



e-voting: the promise and the practice

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Introduction

Digital technologies and the internet have dramatically altered the way Australians communicate, transact business and interact with government agencies. It is hardly surprising that technology's application to the casting and counting of votes in ballots is an idea that has long been entertained and, in many circumstances, realised. Large and small organisations—corporate, community and civic—already use a variety of technologies to enable participants to elect board members, deliver binding votes on policies or budgets and generally contribute to decision-making. These votes may be cast in a particular physical location (a headquarters or local kiosk) or remotely via an internet connection. But how states employ technology in the serious political business of parliamentary elections is a challenge beset by conundrums and exposed to risks that demand sophisticated management.

In representative democracies, voting for members of legislatures is a foundational activity, and the methods, traditions and dynamics that characterise that voting act are usually a distinctive—and often cherished—element of the political culture that exists in the country or jurisdiction concerned.

This paper explores the opportunities and challenges that technology presents for the casting and counting of votes in parliamentary elections. It looks at initiatives in Australian and overseas jurisdictions.

While this paper uses the generic term 'electronic voting' (e-voting) to connote the casting of a vote using an electronic technological device—as opposed to, say, depositing a pencil-marked paper into a ballot box—it is necessary to distinguish two key categories of 'electronic voting': localised electronic voting (LEV) and remote electronic voting (REV).

LEV typically requires an elector to present themselves at an officially-designated place (polling booth, standalone kiosk et cetera.) and to cast a vote using an *in situ* electronic device—a computer, a touch-screen or similar. Using REV enables an elector to cast their vote at a distance from the hub that actually captures, records and counts their vote—typically by a voter logging on to a (secure) internet connection and following a series of prompts that validates the elector's entitlement to vote and then enables them to do so.

The Australian Electoral Commission (AEC) has frequently turned its mind to the question of electronic voting, and has conducted relevant trials. The Commission remains of the view that:

There is no evidence to suggest that there is any political or community support for changing the voting systems presently used in Australia. This is an important point to appreciate when considering the possibility of introducing any form of electronic voting in this country. In our view, the introduction of any form of electronic voting must support the present voting systems and voting culture.¹

1. Australian Electoral Commission (AEC), *Electronic voting and electronic counting of votes*, March 2001, updated 22 December 2010, AEC website, viewed 10 January 2012, <http://www.aec.gov.au/Voting/report.htm>

This paper touches on some of successes and failures of e-voting and is intended to stimulate ongoing thinking about the relationship between technology's capacities and citizens' aspirations.

Background

Casting a vote in Australian Federal elections

Voting is compulsory in Australia. Section 245(1) of the [Commonwealth Electoral Act 1918](#) (the Act) states: 'it shall be the duty of every elector to vote at each election'.² The Act requires Australian citizens aged 18 years and over to enrol (although persons of 'unsound mind' and persons who have been convicted of treason or treachery are not entitled to enrol or vote; nor are prisoners serving more than three years).

Voting for the House of Representatives is by the "exhaustive preferential" method, and for the Senate it is by "proportional representation". The exhaustive preferential system requires a voter to number all candidates on the ballot paper according to the voter's preference. Proportional representation also requires a voter to number all candidates, or to place a number "above the line" which in turn indicates a preference order for all candidates. Voting for most state parliaments is by one or other of these systems (or variations).³

The Act is very explicit about how to cast a vote at an election.

- Electors may vote in person at a polling place on election day. An 'ordinary vote' is a vote cast by an elector at a polling place or at a pre-poll (early voting) centre within the division for which they are on the roll. This is the simplest way to vote and the method used by the majority of electors (approximately 80 per cent).
- When attending a polling place to vote on election day, section 233 of the Act requires an elector, on receiving a ballot paper, to retire alone to an unoccupied voting compartment and there, in private, mark his or her vote on the ballot paper. The elector must then fold the ballot paper so as to conceal his or her vote and deposit it in the ballot box.⁴
- Electors can also make a 'declaration vote'. There are a number of types of declaration votes: postal votes, pre-poll votes, provisional votes and absent votes. Electors making such votes must complete a declaration envelope with their personal details.⁵

2. *Commonwealth Electoral Act 1918*, section 245 (1), viewed 11 January 2012 at <http://www.comlaw.gov.au/Details/C2012C00581>

3. AEC, op. cit.

4. AEC, *Electoral backgrounder: compulsory voting*, April 2010, AEC website, viewed 11 January 2012, http://www.aec.gov.au/About_AEC/Publications/backgrounders/files/2010-eb-compulsory-voting.pdf

5. AEC, 'Ways to vote', AEC website, viewed 11 January 2012, http://www.aec.gov.au/Voting/ways_to_vote/

Australian experiments with electronic voting

Federal elections

The Australian Electoral Commission (AEC) has for many years been 'closely monitoring the development of new technologies that might allow for the introduction of electronic voting by keeping a watching brief on electronic options used overseas and in other Australian jurisdictions'.⁶ By 'electronic voting' the AEC means:

Any system where the elector casts their vote using an online system, such as the Internet, touch-tone phone voting using interactive voice recognition, mobile telephone SMS text facility, or interactive digital television. Once recorded, the elector's vote is despatched in real time to a secure electronic vote store, where it is held prior to counting.⁷

In 2000 a small delegation of representatives from the AEC and the Victorian Electoral Commission (VEC) visited the USA to observe developments in the use of electronic voting and electronic vote counting at the Presidential elections. The delegation's findings were published in 2001 in a report entitled *Electronic Voting and Electronic Vote Counting – A Status Report*.⁸

The report identified a number of possible next steps for electronic voting in Australia. These included internet voting for Antarctic electors, internet voting for overseas postal voters who apply in advance, touch screen voting in pre-poll voting centres as a service for non-English speaking voters and sight-impaired voters, and overseas postal voting on a computer in an Australian overseas mission.⁹

In its *Report of the Inquiry into the 2001 Federal Election*, the Joint Standing Committee on Electoral Matters (JSCEM) briefly canvassed the opportunities and risks associated with digital technology applications to the casting and counting of votes.¹⁰ The Committee invited the AEC to submit a detailed proposal for the trialling of electronic voting.¹¹ In the meantime, the AEC had published a discussion paper *eVolution not revolution*.¹² The paper described various overseas trials of electronic voting in various guises and reported on public reaction to them.

6. AEC, Submission to the Joint Standing Committee on Electoral Matters *Inquiry into the conduct of the 2001 Federal election and matters related thereto*, pp. 27-8, viewed 10 January 2012, http://www.aph.gov.au/Parliamentary_Business/Committees/House_of_Representatives_Committees?url=em/elect01/index.htm

7. C Barry and others, *eVolution not revolution: electronic voting status report 2*, September 2002, p. 3, viewed 27 January 2012, http://www.aec.gov.au/Voting/files/E-voting_report.pdf

8. Ibid.

9. Ibid.

10. Joint Standing Committee on Electoral Matters, *Report of the Inquiry into the 2001 Federal Election*, House of Representatives, Canberra, June 2003, viewed 12 January 2012, http://www.aph.gov.au/Parliamentary_Business/Committees/House_of_Representatives_Committees?url=em/elect01/report.htm

11. Ibid., p. xviii.

12. Barry, op. cit.

The paper noted that ‘Australia has always been a leader in electoral democracy’ and that ‘Australians need to be aware that other jurisdictions are now taking the lead on the e-voting issue’.¹³ The authors recommended as follows:

The Federal, State and Territory Parliaments should amend their Electoral Acts to enable a trial of e-voting to be implemented at Federal, State and Territory elections for:

- Antarctic electors
- electors in other remote locations
- electors with a disability
- overseas electors and
- as an option for the return of postal votes.¹⁴

In its [Report on the 2004 election](#), the JSCEM declared itself ‘particularly keen to see a form of electronic voting implemented that would allow the blind or visually impaired to cast a *secret and independently verifiable* vote’.¹⁵ Accordingly, the JSCEM recommended that a trial of an electronic voting system be implemented at an appropriate location in each electorate at the next Federal election.

With regard to remote electronic voting (REV)—typically via the Internet—the JSCEM expressed the view that:

... attendance at a polling place [is] a key contributor to Australia’s democracy. If all Australians were given the opportunity to vote remotely, the Committee believes one of the best features of Australia’s voting system would be removed. Therefore, even if it is technologically possible, the Committee has no desire to see widespread remote electronic voting introduced at any time in the future.¹⁶

Nevertheless, the Committee recommended that the AEC trial REV for overseas Australian Defence Force (ADF) and Australian Federal Police (AFP) personnel and for Australians living in the Antarctic. It added the following caveat:

While the Committee advocates remote electronic voting in these specific circumstances, it is keen to stress that it does not view this trial as a precursor to wider implementation.¹⁷

The trials for both vision-impaired and ADF overseas electors went ahead at the 2007 federal election. The ADF trial used the Defence Restricted Network (DRN) and was not accessible via the World Wide Web, ensuring a secure software environment for voting. The AEC commissioned

13. Ibid., p. 20.

14. Ibid.

15. JSCEM, *The 2004 Federal election: Report of the inquiry into the conduct of the 2004 federal election and matters related thereto*, September 2005, Canberra, p. 258,

16. Ibid., p. 271.

17. Ibid., p. 272.

independent evaluations of both the [vision-impaired trial](#)¹⁸ and the [Defence personnel REV trial](#)¹⁹ and the AEC in turn reported to the JSCEM. A detailed account of the logistics and outcomes of both trials was reported to parliament by the JSCEM in 2009, along with a qualitative and financial assessment:

The combined costs of the trials was over \$4 million, with an average cost per vote cast of \$2,597 for the trial of electronically assisted voting for blind and low vision electors and \$1,159 for the remote electronic voting trial for selected defence force personnel serving overseas. This compares to an average cost per elector at the 2007 election of \$8.36.²⁰

Largely on the basis of cost the Committee recommended that ‘the trials should not be continued at future federal elections’.²¹

Nevertheless, the Australian Electoral Commission is developing a new assisted telephone voting method for blind and low vision voters. This will allow them to lodge their vote from home (that is, not attend a divisional office to be marked off the roll) using a phone, while still ensuring their anonymity. The AEC is also closely following the progress of state electoral commissions with regard to electronic voting, and is looking to exploit components of electronic voting (such as registration systems) where legislatively and logistically possible.²²

State, territory and local government elections

Experiments with both LEV and REV have taken place in several jurisdictions since the year 2000. The Electoral Commission of the ACT has had a longstanding interest in LEV, and the NSW Electoral Commission has been the most prominent recent player in exploiting the possibilities of REV.

Electronic election initiatives in the Australian Capital Territory

The Australian Capital Territory Electoral Commission [Elections ACT](#) has reported comprehensively on that territory’s electronic voting initiatives, which have been in operation for over a decade.

The impetus for trialling electronic voting was the 1998 Legislative Assembly election where a close result in the Molonglo electorate necessitated a recount which revealed an error in the initial manual counting process. It was hoped that an automated system would improve the speed and accuracy of the election system.²³

18. AEC, Electoral Voting Section, *Report into electronically assisted voting at the 2007 federal election for electors who are blind or have low vision*, n.d., viewed 12 January 2012, http://www.aec.gov.au/Voting/files/bvi_final.pdf

19. AEC, *Report into Remote Electronic Voting at the 2007 Federal Election for Overseas Australian Defence Force Personnel*, viewed 12 January 2012, http://www.aec.gov.au/Voting/files/adf_trial_report.pdf

20. JSCEM, *Report on the 2007 federal election electronic voting trials Interim report of the inquiry into the conduct of the 2007 election and matters related thereto*, March 2009, Canberra, p. iii.

21. *Ibid.*, pp. xiv–xvii.

22. Personal communication from the AEC to the author.

23. ACT Electoral Commission, *Electronic voting and counting: development of the system*, 5 July 2012, website, viewed 22 July 2012,

Legislation to allow for the use of electronic voting was passed in December 2000, and LEV made its first appearance in the ACT at the 2001 Assembly elections, with four locations providing electronic pre-poll voting and eight booths offering electronic voting on election day itself.²⁴ While conventional paper ballots remained the core voting method, technology was applied to both the casting and counting of votes.²⁵

The system uses standard personal computers as voting terminals, with voters using a barcode to authenticate their votes. Voting terminals are linked to a server in each polling location using a secure local area network. No votes are taken or transmitted over a public network like the Internet.²⁶ The electronic voting system—whose source code is publicly available in the interests of transparency—is used in the pre-poll voting centres, which are open for three weeks before polling day and in selected booths on polling day.²⁷ The vast majority of polling places do not have electronic voting, and voters still use traditional paper ballots. In electronic polling places, voters are given a choice of voting electronically or on paper.²⁸

In 2002, following its introduction, the ACT Electoral Commission reported that the [electronic voting and counting system](#) (eVACS®):

- eliminated the need for manual counting of electronic votes, thereby reducing the possibility of counting error and speeding the transmission of results
- was reliable and secure
- effectively eliminated unintentional voter errors; reduced the number of informal votes
- allowed blind and sight-impaired people to vote entirely without assistance and in secret through use of headphones and recorded voice instructions, and
- provided on-screen voting instructions in 12 different languages.²⁹

Electronic counting:

- effectively eliminated errors such as incorrectly sorting or counting ballot papers
- increased the accuracy of the election count
- reduced the time needed to accurately count the votes and announce the election result and

http://www.elections.act.gov.au/elections_and_voting/electronic_voting_and_counting/development_of_the_system

24. P Clack, 'Electronic voting will be first in Australia', *The Canberra Times*, 9 September 2001, viewed 19 January 2012, <http://parlinfo.aph.gov.au/parlInfo/search/display/display.w3p;query=Id%3A%22media%2Fpressclp%2FOMW46%22>

25. A comprehensive overview can be found in the Parliamentary Library Research Note *Electronic Voting in the 2001 ACT Election*, June 2002, viewed 20 January 2012, <http://parlinfo.aph.gov.au/parlInfo/search/display/display.w3p;query=Id%3A%22library%2Fprspub%2F7MS66%22>

26. ACT Electoral Commission, *Electronic voting and counting: development of the system*, op. cit.

27. Ibid.

28. Ibid.

29. ACT Electoral Commission, *The 2001 ACT Legislative Assembly election electronic voting and counting system review*, p. 1, viewed 20 January 2012, http://www.elections.act.gov.au/_data/assets/pdf_file/0007/1798/2001electionreviewcomputervoting.pdf

- increased the amount of information available about errors made on paper ballots by electors.³⁰

The Commission recommended that electronic voting provision be increased, and flagged that the ACT government might wish to consider:

... moving away from the traditional concept of “polling day” and replacing it with a “polling period” which could be from 1-3 weeks. By extending the right to vote throughout a polling period to all electors, electronic voting could be made available at (say) 12 locations strategically placed near main shopping centres and workplaces. Rather than concentrating voting on 1 day at local polling places, electors could vote over (say) a 3 week period at a regional voting centre. In this way, electronic voting could be made available to almost all electors.³¹

This proposal was not accepted by the ACT government or the ACT Legislative Assembly.

The ACT Electoral Commission report on the 2004 Assembly election noted that its enhanced electronic voting system—albeit still confined to only a handful of polling booths— saw an increase of 70 per cent in the number of electronic votes cast, and the system again proved reliable, secure and accurate.³² Voter reaction to using electronic voting was very positive. An exit poll of voter satisfaction showed that 86 per cent of voters who used electronic voting found it easy to use; 88 per cent thought the system fast and efficient; and 83 per cent thought the system had clear instructions.³³

But the Commission also noted that:

... the deployment of the required hardware to polling places for a single day poses logistical challenges and is of questionable cost effectiveness. By contrast, computer voting in pre-poll centres is an effective and efficient use of resources. With the cost of hardware reducing and the options for portable solutions expanding the Commission intends to investigate emerging cost effective and portable technologies to deliver computer voting to more voters.³⁴

On the question of the application of REV to Assembly elections, the Commission made its position clear:

The Commission remains of the view that it would not be appropriate to use the internet for voting for Legislative Assembly elections in the near future. Security concerns and the difficulty of providing electors with unique on-line identifiers are still seen as obstacles that have not yet

30. Ibid.

31. Ibid., p. 3.

32. ACT Electoral Commission, *Electronic voting and counting system: review2004*, June 2005, pp. 3–4, viewed 20 January 2012, http://www.elections.act.gov.au/_data/assets/pdf_file/0006/1797/2004electionreviewcomputervoting.pdf

33. Ibid., p. 14.

34. Ibid., p. 4.

been overcome. Therefore the Commission continues to hold the view that electronic voting should only be provided in a controlled environment at polling centres.³⁵

The 2008 ACT election saw the introduction of electronic electoral rolls and the extension of electronic voting to around 1 in 5 of all ACT voters.³⁶ The election result was finalised in record time, due to the high number of electronic votes cast and the introduction of an intelligent character recognition scanning system for counting paper ballots.³⁷

For the election due to be held in October 2012, ACT Electoral Commission intends to continue to use electronic voting at pre-poll voting centres, combined with scanning of paper ballots. The use of electronic electoral rolls will be extended to include netbook computers networked using the mobile phone system, with voters' names being marked simultaneously on all rolls across the ACT when they vote. This networked system will also be used to provide real-time central reporting of voting numbers and incidents in polling places, as well as wireless transmission of election results to the tally room after the conclusion of the count of ballots on election night.³⁸

Electronic election initiatives in New South Wales

In March 2010 the NSW Government requested a feasibility report into electronic voting for the NSW state general election 2011. A report was tabled in Parliament in September 2010, and funds were appropriated for the implementation of *iVote*, a remote electronic voting system that enables eligible electors to vote using the telephone or the Internet. Relevant legislation was passed on 2 December 2010.³⁹

Only certain categories of electors are entitled to use *iVote*:

- electors who are blind or who have low vision
- incapacitated or illiterate electors who could not vote without assistance
- voters with a disability (within the meaning of the *Disability Discrimination Act 1992*)
- rural voters (who live more than 20kilometres from a polling place)
- electors outside NSW on election day.⁴⁰

35. Ibid., p. 5.

36. ACT Electoral Commission, *Report on the ACT Legislative Assembly Election 2008*, p. 1, viewed 20 January 2012, http://www.elections.act.gov.au/_data/assets/pdf_file/0012/2118/2008ElectionReport.pdf

37. Ibid., p. 2.

38. ACT Electoral Commission, *Annual Report 2010/2011*, p. 50.

39. I Brightwell, 'iVote : technology assisted voting: NSW state election, 26 March 2011', Electoral Commission of NSW, viewed 26 June 2012, http://www.elections.nsw.gov.au/_data/assets/pdf_file/0007/94246/IE_Aust_Presentation_25_August_2011_v8.pdf

40. Ibid.

The 2011 election was notable for its pioneering use of REV with the introduction of *iVote*:

For the first time, NSW citizens who were either disabled, interstate or based in rural areas could vote remotely. The *iVote* project, which was full Internet-based and phone-based electronic voting, recorded 46,864 votes.⁴¹

The system was available during the pre-polling period as well as on election day.

The following overview provided by the NSW Electoral Commission describes the process:

- The elector applies to use *iVote*, just as they might apply for a postal vote, and in doing so supplies a PIN of 6 digits.
- A letter of affirmation is sent to the elector's enrolled address.
- Electors receive an 8-digit *iVote* number—mailed, sent by email or SMS or by telephone call—which will enable them, using their PIN, to access the *iVote* system and vote.
- The elector can vote over the Internet. Electors who are blind or vision impaired can use the phone to cast their *iVote* through the *iVote* call centre.
- After signing-in the elector is presented with the relevant ballot papers.
- The elector has the ability to review the completed ballot before submitting it.
- Once the vote is complete, the elector receives a receipt number that can be used later to confirm that the vote went into the count.⁴²

The *iVote* electronic ballot box is opened after the close of polls and all votes are securely printed in one batch. The printed ballots are sorted by district and go into the normal processes to be counted with the other votes.⁴³

An independent report of the *iVote* operations described its implementation as 'highly successful', with significantly high satisfaction levels, and registration and voting being relatively problem free.⁴⁴

The report summarised the costs as follows:

The average cost of the *iVote* system per vote cast in the 2011 NSW state general election was approximately \$74. Importantly, the actual average cost per vote for this election was significantly lower than estimates calculated prior to the event The reduction in cost per vote is due to the higher than anticipated number of users, rather than a reduction in actual costs. In

41. Ibid.

42. NSW Electoral Commission, 'Overview', Electoral Commission website, viewed 23 January 2012, <http://www.elections.nsw.gov.au/voting/iVote/overview>

43. Ibid.

44. Allen Consulting Group, *Evaluation of technology assisted voting provided at the New South Wales state general election March 2011: report to the NSW Electoral Commission*, p. vi, viewed 23 January 2012, http://www.elections.nsw.gov.au/data/assets/pdf_file/0004/93766/July_2011_Final_ACG_iVote_Report_ELE01-C_Final.pdf

terms of the overall cost of the system, prior to the election, it was estimated to amount to nearly \$3.2 million dollars, while in total the *iVote* system actually cost just over \$3.5 million. However, prior to the election the costs were distributed across 10,000 users, whereas there were actually approximately 50,000 users, hence leading to the large reduction in cost per vote.⁴⁵

The NSW Electoral Commission reported *iVote* 's success in the following terms:

This internet and phone voting option increased the independence and access to a secret ballot to many electors with a disability, as well enabling many overseas and interstate electors to conveniently exercise their right to vote. Usage of *iVote* greatly exceeded expectations by threefold with almost 50,000 electors using it. We estimate that access to *iVote* enfranchised around 30,000 electors who were unlikely to vote if *iVote* had not been available. The independent evaluation found significant public value in extending this voting method to other elections such as enabling voters at Local Government elections to vote out of their council area.⁴⁶

An audit report of *iVote* (required by legislation) found that there were no indications that the votes cast via the *iVote* system were not recorded, extracted and printed accurately. The audit also revealed five incidents that occurred during the voting period for *iVote*:

The most significant of these affected 43 ballots and involved the letter 'N' being shown on ballot papers rather than numeric preferences. The Electoral Commissioner was required to make a determination on each of the 43 votes cast resulting in one of the four affected Legislative Assembly ballot papers and eight of the 36 affected Legislative Council ballot papers being treated as informal. The NSWEC understands how this issue was created and it has been corrected so as not to occur in future use of *iVote*.⁴⁷

An excellent overview of the operation of *iVote* during the 2011 NSW state election is available in the presentation by Ian Brightwell, the CIO of the NSW Electoral Commission, titled [Technology assisted voting: NSW general election and Clarence by-election](#).⁴⁸

Print-on-demand ballot papers

At the 2011 state election, a print-on-demand ballot paper application was used for the first time in a trial at the Sydney Town Hall polling booth. Here an elector could receive the ballot paper that

45. Ibid.

46. NSW Electoral Commission, 'Report on the conduct of the NSW State election 2011', p. 2, viewed 26 June 2012, http://www.elections.nsw.gov.au/_data/assets/pdf_file/0006/96297/SGE_2010-2011_Amended.pdf

47. Ibid., pp. 91–2.

48. I Brightwell, *Technology assisted voting: NSW general election and Clarence by-election*, PowerPoint presentation, 9 December 2011, viewed 26 June 2012, http://www.elections.nsw.gov.au/_data/assets/pdf_file/0008/96380/iVote_Presentation_9_Dec_2011_v4.pdf

corresponded to their electoral district wherever that happened to be, enabling them to cast a vote directly notwithstanding that they were absent from their own electoral district.⁴⁹

Electronic election initiatives in Victoria

At the 2006 Victorian state election, legislative changes allowed the Victorian Electoral Commission to trial Electronically Assisted Voting (EAV) for the visually-impaired. Under this LEV initiative several local 'e-centres' were established that provided voting kiosks containing a touch screen, special keypad and headphones. Vision-impaired voters were supplied with a smart card that enabled them to vote for candidates in their electorate.⁵⁰ The trials were part of a broader suite of technological innovations using a computer-based Election Management System, including an electronic tally board, scannable electoral rolls, and personal digital assistants (PDAs) for electoral officials.⁵¹ EAV was subsequently expanded to be available at every pre-poll voting centre in Victoria for the 2010 state election.⁵²

The VEC 'has no plans to extend these services to the general populace who are able to vote unassisted'.⁵³ The VEC website does state, nevertheless, that 'Victoria's electronic voting system is designed to be "future ready" should there be any changes to legislation. This includes the potential to offer a completely online service'.⁵⁴

Electronic roll mark-off

At the Niddrie District by-election held on 24 March 2012, scannable paper roll mark-off was for the first time replaced entirely with electronic mark-off using netbooks. The VEC's report on the by-election included the following assessment:

- The process worked very well at voting centres and enabled on-line reporting of votes issued to be instantly available to voting centre managers, along with speedy ballot paper reconciliation following the close of voting. Also, the risk of a voter being marked off the roll more than once is eliminated.
 - An added benefit is that for the first time, the VEC is able to obtain rich data about the flow of voters through voting centres individually or as a group, which will assist with being able to estimate staffing requirements more accurately at future elections.

49. J Foreshew, 'Logica tie boosts Electoral Commission in \$40m NSW election', *The Australian*, 5 April 2011, viewed 26 June 2012, <http://www.theaustralian.com.au/australian-it/it-business/logica-tie-boosts-electoral-commission-in-40m-nsw-election/story-e6frganx-1226032950220>.

50. B Haywood, 'The electronic ballot box', *The Age*, 16 October 2006, p. 14, viewed 23 January 2012, <http://parlinfo.aph.gov.au/parlInfo/search/display/display.w3p;query=Id%3A%22media%2Fpressclp%2F8C5L6%22>

51. Ibid.

52. Victorian Electoral Commission (VEC), 'Electronic voting', VEC website, viewed 23 January 2012, <http://www.vec.vic.gov.au/Vote/vote-eav.html>

53. VEC, 'Electronically assisted voting: position paper', VEC website, viewed 21 September 2012, <http://www.vec.vic.gov.au/files/ElectronicallyAssistedVoting201005.pdf>

54. VEC, 'Electronic voting', op. cit.

- All electors were marked off the roll electronically with the vast majority (Early, Mobile and Ordinary) being recorded on Toshiba netbooks wirelessly connected to the VEC on the Next-G network.
 - During the early voting period, 9–24 March, over 4,000 early votes were taken, including 46 votes at six mobile early voting venues in the district, and 151 at the Election Office – Early Voting Centre at 530 Collins St, Melbourne.
 - The eRoll system and Next-G network performed well during both early voting and election day, with only three calls to help desk, all relating to breaks in network connectivity. Help desk troubleshooting routines are now established and in all cases the system was quickly restored.
 - User acceptance of the technology was high and there were no reported issues of difficulty in the routine roll-marking operation.⁵⁵

Prêt a Voter cryptographic voting system

In recent correspondence from the VEC, the Commission advised that it has:

... a project which started recently to build in house an e-voting system which will provide end-to-end verifiability (see http://en.wikipedia.org/wiki/End-to-end_auditable_voting_systems)
Ours will be based on this variant: http://en.wikipedia.org/wiki/Pr%C3%AAt_%C3%A0_Voter.⁵⁶

Both LEV and (limited) REV solutions are being proposed. When completed, the VEC will release the e-voting system under an open source licence so that it can be shared with other electoral commissions in Australia.⁵⁷

The polling-station e-voting solution will provide higher guarantees of integrity than the VEC's current paper-based system. Already one third of votes are cast either by post or at a polling station outside their electorate, which means that there are issues surrounding the secure delivery of paper votes. The verifiable polling-station solution will provide evidence that all its votes have been correctly included in the count. Unfortunately, it cannot provide complete proof that all votes in the election have been correctly tallied, because some votes will still be cast on conventional paper ballots.

The remote e-voting solution aims to provide a solution only for voters who have no other reasonable way of casting a private and individually-verifiable vote. It is expected to be restricted to very specific categories of voter, such as those who are vision impaired.⁵⁸

In June 2012, a team of VEC and other university researchers presented a case study of efforts to adapt the Prêt a Voter cryptographic voting system—which is used at a polling station—to the special requirements of the Victorian parliamentary elections.⁵⁹

55. VEC, 'Report on the Niddrie District by-election held on 24 March 2012, viewed 21 September 2012, <http://www.vec.vic.gov.au/files/ER-2012-Niddrie.pdf>

56. Correspondence to author from Craig Burton (VEC), 21 June 2012.

57. R Buckland et al., 'The future of e-voting in Australia', *IEEE Security and Privacy* (in press).

58. Ibid.

Prêt à Voter is an electronic voting system that uses paper based ballot forms that are turned into encrypted receipts to provide security and auditability and is easy to use. Most electronic voting systems employed around the world today are not verifiable. Our system allows the voter to check that his/her vote has been counted, while retaining secrecy of the ballot, and allowing anyone to check that the election is counted correctly. In simple terms our system allows the voters to check every aspect of the election. This is impossible in traditional voting systems but is possible in electronic elections.⁶⁰

Prêt à Voter is a voting system that provides verification of the ballot. It allows voters to verify that their votes have been included in the count while ensuring their vote remains secret. It also assures the integrity of the election - that the final result corresponds to the votes cast - and allows independent verification of the count. Prêt à Voter provides voters with a familiar voting experience, integrated with an electronic system to process the votes and to provide the security guarantees. The system supports elections involving selection of a single candidate, selection of multiple candidates, lists of preferences, and multiple races on a single ballot.⁶¹

The case study team concluded as follows:

One lesson from our attempt to adapt Prêt à Voter to a real election is that not all issues can be perfectly addressed in a way that retains usability and computational feasibility. This system has unconditional integrity but does introduce some coercion possibilities that do not exist for paper voting. The design problem is to identify and address the issues that really are important and easy enough to address; the political problem is to maintain honesty about the ones that remain.⁶²

Electronic election initiatives in Western Australia

In its [Annual Report 2006–07](#) the Western Australian Electoral Commission reported ‘... a groundbreaking e-voting trial for a non-parliamentary client where members were able to cast their vote via the Internet’.⁶³ The Report explained that during 2003 the idea of e-voting or voting over the internet had been advanced and a trial proposed:

The Commission was awarded a grant for this project from Microsoft and the Office of e-Government early in 2006. In the 6 months up to August 2006 an e-voting proof of concept module was developed allowing an internet voting project to be run with a postal voting election. The Fremantle Dockers Football club displayed interest and in October 2006 club members had the choice of voting for a club Director by post or by using the Internet. This proved to be very successful, easy to use for the electors and produced results for the internet part of the election immediately on the close of polls. The next step is to develop a fully

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59. C Burton et al., ‘Using Prêt a Voter in Victorian State Elections’, unpublished case study, June 2012. See author’s presentation at <https://www.usenix.org/conference/evtvote12/using-pr%C3%AAt-%C3%A0-voter-state-elections>
 60. [Prêt a Voter](#), website, viewed 20 August 2012, <http://www.pretavoter.com/>
 61. [Prêt a Voter](#), website, viewed 20 August 2012, <http://www.pretavoter.com/about.php>
 62. C Burton, op. cit., pp.12-13.
 63. WA Electoral Commission, *Annual Report 2006-07*, p. 2, viewed 25 January 2012, <http://www.waec.wa.gov.au/about/documents/Annual%20Report%202007%20-%20Interactive.pdf>

functional system that will allow internet voting for clients either as a stand-alone election or in conjunction with other forms of voting.⁶⁴

However, for electoral purposes, the application of technology was focussed on managing rolls and logistics rather than voting per se. The use of an electronic version of the electoral roll and an Early Vote Recording System (EVRS) in a by-election for Victoria Park in 2006 did not run smoothly. The EVRS was 'not user friendly' and costs for the initiative 'were high at around six times that of providing paper rolls'.⁶⁵

The Commission's interest in exploring e-voting possibilities continued, and in 2007, the WA Electoral Commission published [Click here for democracy: comparative analysis of electronic elections conducted between 2000–2005](#):

This paper provides a broad overview of the issues associated with 'Electronic Voting Systems' (EVS) specifically, security and vulnerability of the technology, and examines whether or not the use of such technology has resulted in acts of electoral fraud, or has threatened the legitimacy of democratic processes, as opposed to implementation or ICT deficiencies.

... The research is based on a 'desktop' analysis of reports and commentary produced on actual electronic elections; with the central aim of establishing whether the assumptions regarding electronic voting made by academics, technology experts, election officials and other interested parties came to fruition. The paper examines electronically assisted elections conducted in five discrete jurisdictions to ascertain how they functioned in practice and is divided into six parts, covering the key arguments on electronic voting and case studies of electronic elections in the US, Estonia, India, United Kingdom (UK) and to a limited extent, Australia.⁶⁶

In its [Annual Report 2010–11](#) the WA Electoral Commission noted that a successful trial of an electronic roll in the Armadale by-election would 'allow the wider deployment of this system at the next State general election' but expressed disappointment that 'funding was not forthcoming for the development of an internet based voting system for use in all election types'.⁶⁷ Nevertheless, the Commission commenced development of an electronic voting system for use in selected polling places at the next state general election by electors who are blind or vision impaired.⁶⁸

64. Ibid., p. 51.

65. WA Electoral Commission, *District of Victoria Park by-election, 11 March 2006: election report*, p. 17, Perth, the Commission, 2006, viewed 25 January 2012, <http://www.waec.wa.gov.au/elections/documents/state/2006%20Victoria%20Park%20By-election%20Election%20Report.pdf>

66. A Thomas, *Click here for democracy: comparative analysis of electronic elections conducted between 2000–2005*, p. 7, Perth, WA Electoral Commission, 23 May 2007, viewed 24 January 2012, http://www.waec.wa.gov.au/forms_and_publications/documents/democracy.pdf

67. WA Electoral Commission, *Annual Report 2010–11*, Perth, the Commission, p. 3, viewed 24 January 2012, <http://www.waec.wa.gov.au/about/documents/Annual%20Report%202011.pdf>

68. Ibid., p. 21.

Electronic election initiatives in Tasmania

In Tasmania, digital applications have been largely confined to electoral logistics, with electronic certified lists of eligible voters being trialled, then adopted for all polling places at the 2010 House of Assembly and Legislative Council elections:

It was very pleasing that no significant problems occurred and they were well received by voters and polling staff. As a bonus 20,890 absent votes from around Tasmania were counted the day after polling day instead of up to a week later.⁶⁹

The Tasmanian Electoral Commission approved the trial of computer assisted voting for blind and vision-impaired electors at the 2007 Legislative Council elections.⁷⁰ The 'Vision-Impaired voting system' (VI-Vote) enables blind and vision-impaired electors to complete a ballot paper in private. The system has two modes of use:

- the Audio Voting mode allows people with limited or no sight to hear (via headphones) the details of a ballot paper and be guided through the steps to allocate preferences required to complete the ballot paper.
- the Vote Magnification mode allows people with mild visual impairment to complete a large on-screen ballot paper.

Neither mode stores any record of the elector's vote on the computer's hard-drive. Instead, at the completion of voting, the computer prints a ballot paper that includes the elector's preferences, and is very similar in appearance to a standard ballot paper. The elector then places the printed ballot into a nearby ballot box.

At the 2010 House of Assembly and Legislative Council elections a new procedure called 'express voting' enabled voters who were overseas or in a remote location during the election period to receive their ballot paper and a special declaration form by fax or email. Ballot papers could then be returned by mail, facsimile or email.⁷¹

A poor turnout by electors in the 2011 local government elections prompted calls by the Tasmanian Greens for compulsory local council voting and for electronic voting to be explored. The Greens successfully moved that the matters be considered by the House of Assembly Parliamentary Standing Committee on Community Development.⁷² The terms of reference of the Committee's

69. Tasmanian Electoral Commission (TEC), *Annual Report 2009–10*, Hobart, the Commission, 2010, p. 2, viewed 25 January 2012, http://tec.tas.gov.au/pages/ElectoralInformation/PDF/2010TEC_AnnualReport.pdf

70. TEC, *Vision-impaired voting*, website, viewed 25 January 2012, <http://www.electoral.tas.gov.au/pages/HouseOfAssembly/HoA2010/Information/Innovations.html>

71. TEC, *Annual Report 2009–2010*, p. 2.

72. C Waterhouse, 'Call for compulsory voting for councils', *Hobart Mercury*, 28 October 2011, p. 19, viewed 25 January 2012, <http://parlinfo.aph.gov.au/parlInfo/search/display/display.w3p;query%3DId%3A%22media%2Fpressclp%2F1184707%22>

inquiry include examining ‘developments in electronic voting systems, and the capacity to have such a system introduced in Tasmania’.⁷³ The [report](#) was presented on 30 August 2012, and the Committee recommended that:

4.16 Given the current concerns in relation to security, resources and education, the Committee does not consider it appropriate to recommend a move to electronic voting at this stage.

4.17 The Committee notes that technologies in other jurisdictions are still developing and recommends that the issue of electronic voting be re-visited in a few years time, keeping abreast of what happens with the project in Victoria.⁷⁴

Electronic election initiatives in South Australia

The Electoral Commission of South Australia (ECSA) has ‘a network of staff who are experienced in conducting both manual and electronic vote counts, including complex proportional representation counts’, but does not appear to have any initiatives that are directed towards e-voting.⁷⁵ While ECSA currently utilises electronic counting methods for local government, industrial and parliamentary elections as required, and uses technology in a variety of ways that strengthen and enhance the administration of the voting process, voting is still conducted using paper ballots for all elections.

Electronic election initiatives in Queensland

Queensland provides Braille ballot papers for vision-impaired voters, and there are no plans to explore electronic voting options.⁷⁶

Electronic election initiatives in the Northern Territory

Apart from the use of netbook computers to assist with the marking off of voters during a municipal by-election, the Northern Territory Electoral Commission has not pursued any e-voting initiatives.⁷⁷

International experience with e-voting

Since the year 2000 several countries have been using internet voting in binding public ballots, including Switzerland, the United Kingdom, the United States and notably Estonia, a country that has

73. Parliament of Tasmania, House of Assembly Standing Committee on Community Development, Tasmanian House of Assembly, *Inquiry into local government elections*, viewed 20 January 2012, <http://www.parliament.tas.gov.au/ctee/House/TermsOfReference/Advertisement%20-%20Local%20Government%20Elections.pdf>

74. Parliament of Tasmania, House of Assembly Standing Committee on Community Development Report no. 2 of 2012, *Local government elections*, August 2012, viewed 30 August 2012, <http://www.parliament.tas.gov.au/ctee/House/Reports/Local%20Government%20Elections%20Report%20-%20Final.pdf>

75. Electoral Commission of South Australia (ECSA), ‘What we do’, ECSA website, 7 January 2010, viewed 27 January 2012, <http://www.ecsa.sa.gov.au/apps/news/?sectionID=2>

76. Personal communication from Electoral Commission Queensland to author.

77. NT Electoral Commission, Annual Report, 2010–11, p. 16.

'advanced the farthest in deploying internet voting'.⁷⁸ In its 2002 report titled *eVolution not revolution* the AEC described various early trials in the UK and Ireland—including internet voting, the use of touch phones and mobile phone SMS systems.⁷⁹ The report noted that 'the e-voting initiatives at best stemmed the tide of declining voter participation'.⁸⁰

United States

Since the mid-1990s various notable experiments with both local and remote electronic voting have taken place in America.

In August 1996, the Reform Party became the first US political party to use internet voting (along with telephone and postal mail voting) to select a Presidential candidate. Over 2 000 people voted via the Internet.⁸¹

Electronic voting, took on new relevance following the hotly disputed 2000 Bush v Gore presidential election, in which officials in Florida had to manually count paper ballots after problems with electronic punch card machines.⁸²

In January 2000, the California internet Voting Task Force published a [Report on the Feasibility of internet Voting](#). The Taskforce opined that the implementation of internet voting:

... would allow increased access to the voting process for millions of potential voters who do not regularly participate in our elections. However, technological threats to the security, integrity and secrecy of internet ballots are significant.

...

At this time, it would not be legally, practically or fiscally feasible to develop a comprehensive remote internet voting system.

...

One of the most difficult tasks for an internet voting system is the authentication of voters. ... We believe that additional technical innovations are necessary before remote internet voting can be widely implemented as a useful tool

...

78. RM Alvarez and others, 'Internet voting in comparative perspective', *Political Science and Politics*, vol. 42, no.3 July 2009, p. 497, viewed 27 January 2012,

<http://parlinfo.aph.gov.au/parlInfo/search/display/display.w3p;query=Id%3A%22library%2Fjrnart%2FTQKU6%22>

79. AEC, *eVolution not revolution: electronic voting status report 2*, op.cit.

80. Ibid., p. 12.

81. United Kingdom, Parliamentary Office of Science and Technology, 'Online voting', *Postnote*, No. 155, May 2001, p. 3. Viewed 6 February 2012, <http://www.parliament.uk/documents/post/pn155.pdf>

82. T Sutin, 'A timeline of major legal events in the 2000 Florida recount', *Jurist: the legal information network*, University of Pittsburgh Law School, website, viewed 26 August 2012, <http://jurist.law.pitt.edu/election/electiontime.htm>

The success or failure of internet voting in the near-term may well depend on the ability of computer programmers and election officials to design a system where the burden of the additional duties placed on voters does not outweigh the benefits derived from the increased flexibility provided by the internet voting system. The democratic process warrants an extremely high level of security, but the security measures cannot be so cumbersome to voters that the new process would prevent participation. An appropriate balance between security, accessibility and ease of use must be achieved before internet voting systems should be deployed.⁸³

The views of the Taskforce match many of the assessments and comments made in similar reports in other jurisdictions.

One of the most high-profile early uses of REV was the Democratic Party primary election in Arizona in 2000. During a four-day period, voters cast ballots from computers at home, work, libraries, schools, community centres, Indian reservations and polling places:

Voting among Democrats shot up by a factor of more than six — about 86,000 cast ballots. Of those, 36,000 opted to vote from computers via the Internet. Another 32,000 sent in absentee ballots by mail, and 18,000 Democrats travelled to polling places to vote the traditional way.

...

But to many election experts, the Arizona primary highlighted internet voting's pitfalls as much as its potential. "People had major problems with how the Democratic primary was run," said Penelope Bonsall of the Federal Election Commission's Office of Election Administration.

Troubles ranged from the inability of most Macintosh computers and some older PCs to link to election.com's voting Web site, to lack of privacy assurances for voters, to a legal challenge to the election on grounds that internet voting discriminated against those who lack internet access. The FEC does not oppose voting via the Internet, Bonsall said. The agency "is completely neutral" on the technology but is a strict proponent of standards that ensure the integrity of the voting process. And on that front, internet voting raises many questions.⁸⁴

The AEC reported that 'there were many conflicting views regarding the success or otherwise of the project' but it was 'interesting to note that voter participation in the primary election rose by 600% with 80% of those who participated, (40 000) voting via the Internet'.⁸⁵ The Arizona primary was conducted by the private company Election.com.

83. United States, California internet Voting Taskforce, *A report on the feasibility of internet voting*, January 2000, pp. 1–2, viewed 4 September 2012, http://www.sos.ca.gov/elections/ivote/final_report.pdf

84. W Matthews, 'Can the Net revive the vote?', *Federal Computer Week*, 4 September 2000, viewed 28 August 2012, <http://fcw.com/articles/2000/09/04/can-the-net-revive-the-vote.aspx>

85. AEC, *Electronic Voting and Electronic Counting of Votes*, op. cit.

In 2004 the Pentagon scrapped a \$22 million online voting system known as Secure Electronic Registration and Voting Experiment, or SERVE, which was intended to let US military members and their dependents or US citizens living abroad vote in the presidential election via the Internet.⁸⁶

A 2011 report by the US National Institute of Standards and Technology declared the internet 'not ready for full participation in democracy'.⁸⁷

This paper identified desirable security properties of remote electronic voting systems, threats of voting over the internet from personally-owned devices, and current and emerging technologies that may be able to mitigate some of those threats. Based on the capabilities of current computer security and voting technologies, the following three issues remain to be significant challenges faced by remote electronic voting systems.

First, remote electronic absentee voting from personally-owned devices face a variety of potential attacks on voters and voters' personal computers. Since the voter's personal computer is outside the control of election officials, it is extremely difficult to protect against software attacks that could violate ballot secrecy or integrity or steal a voter's authentication credentials. These are serious threats that are already commonplace on the internet today.

Second, remote electronic voter authentication is a difficult problem. Current technology does offer solutions for highly-secure voter authentication methods, but these may be difficult or expensive to deploy. Personally-owned computers may not be able to interface with these methods, such as having the necessary smart card readers for cryptographic authentication using Common Access Cards or Personal Identity Verification cards.

Third, it is not clear that remote electronic absentee voting systems can offer a comparable level of auditability to polling place systems. Because of the difficulty of validating and verifying software on remote electronic voting system servers and personal computers, ensuring remote electronic voting systems are auditable largely remains a challenging problem, with no current or proposed technologies offering a viable solution.⁸⁸

United Kingdom

With the election of the Blair Labour Government in the UK, and the establishment of the [UK Electoral Commission](#) and a Working Group on Electoral Procedures, electoral modernisation received a boost, and experimentation with electronic voting was encouraged.⁸⁹ The passage of the *Representation of the People Act (RPA) 2000*:

86. S Harris, 'Risky votes', *Government Executive*, 27 January 2004, viewed 26 August 2012, <http://www.govexec.com/technology/2004/01/risky-votes/15792/>

87. 'Internet not ready for democracy', *Federal Computer Week*, 21 May 2012, viewed 26 August 2012, http://fcw.com/articles/2012/05/21/agg-internet-voting.aspx?sc_lang=en

88. N Hastings and others, *Security Considerations for Remote Electronic UOCAVA Voting*, Report 7770, United States Department of Commerce, National Institute of Standards and Technology 2011, p. 59, viewed 28 August 2012, <http://www.nist.gov/itl/vote/upload/NISTIR-7770-feb2011-2.pdf>

89. S Wilks-Heeg, 'Treating voters as an afterthought? The legacies of a decade of electoral modernisation in the United Kingdom', *The Political Quarterly*, vol.8, no.1, Jan-March 2009, p. 101.

... made provision for the immediate introduction of postal voting on demand, as well as for the piloting of various forms of e-democracy—most notably electronic voting and electronic counting. The key driver of these reforms has been the government's view that remote voting in British elections, initially through postal ballots and ultimately via 'multichannel' elections, is crucial to reversing the sharp decline in electoral participation.⁹⁰

From May 2002, various electronic voting procedures were piloted in English local council elections, including making computer terminals available within polling stations, 'multi-channel' electronic voting, and enabling voters to cast ballots remotely via the Internet, telephone or SMS.⁹¹ For example, Bristol City Council allowed residents to vote by phone, internet or post on the level of council tax for 2001–02, and 3 063 votes (2.7 per cent) were cast over the Internet. Croydon Council also held a similar referendum, where 2 693 votes (3.4 per cent) were cast over the Internet.⁹²

In January 2002, the [Electoral Reform Society's](#) Independent Commission on Alternative Voting Methods published [Elections in the 21st Century: from paper ballot to e-voting](#). In a chapter devoted largely to REV ('online voting'), the Commission noted:

- remote online voting is able to make geographical location largely irrelevant
- convenience would be an important potential benefit of remote online voting
- the ballot period can be substantially longer than the single day allowed for polling-station voting.
- online voting via the internet and digital television could offer increased accessibility to electors with visual impairments.⁹³

But the Commission's main concern with REV lay with issues of secrecy and security:

Although increasing numbers of financial transactions are being conducted online, and although many people believe that this means that online voting is safe, the security and privacy issues involved are very different. For instance, financial fraud on the internet is not uncommon, and companies are happy to underwrite this to a certain extent; this is not acceptable in an election. With financial transactions, customers can be issued with a receipt which confirms exactly what happened and when; in order to maintain secrecy and protect the voter from undue pressure, this is not possible with voting. Customers identities' are intrinsically bound to financial transactions; with a vote, the two must (at least to some extent) be separated.⁹⁴

90. Ibid.

91. Ibid., p. 105.

92. UK Parliamentary Office of Science and Technology, 'Online voting', op. cit., p. 3.

93. Electoral Reform Society, Independent Commission on Alternative Voting Methods, *Elections in the 21st century: from paper ballot to e-voting*, London, the Commission, January 2002, viewed 30 August 2012, , <http://www.electoral-reform.org.uk/downloadfile.php?PublicationFile=39>

94. Ibid., p. 90.

The Independent Commission concluded that ‘there is a case for online voting as an addition to existing voting methods and not as a replacement’.⁹⁵

In July 2002, the then Leader of the House of Commons, Robin Cook, launched [In the service of democracy, a consultation paper on a policy for electronic democracy](#). Noting that the Government was ‘approach[ing] the subject with high ambitions but with realistic objectives’, Cook wrote:

The two areas for Government action, e-participation and e-voting, highlight ways in which the mechanisms of democracy can be enhanced, by modernising voting methods, improving access to ballots and broadening the scope of government consultations. Information and communication technology (ICT) provides a means by which public participation can be increased, and we hope that with an active government policy the potential benefits can be maximised. e-Democracy offers new ways of participating and seeks to complement rather than replace existing structures.⁹⁶

The policy was clearly oriented to exploiting the potential of REV:

The Government’s view is that the greatest potential benefits in terms of more convenient participation through e-voting lie in remote online voting. Computer-assisted voting and electronic counting systems may bring benefits in terms of cost and time, but that is not the main objective of this policy. The proposed policy for e-voting, therefore, relates primarily to remote online voting.⁹⁷

In 2003, a [major trial of e-voting was conducted in the English local elections](#), with over 1.5 million people in 18 local council areas able to take part in voting trials by text message, internet, electronic kiosk and, for the first time ever, via digital TV.⁹⁸ In some areas voting began a week in advance of election day. In July 2003, The Electoral Commission published its report [The shape of elections to come](#) which evaluated the 59 pilot schemes: ‘The Commission recommended that all-postal voting should become the norm at all local elections throughout Great Britain, and the Government accepted this recommendation in principle’.⁹⁹

It seems that a combination of the outcomes of the trials and responses to the e-democracy consultation paper had a dampening effect on REV’s prospects.¹⁰⁰ Notwithstanding the Blair

95. Ibid., p. 94.

96. UK Government, Office of the e-Envoy, *In the service of democracy: a consultation paper on a policy for electronic democracy*, July 2002, viewed 14 February 2012, http://www.epractice.eu/files/media/media_619.pdf

97. Ibid., p. 23.

98. UK Electoral Commission, ‘Britain launches largest trial of electronic voting in Europe’, media release (undated), viewed 31 August 2012, <http://www.electoralcommission.org.uk/news-and-media/news-releases-old/electoral-commission-media-centre/news-releases-campaigns/britain-launches-largest-trial-of-electronic-voting-in-europe>

99. UK Electoral Commission, ‘The Electoral Commission reports on all-postal electoral scheme in Newcastle’, media release, 25 November 2003, viewed 23 July 2012, <http://www.electoralcommission.org.uk/news-and-media/news-releases/electoral-commission-media-centre/news-releases-reviews-and-research/the-electoral-commission-reports-on-all-postal-electoral-scheme-in-newcastle>

100. For example, see B Fairweather and S Rogerson, ‘Internet voting – well at least it’s modern’, *Representation*, Vol. 39, No. 3, 2003.

Government's initial enthusiasm, and the expectations expressed by Robin Cook in 2002, the online voting initiatives withered for reasons that are not at all clear. There were no published outcomes from the consultation paper. The dedicated website 'edemocracy.gov.uk' eventually disappeared.

Further trials of electronic systems were [commissioned for a dozen local councils](#) in 2007.¹⁰¹ These were evaluated by the Electoral Commission. Five of the local authorities offered a range of e-voting solutions, including remote internet voting, telephone voting and the provision of electronic polling stations enabling a 'vote anywhere' environment on polling day. The Commission's evaluation stated:

In broad terms, the remote e-voting elements of the May 2007 pilot schemes proved successful and facilitated voting, although there were some issues concerning accessibility, public understanding of the pre-registration process and, in at least one pilot area, technical problems in relation to telephone voting. The level of implementation and security risk involved was significant and unacceptable. There remain issues with the security and transparency of the solutions and the capacity of the local authorities to maintain control over the elections.¹⁰²

The latest [official public advice to UK voters](#) about ways to vote does not mention REV. It says only:

In the UK, there are three different ways you can vote. How you vote is up to you. It may depend on what you find easiest or the most convenient method. Most people vote in person at a polling station. However, if you are not able to go to the polling station in person on election day, you can apply to vote by post or by proxy (someone voting on your behalf).¹⁰³

Switzerland

Switzerland has a strong tradition of direct democracy managed largely through the local canton tier of governance, with an emphasis on public participation in polls 'as an expression of the citizens' sovereignty and as an echo of local historical circumstances'.¹⁰⁴ On average, Swiss citizens are called to the ballots between four and six times a year.¹⁰⁵

In 2003 a small Swiss lakeside village in the canton of Geneva [made history with the country's first legally binding internet vote](#). It concerned the awarding of a taxpayer-funded grant to renovate an expensive restaurant:

101. UK Electoral Commission, 'May 2007 pilot scheme', media release (undated), website, viewed 31 August 2012, http://www.electoralcommission.org.uk/elections/modernising_elections/May2007

102. UK Electoral Commission, 'May 2007 electoral pilot schemes: key issues and conclusions', London, Electoral Commission, August 2007, p. 4, viewed 7 February 2012, http://www.electoralcommission.org.uk/_data/assets/electoral_commission_pdf_file/0015/13218/Keyfindingsandrecommendationssummarypaper_27191-20111_ENSW.pdf

103. UK Electoral Commission, website, 'About my vote', Electoral Commission website, viewed 7 February 2012, <http://www.aboutmyvote.co.uk/default.aspx>

104. M Chevallier, 'Internet Voting, Turnout and Deliberation: A Study', *Electronic Journal of e-Government* Vol. 7, Issue 1, 2009, p. 30.

105. *Ibid.*, p. 32.

Under Switzerland's system of direct democracy, voters routinely cast their ballots on national questions such as asylum or abortion laws and local issues like funding for schools or new roads. In Anieres, a wealthy suburb of Geneva, more than 90 per cent of the 1,162-strong electorate traditionally votes by mail. Sunday's vote marked the first time they could vote online, through a special Geneva state Web site using a regular home computer. Residents had to type in a series of security codes, their date and place of birth, then cast their vote on whether \$3.1 million of taxpayer money should be spent to renovate a municipal property housing the restaurant.¹⁰⁶

The cantons of Zurich and Neuchatel also pioneered e-voting trials (each a different system) at the canton level, with federal financial support which has since been terminated.¹⁰⁷ Because of some political resistance to e-voting, national laws were passed that meant no more than ten per cent of the electorate could be offered e-voting for federal-level elections.¹⁰⁸

The [Geneva internet Voting System](#) started life as a test project in 2001, and Switzerland held its first binding referendum on a matter in 2003 (see above).¹⁰⁹ The first binding 'eEnabled' federal referendum was held in 2004, and between 2007 and 2009 the parliament debated internet voting for elections. In 2009 a referendum approved with a 70.2 per cent majority a constitutional provision allowing internet voting.

[T]oday in Geneva, there are three fully integrated ballot-casting channels: polling stations, postal voting and internet voting. This is the Geneva way to show citizens that their opinions count and their participation is valued.¹¹⁰

Prior to a ballot, registered voters are sent securely a 16 digit voter number, unique for that ballot:

The voter introduces his card number into the system, fills an online ballot, and confirms his vote by giving his PIN code, his date of birth and his municipality of origin. He then receives a confirmation of the date and time of his vote's registration. To prevent voters from casting several votes each using the different voting channel we offer (polling station voting, postal voting and internet voting), we use a single voters' database. Whatever your voting channel, the fact that you have voted once blocks your voting card number, preventing a duplicate vote. This procedure allows us to perform the three stages of identification, authentication and proof of vote. Besides, it guarantees that only the registered voters have access to the system. The date of birth and municipality of origin questions protect your voting right as no third party can have access to these information, unless you willingly release it.¹¹¹

106. 'Swiss village holds first internet vote', *Government Technology*, 30 January 2003, viewed 7 February 2012, <http://www.govtech.com/e-government/Swiss-Village-Holds-First-Internet-Vote.html>

107. F Mendez, 'Elections and the Internet: difficulties of "upgrading" elections in the digital era', *Representation*, vol. 46, no.4, 2010, pp. 462-3.

108. Ibid.

109. Republic and State of Geneva, *The Geneva internet voting system*, Geneva State Chancellery website, viewed 31 August 2012, http://www.ge.ch/evoting/english/doc/passport_evoting2010.pdf

110. Ibid.

111. Republic and State of Geneva, 'E-voting', website, viewed 7 February 2012, http://www.ge.ch/evoting/english/presentation_projet.asp

One of the most illuminating accounts of the move to internet voting in Switzerland was published in 2009 by Michel Chevallier, Head of Cabinet for the Elections Secretary of Geneva. It included the observation:

It is silently hoped that ... internet voting could prevent a new wave of diminishing turnout by making a new “product” available to voters in a time of rapid changes. ... There is a healthy political debate and political parties’ membership is high in European comparison. Swiss people mix and exchange in the country’s many cultural and sports associations. This notwithstanding, a vast majority of citizens does not feel anymore the need to ritually gather in a single place to vote. The polling station has lost its symbolism and in the process also its purpose and “raison d’être”.¹¹²

In recent years there has been a growing interest in the potential of Internet-based REV, with the result that in 2011 Switzerland held its first ‘[eEnabled municipal and national elections](#)’.¹¹³

New Zealand

In 2007, the New Zealand Electoral Commission undertook several surveys of voters, one purpose of which was to gauge citizens’ attitudes to online voting and preferred options for its use.¹¹⁴ The surveys revealed that:

There is reasonably solid interest in online voting, although others rule it out entirely. On the strength of these numbers, online voting does seem to have some potential for boosting turnout or at least maintaining it at current levels, as one of the groups most interested in online voting (under 30s) is also associated with lower turnout. At the same time, it seems unlikely that online voting will do much to encourage those on low incomes to participate.

...

A third of New Zealand voters say that they would definitely prefer to vote online rather than at a polling place, although a quarter completely rule it out.¹¹⁵

The Commission prepared a draft strategy in 2007 that looked at possible options for piloting electronic voting for general elections and referenda, but after the 2008 general election it was decided that no further work would be done on developing e-voting options because of financial constraints. Electronic or e-voting was not available for the 2011 general election.¹¹⁶

112. M Chevallier, op. cit., pp. 32–33

113. Republic and State of Geneva, *The Geneva internet voting system*, op. cit.

114. New Zealand Electoral Commission, ‘Research report released—MMP, e-voting, electoral finance’, media release, 2008, viewed 29 June 2012, <http://www.elections.org.nz/study/news/2008-media-releases/ec-media-research-170308.html>

115. Ibid.

116. New Zealand Electoral Commission, ‘Draft long term strategy for voting technology: executive summary’, Electoral Commission website, viewed 29 June 2012, <http://www.elections.org.nz/administration/ceo-corp-info/draft-long-term-strategy-for-voting-technology.html>

Noting that ‘the costs of e-voting will exceed savings until the volume of e-voters builds up’, the Strategy proposed a cautious series of pilot projects. The Strategy also emphasised the risks associated with online voting methods.

Unsupervised remote voting raises particular challenges for: voter privacy and the secrecy of the vote; the exposure of the voter to undue influence or coercion; system security and integrity; and the ability of voters to be confident that their vote has been received and counted as intended. These challenges can be met, with the proposed solutions to be tested in trials and pilots.

Online voting also requires a higher level of authentication of voters’ identity compared to in-person voting as a different level of risk applies. E-voting could potentially be susceptible to large scale electoral fraud or attempts to disrupt elections. Such crime may originate from outside New Zealand. Use of the internet for voting raises a number of risks which are particular to the nature of the internet and personal computers (such as security weaknesses and highly coordinated ‘denial of service’ attacks which result in web sites becoming unavailable to users). These problems have been well documented in other e-voting analyses and are likely to affect public trust.¹¹⁷

Estonia

Estonia has been a pioneering user of electronic voting, with its first use in 2005 in local government elections. Estonia launched its Estonian Information Society Strategy 2013 in 2006, which noted, with respect to remote e-voting:

At local government elections of 2005, the Estonians could, for the first time, cast their votes electronically, using the secure ID card as an authentication mechanism. eVoting does not aim to replace the traditional voting methods, but provides, with the help of new technology, additional options for enhanced inclusion. Thus, people could vote electronically on advance polling days with a possibility to change their vote on the election day at the polling station, making the previously given eVote void. Estonia is the only country intending to make use of eVoting also at its general elections (to be held in March 2007). This time, an additional feature will be added to the process: voters can request their elector cards to be sent to them electronically, eliminating thus the need for the paper card and doing one’s bit for the environment.¹¹⁸

In February 2010, the Government of Estonia approved the *Implementation Plan for 2010–2011* of its Strategy, which involved large-scale uptake of electronic ID and increasing the interoperability of state information systems.¹¹⁹

117. Ibid.

118. *Estonian Information Society Strategy 2013*, viewed 21 June 2012, <http://unpan1.un.org/intradoc/groups/public/documents/unpan/unpan033997.pdf>

119. European Commission, *E-Inclusion in Estonia*, eInclusion factsheet, edition 2.0, December 2010, p. 3, viewed 21 June 2012, <http://www.epractice.eu/files/eInclusion%20in%20EE-December%202010-2.0.pdf>

To enable voters to cast a vote which is their preferred choice, voters can cast a ballot via the internet as many times as they wish, with only the last cast vote taken into account. The internet vote can be cancelled by casting a paper ballot during the advance voting period.¹²⁰

- A voter identifies him/herself with the use of the activated ID card.
- The voter downloads the required application from the National Electoral Commission website.
- The vote is encrypted and authenticated by a voter's digital signature.
- The vote is then stored on a server after confirming the validity of the digital signature.¹²¹

The data and the internet voting equipment need to be destroyed after the election in order to preserve the secrecy of the vote.¹²²

On 6 March 2011, parliamentary elections were held in Estonia. They constituted the largest remote online parliamentary election so far, with 140 846 people voting using the internet out of a total 913 346 electors.¹²³ That is, nearly a quarter of electors voted online.

Estonian electoral laws provide for a wide range of possibilities for citizens to cast a vote. In addition to the actual polling day, voters can vote via the internet over a seven day period, and cast ballots in advance at a polling station.¹²⁴ Some critics have objected to the publication of 'tendency-driven party ratings ... on the day before the elections with the aim of influencing voters'.¹²⁵

For the fifth time in a row, Estonians were able to cast their votes over the internet during the advanced polling days from 28 February to 2 March 2011. The number of internet voters has been in constant increase constituting 24.3 % of all voters in 2011, indicating that iVoting has definitely found its place in Estonia. There was a novel component to this year's iVoting, as the mobile-ID was used for the first time for personal identification. Usage of mobile-ID makes the internet voting especially convenient as in this case one does not need the ID card reader in his/her computer. A mobile phone with its respective SIM card acts as a card and a card reader at the same time.¹²⁶

120. Office for Democratic Institutions and Human Rights (OSCE), *Estonia parliamentary elections 6 March 2011* OSCE/ODIHR Election Assessment Mission Report, p. 25, viewed 22 June 2012, <http://www.osce.org/odjhr/77557>

121. *Ibid.*, p. 11.

122. *Ibid.*, p. 12.

123. *Ibid.*, p. 25.

124. *Ibid.*

125. 'Some observers criticize Estonian elections, *Kyiv Post*, 8 March 2011, viewed 23 July 2012, <http://www.kyivpost.com/content/russia-and-former-soviet-union/some-observers-criticize-estonian-elections.html>

126. European Commission, *eGovernment in Estonia*, edition 15.0, December 2011, European Union, 2011, p. 3, viewed 14 February 2012, <http://www.epractice.eu/files/eGovernmentEstonia.pdf>

After the election, key parts of the internet voting system were destroyed in the presence of Electoral Commission members, the auditor and observers, thereby preserving the secrecy of the vote.¹²⁷

In its [assessment report](#) for the Estonian elections, the OSCE Office for Democratic Institutions and Human Rights undertook a careful analysis of internet voting. Its summary noted:

Voters could cast their ballots via the internet during the advance voting period from 24 February to 2 March. Despite concerns raised by some interlocutors, the OSCE/ODIHR EAM in general found widespread trust in the conduct of the internet voting by the National Electoral Committee (NEC). However, there is scope for further improvement of the legal framework, oversight and accountability, and some technical aspects of the internet voting system.¹²⁸

Netherlands

In December 2003, the Dutch Government adopted its 'Modernising Government's programme', a wide ranging commitment to implementing e-government.¹²⁹

In May 2004, the Government approved plans for the creation of a unique identification number for Dutch residents by 2006. A 'Citizen Service Number' was assigned to every Dutch resident. The Government also published the policy statement 'Towards Electronic Government'.¹³⁰

In January 2005, the Dutch Digital Identity service *DigiD* was launched, providing citizens with a centralised online authentication solution for accessing e-government services, based on a user ID.¹³¹

In May 2008, the Ministry for Internal Affairs launched a website enabling citizens to interact with local and national politicians. The website 'maildepolitiek.nl' is an initiative of the Dutch 'New Voting' foundation and aims to make politics more transparent.¹³² But this did not lead to electronic voting. After a small e-voting trial, the Dutch Cabinet banned electronic voting devices from future elections because of eavesdropping risks.¹³³

Sweden

Sweden is generally considered a 'good democratic example in terms of having well-informed and interested citizens and a high degree of public participation in elections'.¹³⁴ Postal voting in Sweden

127. European Commission, *E-Inclusion in Estonia*, op. cit.

128. OSCE, op. cit.

129. European Commission, *E-government in the Netherlands*, eGovernment factsheet, , edition 15.0, November 2011, European Union, 2011, viewed 21 June 2012, <http://www.epractice.eu/files/eGovernmentTheNetherlands.pdf>

130. Ibid.

131. Ibid.

132. Netherlands Government website, *Mail de politiek*, in Dutch, viewed 19 August 2012, <http://www.maildepolitiek.nl/>

133. European Commission, *E-government in the Netherlands*, op. cit., p. 5.

134. J Olsen and J Astrom, 'Electronic voting in Sweden: hare of tortoise', in N Kersting and H Baldersheim (eds), *Electronic voting and democracy: a comparative analysis*, Palgrave Macmillan, Basingstoke, 2004, p. 149.

has been at over 30 per cent for many years.¹³⁵ But notwithstanding that at the dawn of the 21st century Sweden is one of the world's most wired societies, there has been a strong reluctance by governments to move away from the proven and secure traditional paper-based methods of voting. The Swedish government decided that internet voting in public elections was 'not suitable' and would 'weaken the weight, dignity and symbolic importance of the traditional election day'.¹³⁶

In the year 2000, the government received a [report on internet voting](#) from its Election Technique 2000 Commission.¹³⁷ Although it recommended that large scale trials should precede any further action, no such trials were pursued.

But while the state has been disinclined to pursue internet voting, online ballots have been held by private organisations—notably youth and some political parties. Some local governments conducted online consultations.¹³⁸ The large *Young Election* among senior high-school students in 2002 revealed that 62 per cent of participants (92 000 students) chose the internet voting option, but a 'severe bottleneck problem, caused by an overwhelming number of contacts occurring simultaneously' prompted 47 per cent of the voters to change their attitude to internet voting for the worse.¹³⁹

The Swedish capital Stockholm is home to Kista Science City, one of the most important ICT clusters in northern Europe, and a key innovator in Information and Communication Technology (ICT). But despite Sweden's eminence in digital technological applications, there remains very little on the horizon for ICT's application to the country's electoral processes.

South-east Asia

The Philippines Commission on Elections began efforts to automate the electoral process in 1992.¹⁴⁰ Various pilot projects of mixed success eventually saw the 2010 local and national elections employ technology to record ballots and count the vote—but there were numerous hitches and allegations of irregularities.¹⁴¹ Optical scanning machines counted the votes in 76 000 precincts, and Comelec admitted to problems in 465 of these.¹⁴²

135. Ibid., p. 151.

136. Ibid., pp. 161–2.

137. Swedish Ministry of Justice, *Technology and administration in election procedure- final report*, Election Technique 2000 Commission, Stockholm, 2000, viewed 31 August 2012, <http://www.governments-online.org/documents/InternetVotingSweden.pdf>

138. Ibid., pp. 163–4.

139. Ibid., p. 166.

140. Republic of the Philippines Commission on Elections, 'Automation of the 2010 national and local elections', Commission website, viewed 24 September 2012, <http://www.comelec.gov.ph/?r=Elections/2010natloc/Modernization/2010AutomationIntro>

141. M Palatino, 'Election bugs', *The Diplomat*, 15 May 2010, viewed 25 June 2012, <http://thediplomat.com/philippines-election-2010/insiders-diary/election-bugs.html>

142. J Gomez, 'Philippine Election 2010: Filipinos vote amid violence, computer glitches', *The Huffington Post*, 11 May 2010, viewed 25 June 2012, <http://www.huffingtonpost.com/2010/05/10/philippine-election-2010- n 569800.html>

Smartmatic, the company whose technology ran the election, reported success in the following terms:

In May 2010 the Republic of the Philippines carried out the first automated elections in Southeast Asia: the largest elections that a private company has ever undertaken. More than 85,000 candidates contesting for 17,000 posts, 50.7 million voters, 82,200 voting machines, more than 800 million votes cast, transmitted, and counted, all across 7,107 islands comprising the archipelago.

For the first time, Filipinos got to learn results within Election Day: one hour and a half after the polls closed, 40% of results had been transmitted and tallied. In past elections, for example in 2004, 40 days were spent counting votes manually in order to proclaim the newly elected President.¹⁴³

Indonesia may follow the Philippines as the second country to embrace electronic voting in Southeast Asia. Indonesia was reportedly set to introduce e-voting in time for the next presidential election in 2014, provided the necessary funding could be appropriated.¹⁴⁴

The Australian Government supports the Indonesian National Elections Commission (Komisi Pemilihan Umum—KPU) under AusAID's Australia-Indonesia Electoral Support Program.¹⁴⁵ Legislative changes and the introduction of new regulations for e-voting, as well as a public education program, were contemplated by the Indonesian government.¹⁴⁶ However, a subsequent report quoted the Home Affairs Minister as saying that 'the country would not be ready for e-voting in 2014 but may be for the 2019 elections'.¹⁴⁷

An opinion piece in the *Jakarta Globe* canvassed the risks and benefits in the following terms:

- A rush into electronic voting without first evaluating whether the technology will improve election performance would be ill-advised.
- It is imperative that elections technology be harnessed in a transparent manner that safeguards public confidence that all votes will be cast in secrecy and counted uniquely.

143. Smartmatic, 'The Philippines: general elections 2010', Smartmatic website, viewed 25 June 2012, <http://www.smartmatic.com/case-studies/view/article/the-philippines-general-elections-2010/>

144. R Hicks, 'E-elections put to vote in Australia and Indonesia', *Asia-Pacific FutureGov*, 23 August 2010, viewed 21 June 2012, <http://www.futuregov.asia/articles/2010/aug/23/e-elections-mooted-australia-and-indonesia/>

145. Australian Government, AusAID, 'Australia Indonesia Partnership for Electoral Support', AusAID website, viewed 29 June 2012, <http://www.ausaid.gov.au/countries/eastasia/indonesia/Pages/civ-soc-just-dem-init2.aspx>

146. Ibid.

147. C Pasandaran, 'Minister sets sights on 2019 for nationwide e-voting', *Jakarta Globe*, 23 May 2010, viewed 29 June 2012, <http://www.thejakartaglobe.com/news/minister-sets-sights-on-2019-for-nationwide-e-voting/376671>

- When technology is not well understood by either those who administer the systems or the voters who will use them on election day, insecurities about the systems will discredit the integrity of the elections.¹⁴⁸

Risks of electronic voting—especially online

At the heart of any discussion about e-voting lies the question of the integrity of the voting process. The UK's Electoral Reform Society articulated the dilemmas as follows:

We live in a world of risks. Just as personal health, air and road transport or commercial transactions are prone to risks and newly-perceived dangers, so is democracy. But, unlike most other risks that face us, democracy is a truly collective good: we all need it to work well.

The public can only be expected to have confidence in the electoral system if it is based upon transparently fair and robust procedures and working methods.

One could argue that public confidence in our current voting methods is not well founded; certainly, the current system is more open to fraud than many believe. Voters in the 2000 US presidential election discovered much about their electoral procedures which undermined their previous confidence.

One thing is certain: public confidence in democratic elections takes decades to develop and far less time to destroy.

Dealing with risk is not a matter of eliminating all uncertainties, but of setting clear limits upon the scope for accidents, attacks and errors. In thinking about voting methods, we need to decide how much risk is acceptable. For example, let us imagine that there is a method of voting that is likely to result in higher voter turnout than current methods, but at greater risk to the probity, accuracy or security of the electoral process. Should it be accepted or rejected?

The answer does not lie in an absolutist rejection of risk, but a clear policy about where on the spectrum of risks one decides to draw a line.¹⁴⁹

From the experiences of e-voting experiments and implementation in the various countries outlined above it is apparent that a complex mix of economic, technological, cultural and political considerations shapes the e-voting path that each jurisdiction follows.

For some of e-voting's advocates the psychological disposition of individuals towards the digital world is also a significant factor. For example, the chief technology officer of Symantec—a major firm specialising in digital security—has argued that the primary challenge to the introduction of

148. A Schmidt, 'E-voting a boon, if managed properly', *Jakarta Globe*, 7 July 2010, viewed 25 June 2012, <http://www.thejakartaglobe.com/columns/e-voting-a-boon-if-managed-properly/384687>

149. Electoral Reform Society, op.cit., p. 6.

e-voting is that 'the public typically held a higher standard for information security in the digital world than in the physical world':¹⁵⁰

Take the example of using your credit card – there are many people who are too afraid to use their credit card online ... the reality is that you are sending out a 16 digit number in a sea of billions of other digits. So the likelihood someone will snatch it out of the air is very small.

However those same people will very happily give their credit card to a clerk in a restaurant who they have never met and who they will never see again and who walks away with it to a back room for ten minutes. They feel comfortable about that physical world transaction but not about the cyberspace one.¹⁵¹

But internet voting remains controversial, with 'security the overriding concern. Security holes could compromise vote privacy or cause a vote to be cast that did not reflect the voters' intention, was not properly transmitted, or was not correctly counted'.¹⁵²

In a [paper](#) prepared by the [Democratic Audit of Australia](#) in 2006, the authors identified two sources of caution among Australian voters with respect to online voting:

- a belief that online transactions are by nature insecure or insubstantial
 - electronic systems can be tampered with by internal actors, or by external actors such as hackers, in order to deliver a misleading result
 - these systems are more fallible than printed voting ballots, and could be subject to accidental destruction or loss
- awareness of significant limitations and suspicion of electoral fraud associated with the 2000 Presidential election in the US
 - legal disputes over vote counting, and revelations of the limitations of some electronic voting machines employed in this election received significant negative press in Australia
 - perceptions of fraud can undermine the perceived legitimacy of the outcome, and these perceptions are as damaging as any actual tampering.¹⁵³

150. T Lohman, 'Online voting: a psychological, not technological challenge', *Computerworld*, 7 September 2010, viewed 21 June 2012,

http://www.computerworld.com.au/article/359757/online_voting_psychological_technological_challenge/

151. M Bregman, quoted in Lohman, op. cit.

152. V Teague and R Wen, 'Can we trust online voting?', *The Conversation*, 5 April 2011, viewed 13 July 2012,

<http://theconversation.edu.au/can-we-trust-online-voting-616>

153. P Chen and others, *Electronic democracy? The impact of new communications technologies on Australian democracy*, Democratic Audit of Australia, Australian National University, Canberra, 2006, viewed 13 July 2012,

http://democratic.audit.anu.edu.au/papers/focussed_audits/20060809_chen_etal_electr_dem.pdf

Conclusion

In mass activities such as gathering and counting votes it would be foolish to ignore the potential of technology to expedite routine and mechanical processes such as managing electoral rolls, facilitating the casting of ballots, counting votes, distributing preferences and calculating results. But there are some subtle aspects of 'doing democracy' for which the rapid-fire concatenations achievable in cyberspace may not be so congenial.

There is no doubt that the internet is 'a transformative technology which is having and will continue to have a profound effect on public communication, including the electoral process'.¹⁵⁴ But whether it will inevitably lead to its widespread use for the remote, online casting of votes in elections seems an unlikely prospect—especially in those countries which have a long tradition of established, conventional voting regimes. Voters with such traditions have come to know and trust conventional ballot processes. There is also something in the public act of going to a polling place to cast one's vote that most people seem to regard as an important civic duty, a ritual that embodies the defining principle of democratic governance—the rule of the people by the people.

To cast one's vote as a discrete citizen—in private but within a dedicated civic space—meets the dual requirements of participating in a collective democratic act while retaining one's absolute personal freedom and responsibility to vote as one wishes. In the privacy of a screened booth one can avoid the prying eyes of neighbours, ignore the instructions of one's clan, spouse or associates, and have no fear or repercussions from those who would have you vote differently. This may not be so easy if one were voting online at home or in some other unprotected social setting.

Questions of digital security seem to loom large in people's minds. However, countries such as Estonia seem to have developed sophisticated and secure online voting processes, with robust accountability and verifiable transparency, that appear to have laid to rest any lingering fears about inaccuracy or vote tampering. But Estonia's success hasn't inspired a universal digital electoral revolution.

Privacy issues and questions of voter identity and verifiability—which typically require the issuing of identity numbers for citizens—seem to remain a major concern for many Australians, along with a lack of confidence in computer systems' abilities to resist cyber attacks. The existing high levels of trust in current voting arrangements establish a strong threshold of support for the status quo. The creed "If it ain't broke why fix it?" enjoys considerable currency.

It seems that voting regimes will continue to be determined by the particular traditions that have evolved in each country. Any changes are likely to be small and will proceed stepwise as citizens come to both a concordance of hearts and a consensus of minds about any new proposal. In an era when choices are often but a click away, it may be democratically wise to make reform haste slowly.

154. Electoral Reform Society, *op. cit.*, p. 94.

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