

# EVoting in Australia: Academics versus the Electoral Commissioners

Rajeev Goré

Logic and Computation Group  
Research School of Computer Science  
The Australian National University  
rajeev.gore@anu.edu.au

20 August 2012

# Outline

Australia, Australian Provinces, Governments and Populations

Status of EVoting in Various Provinces

# Australia

maps of australia - Google Maps

<https://maps.google.com.au/maps?oe=utf-8&client=firef...>



Address



# Australian Governments

maps of australia - Google Maps

<https://maps.google.com.au/maps?oe=utf-8&client=firef..>



Address



# Australian Electoral Commissions and Populations

Voting is compulsory!

Australia: 22.6 Million

New South Wales:  $\approx$  7.5 Million

Victoria:  $\approx$  5.5 Million

Queensland:  $\approx$  4.6 Million

Western Australia:  $\approx$  2.3 Million

South Australia:  $\approx$  1.6 Million

Tasmania:  $\approx$  500K

Australian Capital Territory:  $\approx$  350K

Northern Territory:  $\approx$  230K

# EVoting in the Various States

Voting is compulsory!

State	Internet Voting	Electronic Vote Casting	Electronic Vote Counting	Postal Voting
ACT	No	20%	100%	Limited
NSW	Limited	No	No	Increasing
TAS	No	Limited	No	Limited
WA	Planned	Limited	No	Limited
VIC	No	No	No	Planned
QLD	No	No	No	Increasing
SA				
NT				

Many voters cannot even read English!

# EVoting in the Australian Capital Territory

**Booth-based:** but anyone can use them

**Mark-off:** enter polling booth and identify yourself

**Anonymous bar-code:** given when name crossed off electronic roll

**Swipe:** bar-code into reader to start vote construction

**Vote:** constructed using computer and touch screen

**Swipe:** bar-code to cast vote

**Print-out:** no

**Blind:** assisted by recordings in various languages

**Counting:** paper ballots scanned using OCR, counted by computer

**STV:** counting uses Hare-Clarke STV method

**Open source:** the vote counting code is open-source

**Bugs:** we have found three that could affect results

# Proto-type for EVoting in Victoria

**Based on:** Prête à Voter <http://www.pretavoter.com/>

**Booth-based:** but anyone can use them

**Mark-off:** enter polling booth and identify yourself

**Two-part ballot:** constructed using computer and touch screen

**First-half:** has random order of candidates

**Second-half:** has boxes containing preference and unique id  
bar-code and encoding of the preferences as chosen by voter

**Voter:** prints vote, checks it, and destroys first-half

**Printed:** second half is cast by scanning

**Print-out:** taken home by voter but it cannot prove preferences

**Blind:** assisted by recordings in various languages

**Counting:** scanned ballots counted using bar-codes

**Bar-codes:** published on web site

**Verification:** by user using the second half of vote

# Internet Voting in New South Wales

**Web-based:** restricted to vision-impaired and away-voters

**Registration:** by phone or internet

- ▶ voter provides a PIN of own choice
- ▶ system sends a unique ivote number via SMS or email

**Voting:** via internet or phone using PIN and ivote number

**Receipt:** sent via SMS or email once vote is accepted

**Counting:** votes separated from voter id, printed, hand counted

**Problems encountered:** lost PINS, lost ivote numbers, ...

**Criticised:** heavily by academics as being deeply flawed but they intend to continue

# Priorities of Electoral Commissioners

**Vision impaired and Overseas Military Personnel:** “how to allow them to vote privately ... electronic voting (from home) of course”

**Physical security of ballots:** “each ballot is watched carefully as it is opened and counted so no one can tamper with it”

**Accuracy over hand counting:** “all our tests showed that our electronic counting program was more accurate than hand counting”

**Computer security:** “our system is not internet based so it must be safe”

# Naivette of Electoral Commissioners

- ▶ How can you guarantee that the vote I created on the computer is the one that is counted? “Because that is what our code does”
- ▶ But how do you know this? “Because that is what our software provider said and the code was audited by an independent quality assurance company”
- ▶ But it might have bugs in it. “No we tested it extensively and it worked in all our tests”
- ▶ But the ANU people found three serious bugs in your code. “Yes, but our testing had already found one of the bugs and we fixed the rest”
- ▶ Did the hackers that you hired find any serious flaws in the system? “I am not at liberty to say”

# Conclusions

The electoral commissioners are incredibly naive about computer security in general and blindly trust their software providers

They are also unaware of the numerous risks that are involved in electronic voting, especially over the internet

A recent workshop, hosted by the Victorian Electoral Commission, brought together many academics and electoral commissioners and hopefully the situation is now improving, except in NSW (ivote)