E-voting in the Netherlands; past, current, future?

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***Abstract*—This paper is a case study of a country in which e-voting used to be the general norm until 2006; the Netherlands. Since the abandonment of e-voting, several attempts have been made to reintroduces some form of e-voting. This paper describes these attempts and tries to give an insight in the possible future developments of e-voting in the Netherlands.**

Keywords— e-voting, case study.

I. INTRODUCTION

The Netherlands was an early adapter of e-voting. Voting machines were introduced in 1966 in a couple of municipalities. Since then, their use grew rapidly, so that during the municipal elections of March 2006 nearly 99% of the voters cast their vote with the use of a voting machine. Both in the 2004 European Parliament elections and the national elections of November 2006, voters abroad could vote through the internet. Since 2007 this use of e-voting dramatically declined. Nowadays, elections are conducted using paper ballots, mail ballots and hand counting. The action group ´We don't trust voting machines´ raised concerns regarding the safety of both the voting machines and the internet voting system. This ultimately led to the decision to quit using these systems and to reassess e-voting in the Netherlands. [1] However, the discussions on the use of e-voting haven't stopped.

When looking at debates concerning e-voting in public elections, two key issues have to be addressed by any e-voting solution. The secrecy of the vote has to be protected, while voters, political parties and other actors have to be able to check if votes are stored and counted as they were cast. [2] The main point that the action group raised was the impossibility to check the integrity of the Direct Recording Electronic Voting Machines (DRE) that were used (Fig.1). However, the issue of secrecy of the vote got the most attention in the debate, due to the fact that this is one of the few criteria for elections that is laid down in international law.[1] Because states have to guarantee free, fair and secret elections, in court cases that the action group started against the approval of the DRE's, they had to focus on the issue of the secrecy more than on the issue of integrity.

Fig. 1. The DRE that was used in the majority of municipalities.

II. E-VOTING IN THE POLLING STATION

After the abandonment of the DRE's that were used in the polling stations a governmental committee made recommendations on the electoral process in general and on new ways of e-voting in particular. In their report 'Voting with Confidence' [3] they recommended a new form of e-voting which would consist of a voter printer and a vote counter. A voter would make its vote on the printer, which would only print the vote. The print would then be put into a ballot box and counted at the end of the day using the vote-counter, by means of scanning it. A group of technical experts were asked if this system would be feasible and how it should be tested. Their findings were that it would be hard to ensure that this new system would meet the criteria for safety and secrecy of the vote. One particular issue that would be difficult to address was the compromising radiation that vote printers would send out, which could be used in order to breach the secrecy of the vote.[2] The Secretary of State therefore informed the Parliament that she would not pursue this system. [4]

The 2009 elections for the European Parliament were the first nation-wide elections held with the use of paper ballots and hand counting. Although the hand counting process meant that it took longer for the results to be known, most municipalities finished their counts before 3 AM election night. (Fig.2).

[1] See for example article 3 of the First Protocol of the European Convention on Human Rights.

[2] In the Dutch debates the term Tempest was used. The official term for eavesdropping by means of electromagnetic emissions is Van Eck phreaking.

Fig. 2. Example of the counting process in the Netherlands.

There were also no major incidents with voters using the paper ballots. In response to question by Parliament on the duration of the counting process, the Secretary of State emphasized that the speed with which the results are known is not a goal in itself. What is important is that the voting process, including the counting of the votes is transparent and verifiable. [5] During the municipal election of March 3rd 2010, there were 15 municipalities out of the 394 that held recounts. These recounts did not lead to changes in the seat distribution. In 2010 the Parliamentary elections were observed by the Office for Democratic Institutions and Human Rights. In their report they agree with the decision to cancel e-voting as an appropriate measure in view of the challenges to electoral integrity that were identified in 2006.

Due to complaints from municipalities about the counting process and the fact that recounts were held, the government decided in April 2010 to examine if it would be feasible to introduce a form of e-counting. A bill was drafted to make experiments with e-counting possible in 2012. However, while the Minister was investigating what requirements should be met before such an experiment could take place, Parliament once again started pushing for e-voting by means of a voting computer. The Electoral Council also showed support for the reintroduction of voting machines. [6] The Minister decided to stop focusing on e-counting in order to look at e-voting again. [7]

In 2013 the government set up a new committee to investigate if e-voting could and should be used. This committee published a report called 'Every vote counts – Electronic voting and counting', in December 2013. [8] The committee concluded that it would benefit the election process to use electronic means to count votes and preferably also to cast votes. The committee presented a model using a vote printer and vote counter. This model allows voters with a physical disability to vote without help[3] while the use of the vote counter eliminated the problems with the inaccuracy of hand counting. It is possible to check the integrity of the system because the printed votes can be hand counted to verify the tally by the vote counter. This committee therefore reached the same conclusion as the committee in 2007.

The government will look into the feasibility of the advised system of a vote printer and a vote counter. The government admits that the Tempest problem which was the reason not to introduce this system after the previous committee in 2007, still exists. However the government takes the stand that if certain measures are taken to reduce Tempest as much as possible, it is acceptable to allow for a certain level of residual risk. [9]

III. INTERNET VOTING

After the discussions surrounding the internet voting for voters living abroad during the national elections of 2006, the Minister had defined criteria that all forms of e-voting should meet. Part of these criteria are the recommendations of the Council of Europe on the use of e-voting. [10] The proposed internet voting system for the waterboard elections in 2008 failed to meet these criteria. A major issue was the robustness of the cryptography that would be used. According to the testing agency, the chosen method of encryption would in the best scenario protect the secrecy of the vote until 2030, but it would be very likely that it would be possible (way) before that date to reconstruct which voter voted for which candidate. Another issue was that a voter with the right software would be able to calculate valid voting codes within 20 hours. Since the voting period was two weeks, this would mean that such a voter would be able to cast at least 16 valid votes. Finally, there were security issues with the system that would be used. [11] The government therefore decided to withhold the certification of this system. [12] The waterboard elections were then held by the use of paper ballot mail votes.

The voters living abroad also used paper ballot mail votes during the European Parliament elections of 2009 and the parliament elections of 2010 and 2012. The main issue for these voters receiving and returning their ballot paper in time. In order to solve this issue, voters were enabled in 2012 to download and print the ballot paper themselves. This eliminates the time it takes to send the ballot papers from the Netherlands to the voter (Fig. 3 and 4).

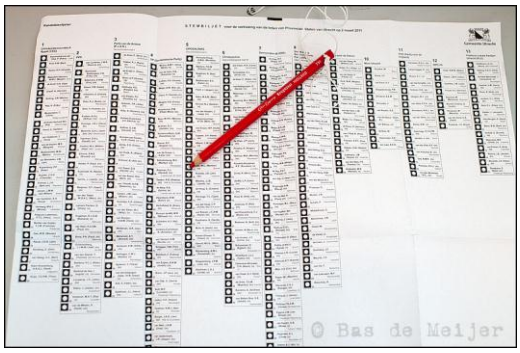

Fig. 3. Regular ballot paper.

[3] A vote printer can be equipped with audio support, making it possible for blind voters to cast their vote on their own.

Fig. 4. Ballot paper for voters living abroad.

In 2013, the Minister commissioned a market research institute to investigate the feasibility of internet voting. [13] Based on their study [14], the government informed Parliament on March 21st 2014 that they had decided that currently there are too many risks with internet voting. Combined with the large costs of internet voting and the fact that there is no evidence that internet voting raises turnout, the government will not introduce internet voting for voters living abroad in the near future. [15]

IV. Debates in Parliament

Before the Parliamentary elections in 2006 during which the controversy on e-voting arose, the Dutch Parliament was a big supporter of e-voting. Most parties were in favor of introducing nation-wide internet voting. In the first two years after the 2006 elections, the view on e-voting was dramatically different. Parliament supported the decision to cancel e-voting as long as the issues concerning secrecy and integrity were not solved. In 2007 it was Parliament who questioned the possible use of internet voting for voters living abroad. Most members felt that the internet voting system might not meet the criteria for secrecy of the vote and integrity and asked for criteria such a system should meet. [16] The decision in 2008 to cancel the use of internet voting for the waterboard elections was also supported by Parliament. In these debates, both issues; secrecy and integrity, were mentioned by members as reasons not to use e-voting. However, this attitude towards e-voting changed after the first elections conducted with paper ballots. Both after the European Parliament elections of 2009 and after the municipal elections of 2010, members asked the Secretary of State to investigate the return to e-voting, because hand counting was both inaccurate and time-consuming. [17] Where members stressed the importance of the integrity of the vote in February 2012, [18] in December 2013, nearly all political parties in Parliament were in favor of using e-voting, because that hand counting was inaccurate. [19]

V. 'Stemfies'

A question that recently got attention in the Dutch voting process is the use of smartphones by voters to make a 'stemfie' (a picture of themselves voting). During the municipal elections of March 2014, a politician posted a photo of himself on social media on which his face and the marked ballot paper were visible, showing his vote (Fig.5). His example was followed by many voters. In answer to questions about these photos, the Minister said that these kind of photos are not prohibited under Dutch law. A ngo then started a procedure against the Minister in which they demanded that he would issue a statement that 'stemfies' are not allowed and that the polling stations should act against them, because 'stemfies' breach the secrecy of the vote. On May 9th 2014, the judge ruled that although the disadvantages of 'stemfies' were in his eyes bigger than the advantages, the Election law does not prohibit them and therefore there was no reason for the Minister to withdraw his statements. During the European Parliament elections, a sign in the polling stations informed voters that they didn't have to reveal their vote to anyone.

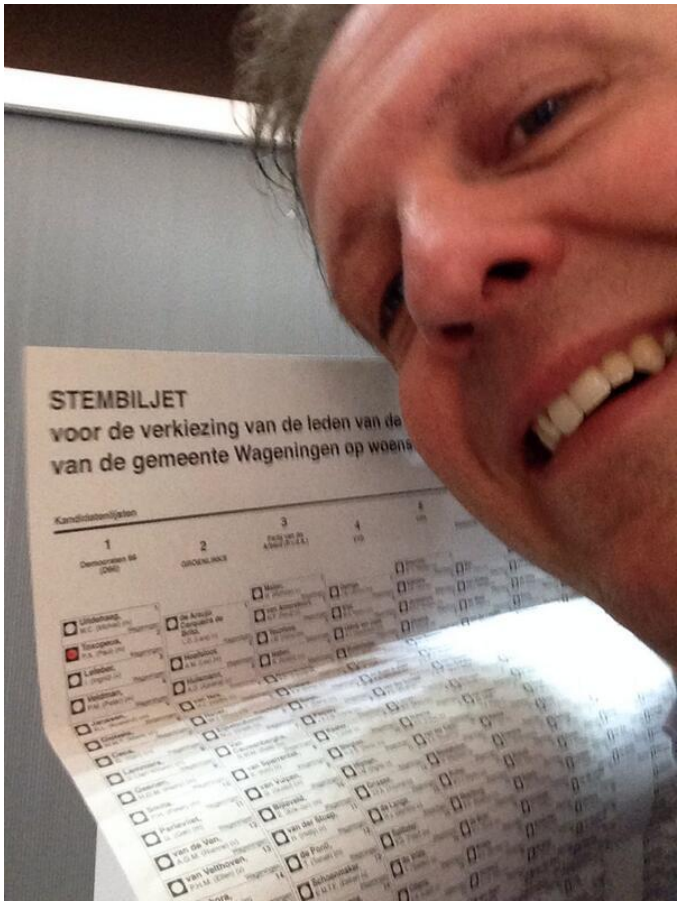

Fig. 5. 'Stemfie'.

VI. Conclusions

Although the events of 2006 led to a withdrawal of all forms of e-voting in the Netherlands and caused debates in Parliament, shortly after, Parliament once again asked for the introduction of new forms of e-voting. Both committees that looked into e-voting recommended the same: a vote printer combined with a vote counter. While government did not follow this advice in 2007 due to the concerns on secrecy of the vote and integrity of the system, nowadays it seems willing to embrace this system. Further research will be done to discover if such a system is feasible, and possible to implement in a cost-efficient manner. The government however has made the decision not to pursue internet voting for voters living abroad.

What is striking about the debate in the Netherlands on e-voting is the short time that elapsed between the decision to abandon e-voting and the renewed call for it from election officials and members of Parliament. Where the main focus was on the protection of the secrecy of the vote and the integrity of the system, it shifted to the (perceived) inaccuracy of hand counting. The arguments against e-voting seemed to have faded into the background in favor of the arguments against voting by paper ballot. One argument that is used in the debate is that paper ballot voting is old-fashioned and that in the Netherlands, where computers are a big part of daily life, it should be possible to use technology in the voting process. It is questionable if this argument should play a role in a debate that should focus on questions of secrecy of the vote, integrity of the system and accuracy of the results.

Besides the issues of e-voting and internet voting, the use of smartphones by voters to make ‘stemfies’ and post them on social media gives rise to a new debate on secrecy of the vote. Is this a right that a person can waive, or is it also a duty of a voter to protect the secrecy of the vote? At this moment, this question remains unresolved, but will undoubtedly play a role in future debates on the Dutch election process.

References

[1] L. Loeber, “E-voting in the Netherlands; from general acceptance to general doubt in two years.” Electronic voting 2008, GI lecture notes in informatics, ed. R. Krimmer and R. Grimm, 21-30. Bonn, Germany: Gesellschaft für Informatik.

[2] L. Mitrou, D. Gritzalis and S. Katsikas. "Revisiting legal and regulatory requirements for secure e-voting." Security in the Information Society. Springer US, 2002. 469-480.

[3] F. Korthals Altes et. al., “Voting with confidence”, Report by the Election Process Advisory Commission September 27, 2007, found on www.minbzk.nl.

[4] Kamerstukken II 2007/08, 31 200 VII, nr. 64.

[5] Kamerstukken II 2009/10, 31 142, nr. 16.

[6] Evaluation report of Septermber 22nd 2010, found on www.kiesraad.nl.

[7] Kamerstukken II 2013/14, 31 142, nr. 37.

[8] Committee reseach electronic voting in the polling station, “Every vote counts, Electronic voting and counting”, Kamerstukken II 2013//14 33 829, nr. 1.

[9] Kamerstukken II 2013/14, 33 829, nr. 3.

[10] Legal, operational and technical standards for e-voting, Rec(2004) 11.

[11] Fox-it, “Rapportage advisering toelaatbaarheid internetstemvoorziening waterschappen”, August 12th 2008.

[12] Kamerstukken II 2007/08, 31 142, nr. 11.

[13] Kamerstukken II 2013/14, 31 142, nr. 39.

[14] Kamerstukken II 2013/14, 33 829, nr. 2.

[15] Kamerstukken II 2013/14, 33 829, nr. 3.

[16] Handelingen II November 21st 2007, 26-2017 – 26-2023.

[17] Handelingen II 2009/10, Aanhangsel 267 and Kamerstukken II 2009/10, 31 142, nr. 22.

[18] Kamerstukken II 2011/12, 31 142, nr. 33.

[19] Kamerstukken II 2013/14, 31 142, nr. 39.