Commission on Electronic Voting (Ireland)

Request for Proposals

Review of Hardware Security

15 February, 2005

Ref: CEV01/09/05/01
1. Introduction and Background

The Commission on Electronic Voting was established by the Government of Ireland to report on the secrecy, accuracy and testing of the electronic voting system chosen for use at elections in Ireland. The Commission presented its first report in December 2004.

As part of its ongoing work, the Commission now intends to review in detail the hardware security aspects of the chosen system and invites proposals from suitably qualified and experienced parties to carry out such a review.

A review of the software security aspects of the system is not included in this work which relates only to the security of the hardware devices of the system.

2. Description of the Work

**Materials:** The hardware of the chosen system comprises the following:

- Voting machine
- Programming/reading unit
- Ballot module
- PC and Printer
- Peripherals and consumables

Examples of these devices and of the documented procedures for their use will be provided by the Commission for the purposes of carrying out the work. A brief description of the system is set out at Appendix A.

**The Work:** The security aspects of these devices and their internal and external (hardware only) components are to be thoroughly evaluated -

(a) with regard to their design, construction and use;

(b) in the context of their use at public elections at local and national levels in Ireland; and

(c) in light of the documented procedures for their use at such elections.

**Deliverables:** The outputs of the work will comprise one or more written and verbal reports as may be agreed with the Commission.

**Travel:** The work may involve travel to the place of manufacture in Holland of some or all the equipment or to other premises of the manufacturers or suppliers thereof.

3. Terms and Conditions

This competition and any contract awarded as a result shall be subject to this notice and the general terms and conditions at Appendix B.

In submitting a proposal, proposers are deemed to have accepted the general terms and conditions set out at Appendix B but may also include in their proposal their own terms of business in so far as they are not in conflict with this notice or Appendix B.

4. Proposals

Proposals should be brief and should address the following matters:

(a) detailed proposal for handling the work;

(b) relevant expertise and experience of proposer (with references where appropriate);

(c) price.
Proposals must be accompanied by the statements regarding the following matters referred to in paragraph 8 of Appendix B:

(a) acceptance of the terms and conditions of the competition;

(b) compliance with applicable law;

(c) conflict or potential conflict of interest involving the tenderer;

(d) registerable interest involving the tenderer; and

(e) circumstances listed in paragraphs 1 and 2 of Article 45 of EU Directive 2004/18/EC.

Proposals should be in writing and should be submitted by post or e-mail marked “Hardware Security Proposal” so as to be received at the postal or e-mail address below not later than 12 noon on Tuesday, 1 March, 2005.

5. Selection and Award

The Commission will select the proposal (if any) which it considers most suitable to its requirements, including (but not confined to) the description of the work set out above. The Commission will enter into discussion with the selected proposer on this basis with a view to the award of a contract for the work.

6. Further Information

Additional information on the role and work of the Commission is available from the Commission’s website at www.cev.ie.

The attention of proposers is drawn in particular to the Commission’s First Report on the Secrecy, Accuracy and Testing of the Chosen Electronic Voting System presented in December 2004 and available on-line at the Commission’s website or in print from the Government Publications Sales Office, Molesworth Street, Dublin 2, Price €5.

Proposers may inspect samples of the hardware devices by appointment at the offices of the Commission at the address below.

Further information in relation to this request for proposals is available (by post or e-mail only) from the following addresses quoting for reference “Hardware Security”:

By post: Anne Quinlan
Commission on Electronic Voting
Floor 4, Setanta Centre
Nassau Street
Dublin 2.
Ireland

E-Mail: Anne.Quinlan@cev.ie
Appendix A – Description of the Chosen Electronic Voting System

Scope

This document is written to give a high level overview of the Powervote Electronic Voting System for use at elections in Ireland1.

The Powervote Electronic Voting System

This consists of:

- A Voting Machine (VM) Powervote ESI2, which is also the polling booth, has paper ballots as the user interface inserted into the voter’s panel of the voting machine. This allows voters to select their preferences by pushing buttons for candidates or options, while keeping a full overview of what they have selected and still can select.

- A Ballot Module (BM), where the election configuration is programmed in with security checks via PRU and the IES software and that is placed in the VM before the election and where the votes cast are stored redundantly with security checks.

- A Programming and Reading Unit (PRU), connected to the PC to allow for communication between PC and Ballot Module. The PRU also verifies the correctness of the election configuration.

- Integrated Election Software (IES), that runs on a PC. This is used to define polls for all electoral areas. IES is responsible for configuring the ballot modules and providing the correct information for printing the ballot paper overlays for fitting to the voter's panel of the voting machine. At the close of polls IES reads in the vote data from each ballot module, carries out the count and tabulates the results.

The Electronic Voting Machine Powervote ESI2

The Voting Machine consists of three main parts:

- The voter’s panel, with up to 5 ballot paper overlays, with membrane switches underneath each candidate or option. Next to each ballot paper there are LED displays that show the order of preferences of the voter when candidates or options are selected. An LCD display presents instructions to the voter and shows the name of last selected candidate or option to the voter. The voter uses the Cast Vote button to cast his/her vote.

- The electronics cabinet in the back of the VM, contains the main electronics. This cabinet has a slot for inserting the BM. When this BM is inserted, the machine reads the specific election configuration and the applicable candidates and options.

- A Control Unit, connected to the electronics cabinet, is used to ‘activate’ the voter’s panel by the member of the polling station staff pressing a button on it. It also enables the staff to put the VM into functions mode for opening and closing the poll procedures.

1 Source: Nedap-Powervote, manufacturers and suppliers of the system
Machine Hardware

The ESI2 VM machine hardware is built up as shown in the picture below:

Machine software

All Voting Machine software is written in ANSI C. It consists of three main parts:

Main Board Software: The embedded VM software that communicates with the voter’s panel and the ballot module. It displays the voter’s preferences and stores these preferences in the BM when the cast vote(s) button is pressed. It consists of about 25,000 lines of source code. The source code is compiled by a Metrowerks ANSI C compiler. The development environment is PC based.

Connection Board Software: The connection board software connects the 5 display boards, which communicate via an I²C bus, with the parallel interface of the main board. The source code is compiled by an IAR compiler. The development environment is PC based.

Display Board Software: The display board software is responsible for handling the communication with the membrane switches and the LED displays on one side and the communication with the connection board on the other side. Each of the 5 display-boards contains the same software. The source code is compiled by the same IAR compiler as the connection board software.

Ballot Module

The ballot module consists of two separate flash memories for redundant vote storage. The election configuration and the candidate names and their positions on the voter’s panel are programmed into this ballot module before the elections. During the election the ballot module is in the voting machine and the voter’s preferences are stored onto this ballot module each time the cast vote(s) button is pressed.

PRU hardware/software

The PRU hardware is the same main board as in the Voting Machine. It is equipped with an extra connector for the programming slot of the Ballot Module. It holds the same software as the main board of the voting machine.

Integrated Election Software (IES)

IES operates on a PC with Windows software installed. It is structured in a way to enable electoral administration staff to input all data relating to poll(s). This includes candidates’ details, polling stations, poll data, etc. This data is then used to programme ballot modules, which are installed into voting machines for the purpose of recording votes. Once the polls close the ballot modules are delivered to a reading in point. The vote data is read into IES and it carries out the count. IES then makes presentation of final results.
Appendix B – Terms and Conditions

1. Definitions
For the purposes of this competition and any contract arising therefrom (unless the Commission and the contractor agree otherwise in writing):

“chosen system” means the Nedap-Powervote electronic voting system chosen by the Government of Ireland for use at elections and referenda in Ireland;

“Commission” means the Independent Commission on Electronic Voting and Counting at Elections (known as the “Commission on Electronic Voting”) established by the Government of Ireland on 1 March, 2004 and confirmed by the Electoral (Amendment) Act 2004;

“contractor” means the successful tenderer following the commencement of a contract;

“manufacturers” means the manufacturers of the chosen system, namely, Nedap NV (Holland) and Powervote Ireland;

“tenderer” means any person submitting or intending to submit a tender proposal in response to this competition and “proposer” has the like meaning;

“successful tenderer” means a tenderer whose tender is the winning tender following the evaluation of tenders and with whom the Commission proceeds to discuss the detailed specification and other terms of the work with a view to commencing a contract.

2. Contract
Unless the Commission and the successful tenderer agree otherwise in writing, the contract for the work will comprise this notice, the successful tender proposal and any further terms agreed in writing between the Commission and the successful tenderer.

3. Interpretation
Any conflict of interpretation arising from a difference between the wording used in this notice and in any proposal accepted, shall be resolved by giving priority to this notice and then to any terms and conditions imposed by the Commission in writing.

4. Timetable, Commencement and Duration
The timetable in relation to this competition is as follows:

Closing date for receipt of tenders:

Tuesday, 1 March, 2005 (12 noon)

Selection of winning tender – anticipated:

Friday, 4 March, 2005

Contract commencement – anticipated:

Friday, 18 March, 2005

Subject to discussion of the detailed specification of the work with the successful tenderer following this competition and before the commencement of the contract, it is envisaged that the duration of the work will be from March 2005 until June 2005.

The successful tenderer will be required to remain available to the Commission for a period of 12 months following the conclusion of the work (and for such periods as may be agreed thereafter) to respond to issues arising from any reports which may be presented by the Commission on the basis of the work.

5. Tender Pricing
All costs of the work inclusive of all associated costs but exclusive of VAT or equivalent taxes on the sale of services (each of which should be stated separately) should be included in the tender price which should be expressed in Euro. No additional costs will be accepted.

Travel and related costs which can be reasonably anticipated in connection with the work must be included.

Tenderers should indicate clearly any discounts to which the Commission may be entitled, including public sector discounts, early payment discounts, forward contract discounts and any other discounts.

6. Duration of Tender
Tenders are to remain open for acceptance for a period of 60 days from the closing date for the receipt of tenders [Tuesday 1 March, 2005].

7. Group Tenders
In the event of a group of tenderers jointly submitting an acceptable proposal, the Commission shall award the contract to one of the group, who shall act as the agreed prime contractor. The prime contractor will be responsible for the delivery of all services provided for under the terms of the contract and shall assume all the duties, responsibilities and costs associated with the position of prime contractor.

8. Statements to Accompany Tenders
Tenders must be accompanied by the following statements:

(a) statement of acceptance of the terms and conditions of the competition;

(b) statement of compliance with applicable law as referred to in paragraph 29;

(c) statement regarding conflict or potential conflict of interest involving the tenderer as referred to in paragraph 30, including, in circumstances where no such conflict or interest exists, a statement to that effect;

(d) statement regarding any registerable interest involving the tenderer as referred to in paragraph 31, including, in circumstances where no such interest exists, a statement to that effect; and

(e) statement that none of the circumstances listed in paragraphs 1 and 2 of Article 45 of EU Directive 2004/18/EC apply to the tenderer.

9. Constraints
It should be noted by tenderers as a constraint on the work that the Commission is neither the owner of the chosen system nor a party to any contract which would give it express rights in relation to the use of, or access to, information or materials in relation to the chosen system.

These rights are shared between the Department of the Environment, Heritage and Local Government as purchaser/user and Nedap-Powervote as the manufacturers and suppliers of the system whose cooperation and assistance are thus necessary to facilitate the work carried out by the successful tenderer for the Commission, particularly as regards access to information and materials.

In order to ensure the effective and uninterrupted flow of materials and information between the successful tenderer and the Commission, protocols may be implemented as between the Commission, as the primary contracting party,
the successful tenderer as the second party and the Department and the manufacturers as third parties to protect the respective rights, including intellectual property rights, of the various parties without impeding the work of the Commission.

10. Materials
The materials for the work are as set out in this notice. All other materials, consumables and tools necessary for the carrying out of the work will be provided by the contractor.

11. Deliverables
The deliverables of the work will typically comprise a series of written and verbal reports to the Commission within agreed timeframes and containing the results of each stage, or other division, of the work, together with such commentary and additional information as may be required by the Commission.

The Commission intends to schedule payments around the delivery and acceptance of key deliverables and therefore tenderers should clearly indicate key deliverables and associated costs.

12. Financial Arrangements
Payment for services covered by the contract will be on foot of appropriate invoices, which will be based on agreed deliverables. Invoicing arrangements will be agreed with the contractor following the award of the contract. A contract entered into on foot of this competition is subject to the Prompt Payment of Accounts Act 1997.

The contractor shall be responsible for the delivery of all services provided for within the contract on the basis of the agreed fees set at the beginning of the contract and at appropriate stages thereafter.

Costs quoted in the tender cannot be increased during the currency of the tender. Similarly, terms and conditions of business cannot be altered.

The Commission reserves the right to withhold payment of fees where a contractor has failed to meet their contractual obligations in relation to the delivery of services to an acceptable level of quality.

13. Ownership and Return of Work, Materials, etc.
Unless the Commission decides otherwise, all work, materials, documentation, information, deliverables and other outputs of the work shall be the property of the Commission and shall be returned to it on completion of the work. No ownership or other rights in any such matter shall vest in or attach to the contractor save as may be agreed by the Commission in writing.

14. Travel in the Course of the Work
It will be a requirement that the successful tenderer must travel to meet periodically with the Commission, its staff and advisers, the manufacturers, the Department of the Environment, Heritage and Local Government and others in the course of the work.

The costs of such travel as can be reasonably anticipated in connection with the work will be borne by the successful tenderer and should be priced for accordingly.

15. Location of Work and Jurisdiction
The work carried out by the contractor pursuant to a contract executed with the Commission shall be deemed to be carried out in Ireland, irrespective of where the contractor’s offices are located, and shall be governed by the laws of Ireland. The contract shall be subject to the exclusive jurisdiction of the Irish Courts.

16. Termination
The Commission may cancel the tender process at any time prior to a contract being entered into.

If, at any time during the operation of the contract, the Commission deems the work being undertaken by the contractor to be unsatisfactory, or for breach of any undertaking on confidentiality, or if there are any undue delays in progressing the work, the Commission may terminate the contract early or with immediate effect, without liability for the full costs.

17. Rejection or Re-tendering by Commission
The Commission reserves the right to reject or exclude in whole or in part any or all tenders received. The Commission reserves the right to go to tender again.

18. Enforceable Rights
The selection of a tenderer does not give rise to any enforceable rights by the successful tenderer. The Commission may cancel the process at any time prior to a contract being entered into. In the event that the project must be revised or abandoned following the commencement of the contract, provision for termination of contract may be made without undue costs and/or liabilities being incurred by the Commission. The Commission reserves the right to go to tender again.

19. Amendment of Competition
In the event of any modifications, clarifications or additions to this notice, all known interested tenderers will be notified in writing and will receive such modifications, clarifications or additions. It is the responsibility of interested tenderers to notify the Commission that they are preparing a tender. Failure to notify the Commission may mean that such modifications, clarifications or additions to the notice will not be notified to the tenderer.

20. Security, Confidentiality and Non-Disclosure
The Commission requires that all information provided by it for the purposes of this competition and any contract arising therefrom be treated in strict confidence. Under no circumstances may information be disclosed to other parties without the express permission of the Commission.

The successful tenderer shall observe strict security arrangements and confidentiality in relation to the materials, the work, the deliverables and related information and matters.

The successful tenderer may be required to enter into non-disclosure agreements with the Commission and/or the manufacturers of the system and may be required to give such undertakings, including by way of financial undertakings, as are necessary to indemnify and to keep indemnified the Commission and/or the manufacturers against loss or damages arising from any breach of security or confidentiality.

The successful tenderer may be required, subject to the approval of the Commission, to take such steps as are reasonably necessary to meet the requirements of the manufacturers of the system as regards these matters.

21. Intellectual Property
(a) Subject to paragraph (b), all intellectual property rights connected with and arising from the work shall vest in the Commission.
The contractor shall take all such steps as are, in the opinion of the Commission, reasonable and necessary to protect the intellectual property of the Commission and the manufacturers.

22. Project Management and Structure

Subject to any additional project management structures agreed by the Commission, the successful tenderer will be required to liaise on a continuous basis and at all levels with the Commission’s project manager and other staff and to report periodically in writing and verbally to the Commission and its advisers.

23. Progress Review

Conduct of the work by the successful tenderer will be subject to ongoing assessment by the Commission and to formal periodic review at such intervals as the Commission considers appropriate.

24. Additional Work

If, during the course of the contract, the contractor is asked by the Commission to carry out additional work which is beyond the scope of the work described in this document (or as agreed with the successful tenderer before the commencement of the contract) and which could not have been reasonably foreseen, the contractor will submit a quotation for that work. The quotation will be based on the breakdown of costs provided in the tender, and if it is considered reasonable, an order to carry out the work may be issued by the Commission.

25. Tax Clearance

Before a contract is awarded, the successful tenderer (and agents, where appropriate) will be required to produce a tax clearance certificate. In the case of a non-resident tenderer, a general tax clearance certificate will be required.2

Where a tax clearance certificate expires within the course of the contract, the Commission reserves the right to seek a renewed certificate. All payments under the contract will be conditional on the contractor(s) being in possession of a valid certificate at all times.

26. Professional Services Withholding Tax (PSWT)

Payments under the contract will be subject to deduction of withholding tax at the standard rate of tax in Ireland (currently 20%).

27. Value-Added Tax (VAT)

Tenderers should indicate the applicable rate of VAT in respect of each of the services, etc., being proposed.

VAT is a tax on consumer spending which arises on supplies of goods and services by traders to their customers in Ireland.

The Commission is required to submit VAT (at 21%) to the Irish Revenue Commissioners on services provided from abroad. This VAT is payable in lieu of VAT due in the country of residence of the contractor. Confirmation of such payments can be provided by the Commission if required.

28. Freedom of Information

The Commission undertakes to use its best endeavours to hold confidential any information provided by tenderers in connection with this competition, subject to its obligations under law, including the Freedom of Information Act 1997.

Tenderers should indicate, when tendering, what parts of their tenders are commercially sensitive and which they consider should be kept confidential. The Commission will consult with tenderers about any such sensitive information before making a decision on any request received under the Freedom of Information Act 1997 in connection with this competition.

29. Applicable Law

Tenderers must ensure and confirm for the purposes of their tender proposal that they are compliant with all applicable law, including employment and taxation law.

Tenderers must have regard to statutory terms relating to minimum pay and to legally binding industrial or sectoral agreements in preparing tenders.

Tenderers should be aware that Irish national legislation applies in other matters such as official secrets, data protection and health and safety.

30. Conflict of Interest

Any conflict of interest or potential conflict of interest must be fully disclosed in responding to this notice.

Tenderers should confirm in the course of their tender that, prior to responding to this notice, comprehensive searches to identify any conflict of interest have been carried out. Tenderers are expected to exercise all reasonable care in ensuring that they are aware of any conflicts of interest which exist or may arise at any stage of the process. Should any such association or conflict of interest emerge at any time subsequent to the submission of a tender, it should be immediately disclosed to the Commission and confirmed in writing by registered post.

All references herein to conflicts of interest shall include conflicts of interest or potential conflicts of interest arising either for the tenderer, individual employees or corporate or individual service providers relating to the tender.

31. Registration of Interests

Any registerable interest involving a tenderer and the Commission, members of the Government, members of the Oireachtas (parliament of Ireland) or the members, staff, advisers or employees of the Commission must be fully disclosed in the tender, or in the event of this information only coming to their notice after the submission of a tender, should be communicated to the Commission immediately upon such information becoming known to the tenderer.

The term “registerable interest” has the meaning assigned by section 2 of the Ethics in Public Office Act 1995.

32. Data Formats

Tender documents, deliverables and project documentation must be generated using Microsoft Office 2000 compatible software packages.

2 A non-resident tenderer should apply on form TC1 which is obtainable by downloading it from the revenue website (www.revenue.ie) or by e-mailing nonrestaxclearance@revenue.ie. The completed TC1 form should be returned to Non Resident Tax Clearance Unit, Office of the Collector General, Sarsfield House, Francis Street, Limerick, Ireland or faxed to 00 353 61 401009 or e-mailed to nonrestaxclearance@revenue.ie.