

Appendix 7B

Comments of Powervote Ireland

Powervote Ireland Comments on Parts 3, 4, 5 and 6

10th March 2006.

Mr A Murphy Secretary
Commission on Electronic Voting
Floor 4
Setanta House
Nassau Street
Dublin 2
Ireland

Dear Mr Murphy,

Matter: Final draft parts of second report provided for review 3,4,5 and 6.

It is acknowledged by the Commission and Powervote that the Commission has received a letter dated 14 February directly from Groenendaal b.v. regarding the Commission's proposed second report. Having reflected and discussed the letter with Mr Groenendaal and considered the content of the report sections we have reviewed, we find that the documents contain errors, omissions and inaccuracies. On this basis, and taking account of the Groenendaal letter to the Commission we have decided not to respond in detail to the individual sections of the report provided.

We request that you include our response unedited as part of your report.

Our view remains unchanged regarding the system;

- IES and its successful use depends upon the use of effective electoral procedures and administrative management.
- Groenendaal's Election Management Software and its associated versions in use in The Netherlands, Germany and France and as used for the pilots in Ireland have an unblemished record spanning 20 years.
- Millions of votes have been processed and counted under a range of electoral systems.
- The system has exceeded more than 500,000 hours of accumulated use.
- It has been subjected to exhaustive, independent testing.

The Dept appointed 3 independent organisations in addition to its own staff to conduct proving and acceptance tests prior to the systems use at a Dail Election, followed by the referendum on the Nice treaty. A major reason for the success of the system is its proven simplicity and ease of use. This is key in our discussions with customers where we strive to avoid complexity due to the associated failures this can inevitably bring.

- The pilot uses of the system in Ireland worked successfully.
- Government announced its decision to extend the use of the system nationally.
- At this time, pressure and some political groups decided to object to the introduction of the system.
- Media coverage ensued.
- Government delayed its introduction and appointed the Commission to report on the accuracy and secrecy of the system.

We have co-operated fully with the Commission at all times during their work associated in testing and evaluating our system.

As the Commission finalises their second report it is evident that the system as supplied works in accordance with those documents and specifications agreed with our customer, the Department. It has also become evident that the criteria applied by the Commission in evaluating the chosen system deviates from that which we agreed with our customer.

Where the Commission indicate a need for procedural/administrative changes we understand that the Department have been reviewing this area as part of their on-going work. Post election audits are standard practice as a formal method of considering if and where changes might be required. This is and must be a continuous process.

Our customer (the Department) remain satisfied that with effective procedures in place and an opportunity to reflect on certain aspects that the Nedap Powervote system would be fit for purpose within a relatively short timeframe.

We have suggested to the Department that subject to the completion of their review that consideration could be given to a phased introduction of the system. This would be based upon its use in a small number of constituencies initially. Such an approach would enable additional practical experience to be accumulated and confidence to be rebuilt to the levels experienced at the previous pilots in Ireland.

Our wish remains, to work with our customer to ensure the readiness of the system at the earliest possible opportunity.

Yours sincerely

Roy Loudon
Powervote Ireland Limited

Powervote Ireland Comments on (Draft) Second Report

29TH June 2006.

Mr A Murphy Secretary
Commission on Electronic Voting
Floor 4
Setanta House
Nassau Street
Dublin 2
Ireland
Dear Mr Murphy,

Matter: (Draft) Second report of the Commission on Electronic Voting.

We request that this letter, un-edited be included within the CEV Second report.

A letter dated 10th March 2006 was also sent to the Commission and its comments and content were based on the Commissions draft report to that point.

We acknowledge the invitation of the CEV to review and comment on the draft of their Second Report and the Principal Significant Changes (version 6.2).

Mr Groenendaal has written directly to the Minister for the Environment, Heritage and Local Government in this matter.

Powervote Ireland Limited remains in total agreement with our business partners Nedap N.V. and Groenendaal b.v. responses to the CEV and that the chosen system should be deployed for use in Ireland. It is acknowledged that some procedural processes may require changes but that these fall outside the scope of our system.

We have not seen anything within the report, which unequivocally proves that the system is not fit for purpose.

The Department of the Environment, Heritage and Local Government (DOEHLG) developed and approved the system specifications of the chosen system. After testing they determined that it was fit for purpose.

Work undertaken by the CEV deviates and exceeds in many areas the work undertaken by the DOEHLG during the life of the project. Further testing of hardware and embedded software is called for by the CEV. No clear definition of testing parameters is included.

We respond in this instance to some points raised in the report.

- It is incredible and undermines the credibility of the report that no dialogue was sought by the CEV or their appointed testers with the main Groenendaal developer of the Integrated Election Software (IES). Dialogue with this developer would have given a clear insight into the working methods used and how these apply in the field of elections. His many years of practical experience in the field of specific software design for use at elections in a variety of countries would have represented a significant contribution to the testers.

It is acknowledged that the developer suffered a period of illness. As the main contributor to the development of the Irish version of the software it was agreed with the CEV that he would be the best person to enter into what was anticipated would be detailed technical discussions. His recovery and subsequent availability was made known to the CEV. This recovery was in time to contribute to the work of the CEV and their testers.

- The report cites an 'error' within the count section of the software.

As has already been described in writing, this event is attributable to an interpretation of a rule. Had dialogue taken place with the main Groenendaal developer then this would have made an essential contribution to the work of the testers appointed by the CEV.

Estimates are that such an outcome as that described in the CEV report would possibly occur, but without any certainty, once in 10,000,000 cases.

- Questions raised in the report regarding the reliability and proven operation of the Integrated Election Software are incorrect. The CEV state that the software is under continuous development.

The Integrated Election Software can be divided into 3 main sections.

1. Preparation and Administration.
2. Programming and reading in ballot modules.
3. The Count.

Sections 1 and 2 have been in use in other countries for many years. Millions of votes have been processed and counted without incident or challenge. These 2 crucial sections are therefore very well proven in practice and form part of the Irish version.

Unlike Sections 1 and 2, Section 3 was developed specifically for Ireland. This was subjected to extensive testing by the Department prior to its deployment at the Dail election and the Nice referendum.

IES is a mature and stable design. Adaptations and enhancements are inevitable for each new country.

Changes to electoral practices are common and require software which can be readily adapted to meet these changing requirements in a very timely way. Each time a change is introduced requires testing to be carried out.

Once testing is completed satisfactorily then that particular build number is not allowed to be changed and is issue for use.

It is inaccurate and misleading that the CEV state in their report that the software is under continuous development.

Our objective remains to work with The Department in preparation for the systems use in Ireland.

Yours Sincerely

Roy Loudon
Powervote Ireland Limited

Response by Commission to Powervote Ireland Comments

Mr. Roy Loudon, Director
Powervote Limited
Stonely, St. Neots
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PE19 5EJ
England

Second Report of the Commission

Dear Mr. Loudon

I refer to your letters of 10 March and 9 June in response to the Commission's invitations to you to comment on versions 3 and 6 respectively of its second report in draft form and I confirm that your comments will be included in the report when it is presented.

Your letters raise a number of issues on which the Commission has asked me to respond to you. This response will also be included in the report.

Agreed System Specifications and the Commission's Evaluation Criteria

In your letter of 10 March you stated that the chosen system works in accordance with the documents and specifications agreed between your Company and the Department and that the criteria applied by the Commission in its evaluation of the system deviate from this agreement. Your letter of 9 June further states that the Commission's work has exceeded in many areas the work of the Department in approving the system. There is thus a suggestion in your letters that that the Commission may have deviated from or exceeded its brief in relation to the chosen system.

The Commission has recognised at all times in its work (and has also acknowledged in its report) that there are essential and necessary differences between its approach to evaluating the chosen system and the work carried out previously by the Department in the context of procuring and deploying the chosen system for use. Foremost among these differences is the fact that the Commission's role is specifically to consider the secrecy and accuracy of the chosen system whereas the Department's work in procuring the system took account of a broader range of e-voting considerations and requirements. Significant also is the fact that the Commission, as an independent statutory body, approached its work with an open view, and from a neutral standpoint, not having been involved either in the policy decision to adopt electronic voting in Ireland or in the selection and adaptation of the chosen system for that purpose. Nor was the Commission asked to review or comment on these events.

The Commission remains satisfied that these differences in the scope and basis of assessment of the chosen system as between its procurement by the Department and its evaluation by the Commission are necessary and appropriate and that they in no sense alter the validity of the Commission's work as presented in its report.

Errors, Omissions and Inaccuracies in the Commission's Report

The Commission has previously invited you to specify any errors, omissions and inaccuracies that may be contained in the Commission's report as stated in your letter of 10 March so that they can be considered by the Commission. While a number of general issues concerning the Commission's approach to its work and selected aspects of the report are set out in your letter of 9 June, the Commission has not received any specific indication from you as to where any such errors, omissions or inaccuracies lie.

In the absence of any such indication, the Commission has nonetheless reviewed its report in so far as possible in light of the more general concerns set out in your letters and in light of the concerns highlighted in separate correspondence with the third party developer of the IES election management software (see below). Changes have been made to the report as a result of this review and, while the Commission has made every effort to ensure the accuracy and fairness of its report, the Commission cannot respond to, or be held accountable for, unsubstantiated allegations that its report contains errors, omissions or inaccuracies.

Communications with Developer

Your letter of 9 June states that no dialogue was sought by the Commission or its agents with the main developer of the IES election management software and that this undermines the credibility of the Commission's report. This statement gives the impression that the Commission has formed its view of the software based on a review process that was deficient for the want of direct consultation with the person who wrote it.

The Commission has engaged fully with your company, Powervote Ireland, as end-suppliers in Ireland of the IES software product developed and maintained by a third party developer Company. These communications were on the clear understanding that Powervote Ireland represented the interests of the developer Company and would act as a conduit for information sought by the Commission. Experts appointed by the Commission also exchanged communications directly with the developer Company on technical matters.

The Commission has at all times had due regard to the interests of the developer Company and has recognised the expressed and implied wishes of Powervote Ireland regarding the manner in which communications with the developer Company and its personnel should be conducted, notwithstanding the limitations imposed by some of these arrangements.

Error in Count Algorithm

Your letter of 9 June indicates that the error found in the IES count algorithm would occur only once in an estimated 10,000,000 test cases. The Commission has in fact uncovered two errors in the software. The first is in selecting between tied candidates, the second is in the reporting of this selection. Because they are interconnected, these errors combine to produce an enhanced effect.

The Commission is not basing its view solely on the fact that these errors were found or on their materiality to the result of an election but rather on their significance in the context of other evidence obtained by the Commission regarding the quality of the software and the design and development processes that underpin it.

Thus the significance of these failures for the Commission lies not in their potential impact on an election (the likelihood of occurrence of which is of course remote) but in the fact that errors exist in that part of the code that is most amenable to testing, i.e. the count algorithm. This raises the significant question of what potential errors may exist in other parts of the code such as the vote read-in, aggregation and disaggregation functions that are less transparent in operation, that are less amenable to testing, that have not been independently tested and that the Commission was unable to test either.

Experts appointed by the Commission have also indicated that, based on the number of lines of source code - and the logical complexity of the counting algorithm being implemented - as an indicator of the range of possible paths of execution that may be followed through running the code, the 100,000 sample elections tested by the Commission comprise only a very small fraction of the total number of possible execution paths that would need to be followed in the case of the IES software in order to develop a high level of assurance based on testing of the software alone.

Software Under Continuous Development

Your letter of 9 June takes exception to the Commission's description of the IES software as being under "continuous development". Although this description is based mainly on the evidence of the Commission's work in reviewing the software development process to date, and ongoing, it is also based on the use of the same term by your Company in discussions with the Commission to describe the likely requirement to update the software to meet the particular needs of each successive election and to take account of other changes arising between elections. For these reasons, the Commission has also found it appropriate to describe the software as being under continuous development.

Similar Software in use Elsewhere

The Commission acknowledges the value, as a general indicator, of prior usage of closely related software designs in other countries over a long period of time and in many elections as set out in your letters. However the same evidence cannot be applied as a substantive indicator of reliability of the software proposed for use in Ireland, given the many changes that have been made to adapt it for such use and the well-established principle that even the smallest changes to software can have disproportionately large and sometimes unexpected consequences in terms of its behaviour.

I would like to take this opportunity to thank you and your colleagues in the developer Company for your cooperation with the Commission in its work.

Yours sincerely

Alan Murphy
Secretary to the Commission

30 June, 2006

