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Submits to

**Electoral Matters Committee
Parliament of Victoria**

Inquiry into Electronic Voting

INTRODUCTION

The Victorian Parliament's Electoral Matters Committee has invited submissions for its inquiry into Electronic Voting, with particular reference to:

- the forms of electronic voting currently utilised in Victoria and other jurisdictions and their effectiveness; and
- available alternatives that if implemented would ensure the continued integrity and security of electronic voting.

Electronic voting offers the potential to address a number of the challenges facing Australian electoral systems. A major challenge in recent years has been the decline in democratic participation as reflected in levels of enrolment and voting. Younger citizens in particular seem to be switching off from conventional politics. To a generation reared on a diet of smart technology, the continued use of ballot papers and pencils must seem decidedly old hat.

Many people with disabilities such as blindness now have special computer equipment and mobile devices which they use for a variety of other purposes but, except in New South Wales, still cannot use to vote. Although they have the right under international conventions to vote in secret, many people with disabilities are still denied that right because of their need for assistance in filling out a paper ballot.

The incidence of international travel has increased enormously in recent years. Many electors who happen to be overseas when an election is held find it difficult to participate even using the postal voting option that is currently available.¹

At the 2008 Queensland election a substantial part of the state was isolated by floodwaters for a long enough period to make postal voting impracticable. The Electoral Commission chartered helicopters to fly ballot material into many areas. Although electors were able to be advised by email when the choppers would be arriving, the legislative provisions precluded them from actually voting online. Voting difficulties in remote areas are not confined to such unusual events. The steady decline in postal services throughout Australia is making it increasingly difficult for postal votes to be received and returned by electors within the legislated timeframe,

¹ For example at the 2013 Western Australian general election over 17,000 electors were excused for not voting because they were either interstate or overseas at the time.

evidenced by the 6,500 postal votes received too late to be counted at the October 2015 Western Australian Local Government elections.

The above examples present a compelling case for Australian parliaments to authorise the trial and expansion of electronic voting solutions. The question is what type?

Broadly speaking, electronic voting denotes a process by which electors record their vote using some form of electronic device as opposed to filling out a paper ballot by hand. There are two basic forms: systems that allow electors to cast their vote, under the supervision of election officials, on a voting machine or computer terminal located in a polling place (“voting centre solutions”); and those that allow electors to vote remotely using a personal computer or mobile device linked to the Internet, or a special telephone key pad (“remote electronic voting”). The first form is, in my opinion, of limited application in an Australian context. The latter – especially Internet voting - is the way of the future.

VOTING CENTRE SOLUTIONS

Despite more widespread use in places such as the United States, the use of electronic voting machines in Australia has to date been limited, with the notable exception of the Australian Capital Territory (ACT). While most voters in ACT elections still choose to fill out a paper ballot, since 2001 they have had the option of voting using special voting kiosks located in designated voting centres. Growing acceptance of this option in the ACT is reflected in the increase from 16,559 votes cast electronically in 2001 to 49,591 (about ¼ of the total) in 2012.²

The voting kiosks deployed in the ACT do not necessarily make the casting of votes any quicker but they do speed up the counting process, enabling earlier publication of results on election night with the potential to provide an early indication of the outcome. Added advantages are the capacity to provide voting instructions in different languages, to alert electors if they are about to cast an informal vote, and to minimise the risk of human error in the counting of votes.

Despite these advantages, the tyranny of distance renders the deployment of electronic voting machines impracticable on any significant scale in larger jurisdictions such as Western Australia, Queensland and New South Wales. As a point of comparison, Western Australia has an area of 2,529,875 square kilometres; 1,280,666 electors voted in 2013; and almost 800 polling places were open on Election Day.³ The ACT is much smaller: 2358 square kilometres in area; 229,125 votes cast in 2012; around eighty polling places open on Election Day. Even though only six ACT centres were equipped with voting kiosks, electors wishing to use them still had a reasonable level of access. To provide the same level of access in larger jurisdictions would be extremely expensive, not to say fraught with risk because of

² Elections ACT, *Election statistics ACT Legislative Assembly election 2012* p.13

For a full description of the ACT system see

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

³ WAEC, *Election 2013 Results and Statistics* p.8

the lack of technical support in local areas. Victoria occupies the middle ground with regard to area, but is at the high end when it comes to elector numbers - 3,806,301 in 2014 - and polling places -1786,⁴ suggesting that the widespread roll out of voting machines in polling places would be equally problematic.

In its interim report on the 2013 federal election, the Commonwealth parliament's Joint Standing Committee of Electoral Matters canvassed the possibility of progressively replacing the paper electoral rolls used in polling places with an "electronic interconnected roll".⁵ Electronic mark-off systems (using either netbooks or tablet PCs) have been deployed in recent State elections in Queensland and Western Australia and are a long-standing feature of ACT elections. Queensland and NSW have also deployed print-on-demand systems in capital city CBDs and major tourist centres which see large numbers of absent votes cast. It is important, however, not to overstate the benefits of such systems. Although they have the advantages of speeding up the issuing (dispensing with long declaration vote queues) and processing of votes, they do not offer wholesale protection against multiple voting. Even in smaller jurisdictions there are issues with Wi-Fi connectivity⁶ and even if reliable networks could be established, they would prove to be a prohibitively expensive solution to a problem that arguably does not exist (the past incidence of multiple voting in Australia being low).

A further example of technology deployed in polling places in recent years is the use of special computers (such as Victoria's Electronically Assisted Voting⁷ and Western Australia's Vote Assist system) to enable people who are blind or severely vision impaired to vote independently. Although an important advance, only a limited number of centres have been equipped with such systems.

REMOTE ELECTRONIC VOTING

Use of the Internet and other electronic devices is now commonplace, with over 3 billion Internet users world-wide.⁸ In Australia alone, over 93 per cent of households with at least one occupant under the age of 15 now have Internet access.⁹ A significant number of Australians now do their banking and shopping online, leading

⁴ VEC, *Report to Parliament on the 2014 Victorian State Election* Section 3, p.10; Section 8 p.28

⁵ Commonwealth Parliament JSCEM, *Second interim report on the inquiry into the 2013 federal election: An assessment of electronic voting options* November 2014 p. vi

⁶ At the 2012 election in the ACT just over 11,000 (or approximately 5%) of the names marked off on netbooks were not able to be transmitted to the central database because of 3G connectivity issues.

⁷ Including votes cast by overseas electors in the UK, *Ibid*, section 8 p. 31

⁸ <http://www.internetlivestats.com/>

⁹ <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/8146.0Chapter12012-13>

many to ask why they can't vote online instead of queueing at a polling place.¹⁰ In a voter survey conducted by the Western Australian Electoral Commission (WAEC) in 2005, 44 per cent of respondents indicated that they would be likely or very likely to vote via the Internet if a secure facility were available, increasing to 57 per cent in 2008 and 66 per cent in 2013.¹¹ In a recent survey conducted in the UK 60.6% of respondents and 81.7% of the 18-35 year age group indicated that they would be more likely to vote if they could do so online.¹²

To date, the main opposition to Internet voting has been based on concerns about security. Such concerns will undoubtedly continue to be expressed, given that at present it is not possible to give a 100% guarantee that Internet applications can be made immune from hacking. While such concerns need to be taken seriously, it is also important when evaluating the Internet as a voting tool to take account of the risks inherent in the system of voting that is already in place.

The following comparison highlights some of the advantages of Internet voting compared with the current paper-based system.

- Internet voting offers greater secrecy and accessibility for electors with disabilities (and thus greater voting equality).
- It also provides greater accessibility for electors living in remote areas (in Australia a first class mail service may not exist in 10 years' time and electoral legislation allows only limited time for the return of postal votes) or travelling abroad, as well as people such as single parents who may find it difficult to get to a polling place.
- Internet voting provides a faster means of counting votes cast. It also obviates human error in the handling and counting of paper ballots - the loss of some 1,375 Western Australian Senate votes in 2013 being a case in point.
- The rate of informal voting at the 2014 Victorian State election was 5.22% for the lower house and 3.43% for the upper.¹³ An Internet voting system can alert voters who may be about to cast an informal vote accidentally; a ballot paper can't.
- Over the longer term Internet voting would also constitute a cheaper option than traditional polling places which are very labour intensive.

It should also be noted that although voter coercion is sometimes referred to as a risk of Internet voting, this is also a risk with postal voting. If anything, the ability afforded to users of some Internet voting systems to cancel and re-cast their vote provides greater protection in such circumstances.

¹⁰ Although the risks associated with banking and voting are markedly different, this does not prevent the question being asked.

¹¹ Asset Research, *Report on the Western Australian Electoral Commission Survey of Voters – State General Election 2013* (April 2013) p.85 (In the 2013 survey only 22% of respondents indicated that they would be unlikely to vote in this way.)

¹² M Ryan and G Grewal, Democratic Audit UK, *Internet voting: coming to a computer near you, though more research is needed to eliminate the risks* 2014 <http://www.democraticaudit.com/?p=3149>

¹³ <https://www.vec.vic.gov.au/Results/State2014/Summary.html>

With Internet voting there is also potential to reach out to people aged 18-30 who we know are less likely to vote than older electors.¹⁴ There is some international research to indicate that Internet voting would contribute to increased turnout rates among younger electors¹⁵ who also are the greatest users of modern technology. Indeed, the most pressing argument for the consideration of Internet voting trials is that, with generational change, it is only a matter of time before Internet voting is made available as an option for all electors, simply as a response to public demand.

In the meantime NSW is the only Australian electoral jurisdiction that has made Internet voting available in parliamentary elections¹⁶, and even then with access restricted to electors who are vision impaired, illiterate or have a disability, live more than 20 kilometres from their nearest polling place or who will be interstate or overseas on election day. At the 2011 NSW State election 46,864 electors in these categories (1.09% of the total) opted to vote online, increasing to 283,669 electors (6.2%) in 2015.¹⁷

The *iVote* system developed by the NSW Electoral Commission has a range of security features.¹⁸ A critical component of any Internet voting system is the use of advanced cryptographic algorithms to protect the integrity of the system in the event that it comes under attack. Upon registering *iVote* users are issued with an 8-digit identifier to which they add their own 6-digit PIN. This number and PIN form the voter's secret credentials which are used to log in and cast a vote. When a vote is cast it is encrypted and each voter is issued with a randomly generated and unique receipt number.

A second critical security feature of the *iVote* system is what is referred to as "end-to-end verifiability". Up until the close of voting users can check that their vote has been recorded and stored as cast by calling an automated Verification Server. This server requests the voter's unique credentials (*iVote* Number and PIN) and receipt number, opens the corresponding vote and reads it aloud (using synthetic voice technology), enabling the voter to verify their vote. This provides added security in

¹⁴ Whitlam Institute, University of Western Sydney: *Young People Imagining a New Democracy: Young People's Voices* (2008); *Youth Federal Election Voting Intentions 1996-2010* (2011); *Youth Federal Election Voting Intentions Update* (2013). See also:

http://www.elections.nsw.gov.au/data/assets/pdf_file/0013/103207/International_Experiences_of_Electronic_Voting_and_Their_Implications_for_New_South_Wales_Report_2009.pdf p. 29

¹⁵ See for example:

http://www.elections.nsw.gov.au/data/assets/pdf_file/0013/103207/International_Experiences_of_Electronic_Voting_and_Their_Implications_for_New_South_Wales_Report_2009.pdf p. 29

¹⁶ The Australian Electoral Commission conducted a limited trial at the 2007 federal election allowing overseas military personnel to vote via the Defence internal network but this was not linked to the Internet and was subsequently discontinued.

¹⁷ The biggest take-up by far was by overseas electors.

¹⁸ For a full description see Brightwell et al., *An overview of the iVote 2015 voting system*

https://www.elections.nsw.gov.au/data/assets/pdf_file/0019/204058/An_overview_of_the_iVote_2015_voting_system_v4.pdf

that the elector's contact with the verification service is made independently of the Internet. If electors believe their vote has been tampered with they can cancel and re-cast their vote as well as reporting the incident for investigation.

Further layers of security are provided by replicating the storage of votes using separate data bases at different locations and through an independent audit to verify system integrity before votes are admitted to the count. The encryption key used to access the votes on election night is split and held by different officials. Once counting has been completed a list of receipt numbers is published, enabling electors to confirm that their votes were actually counted.

Legislation to permit the use of Internet voting in State elections has been introduced in the Western Australian parliament, passed by the Legislative Council and is about to be voted on by the Legislative Assembly.¹⁹ The proposed legislation has more restricted application than in NSW, with eligibility for Internet voting confined at this stage to electors who are illiterate, sight impaired or otherwise incapacitated.²⁰ However, during passage of the Bill through the Legislative Council the Minister for Electoral Affairs indicated that the availability of Internet voting for electors in remote areas will be countenanced in the years ahead.²¹

The proposed Western Australian legislation mirrors NSW in enabling the Electoral Commissioner a degree of flexibility in establishing approved procedures. There are, however, some mandatory conditions requiring:

- electors' votes to be kept secret;
- a mechanism to allow users to verify that their vote has been stored as cast;
- votes cast to be securely transmitted and stored; and
- the Internet voting system to be independently audited.

These requirements are bolstered by strict penalties. The Electoral Commissioner can also make a determination not to proceed with Internet voting at a particular election. The WAEC has taken the decision that telephone voting will also be available as a remote voting option, but will differ from systems deployed at recent Federal and Queensland State elections. Instead of telling an electoral official how they wish to vote (which makes some users uncomfortable even though their identity is not known to that official), electors will be able to record their votes via an IVR/telephony facility using special telephone keypads in their own homes. With this system in operation, the WAEC intends to discontinue the Vote Assist system used in designated voting centres at the last State election.

CONCLUSION

Under our conventional voting system many people with disabilities are denied a secret vote. For many others traditional polling places are difficult to access. Participation by electors in remote areas or travelling abroad is hampered by the

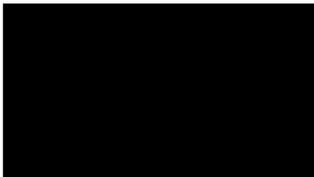
¹⁹ The Bill was first introduced in the Upper House where the Minister for Electoral Affairs is a member.

²⁰ Amendments have been debated and passed by the Legislative Council with bi-partisan support and are awaiting passage in the Legislative Assembly.

²¹ WA Parliament *Hansard* Legislative Council Thursday 7 April 2016 pp. 2268b – 2280a

declining reliability of postal services. Younger people and others who are enthused by what the Internet has to offer increasingly ask when online voting will be made available as an adjunct to the current paper based system. Participation can also be increased by reducing the level of informal voting - by alerting electors about to cast an invalid vote and by facilitating the issue of instructions in multiple languages.

In light of these factors and taking into account the drawbacks of the system that we already have, security should not be the sole consideration when weighing up the practicability of the Internet as a voting tool. The challenge for Australian legislatures and governments is to provide the necessary legislative authority and resources to develop robust Internet voting systems and for election management bodies to deliver that product, with priority initially given to groups disadvantaged by the current system but with an eye to making Internet voting available to all electors in the not too distant future. The fact that over 280,000 electors voted successfully using the Internet in the 2015 NSW State election sends a clear message that this is what an increasing number of electors want and expect, and that there now is no going back.



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