Cryptography for social good

Mukesh Tiwari

Quest: Can e-voting systems replicate the trustworthiness of paper-ballot elections?

Western Australia Senate election will be re-run on 5 April

Last year's Senate election in WA was declared void by the high court after the loss of 1,370 votes

Re-conducted with 20 Million AUD additional cost.

Blind advocates allege NSW's removal of online voting system is a breach of human rights

State electoral commission accused of discrimination for suspending iVoting platform as Blind Citizens Australia takes case to watchdog

Inclusive for disabled voters.

EN - English

Can you vote for political elections online?

Verified 09 July 2024 - Directorate for Legal and Administrative Information (Prime Minister)

The rules are different depending on whether you vote in France, or from the foreigner:

In France | From the foreigner

You can vote via the internet provided you meet the following 3 conditions:

- You live abroad
- You are registered on a consular voters list. You can check your voter registration using this online service.
- When you registered, you provided an email address (e-mail address) and a phone number. This data is necessary to communicate a username and password.

You can vote online in the following elections:

- In general elections, you can vote by internet. To do this, it may be necessary to update your contact information in the foreigner register before a deadline. But you may prefer to vote by correspondence, or by going to polling station the election day, or by making a prior power of attorney.
- In the election of advisers to the foreigner, you can vote by internet. But you may prefer to go to the polling station the election day, or vote by power of attorney.

Council of the Swiss Abroad – e-voting to be made available in numerous countries for the 2025 election

04.10.2024 – Andreas Feller

To improve and modernise the process of electing candidates to the Council of the Swiss Abroad in 2025, an online voting system will be made available in 13 electoral constituencies. This will enable significantly more Swiss Abroad to vote – and make the "Parliament of the Fifth Switzerland" more representative as a result.

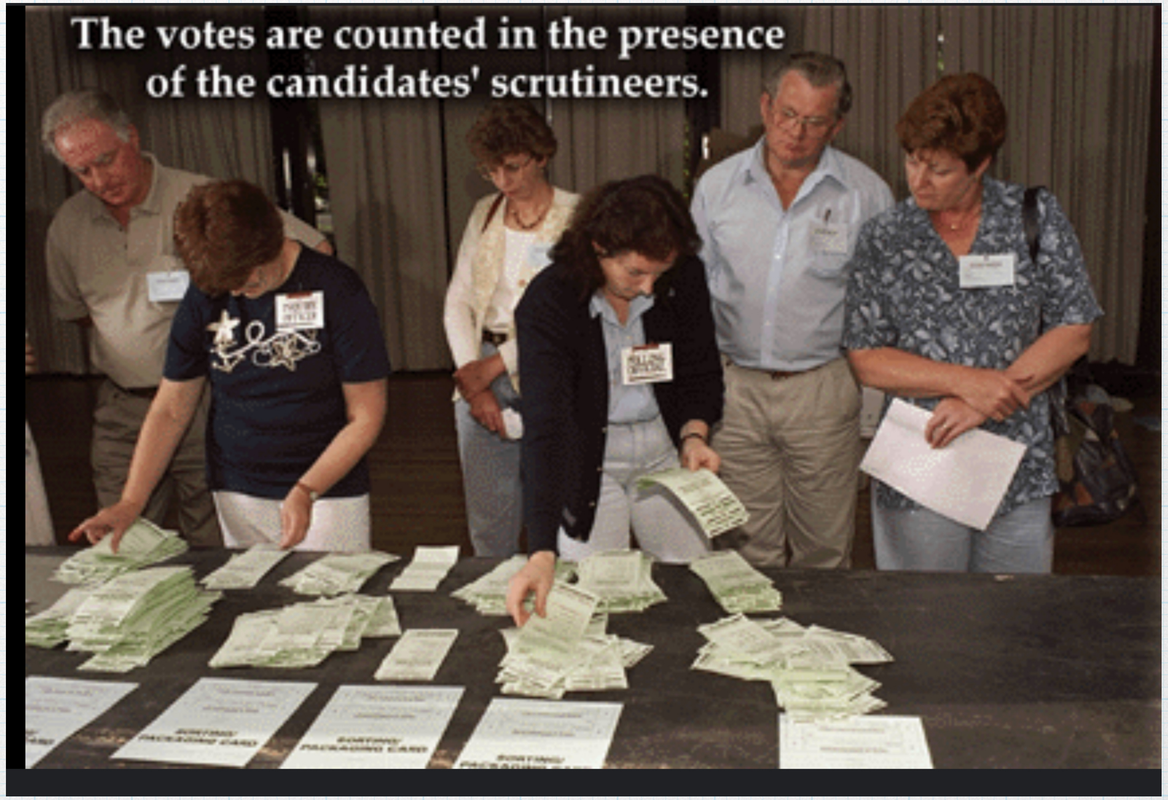
The Council of the Swiss Abroad (CSA) is the "Parliament of the Fifth Switzerland" and the highest body of the Organisation of the Swiss Abroad, SwissCommunity. Among other things, the CSA plays an important role in representing the interests of the Swiss Abroad in their dealings with the Swiss authorities.

Convening twice a year in Switzerland, it makes decisions, formulates opinions and lays

Inclusive for overseas voters.

Trustworthiness in paper-ballot elections:

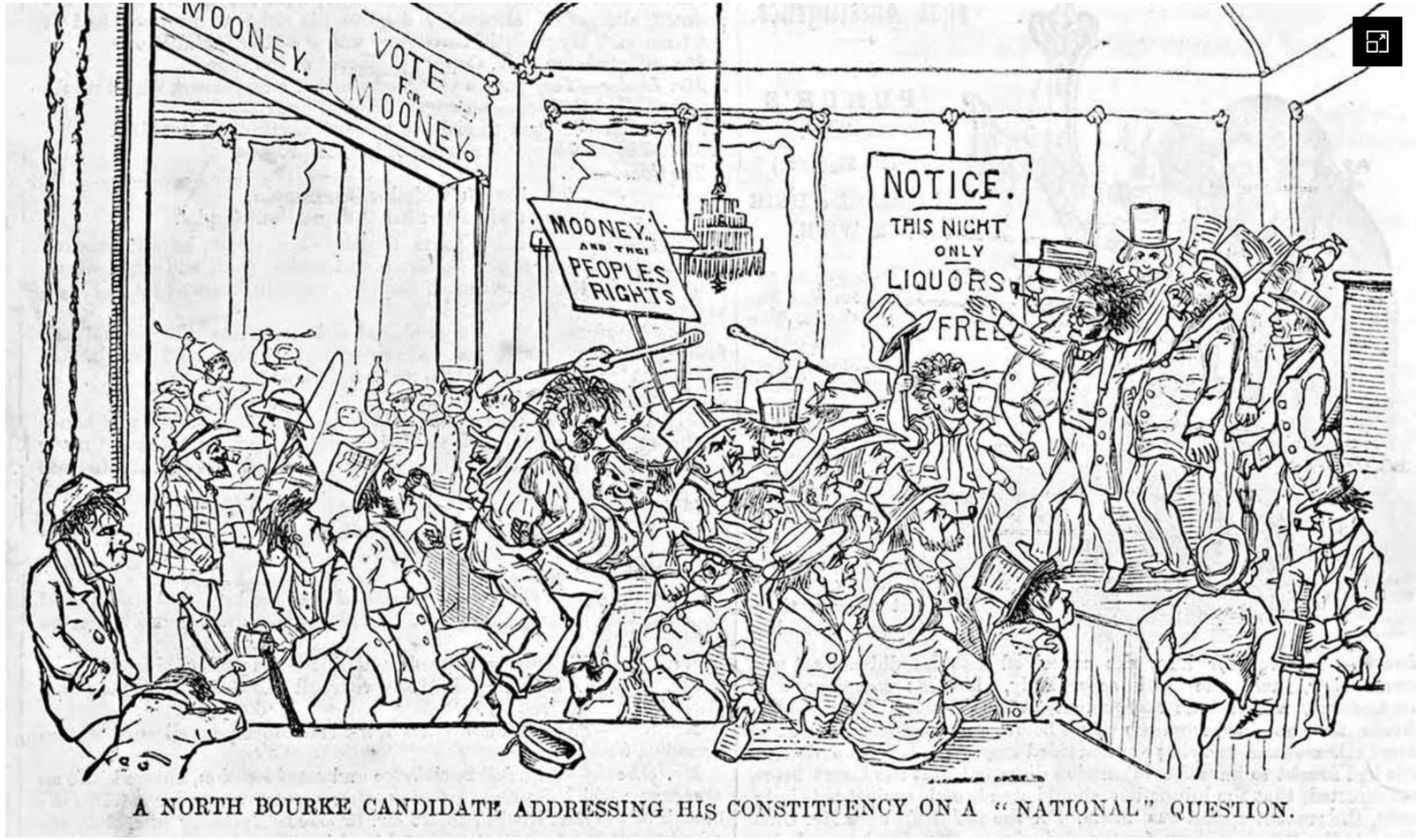
1. Anonymity
2. Verifiability



Trivia

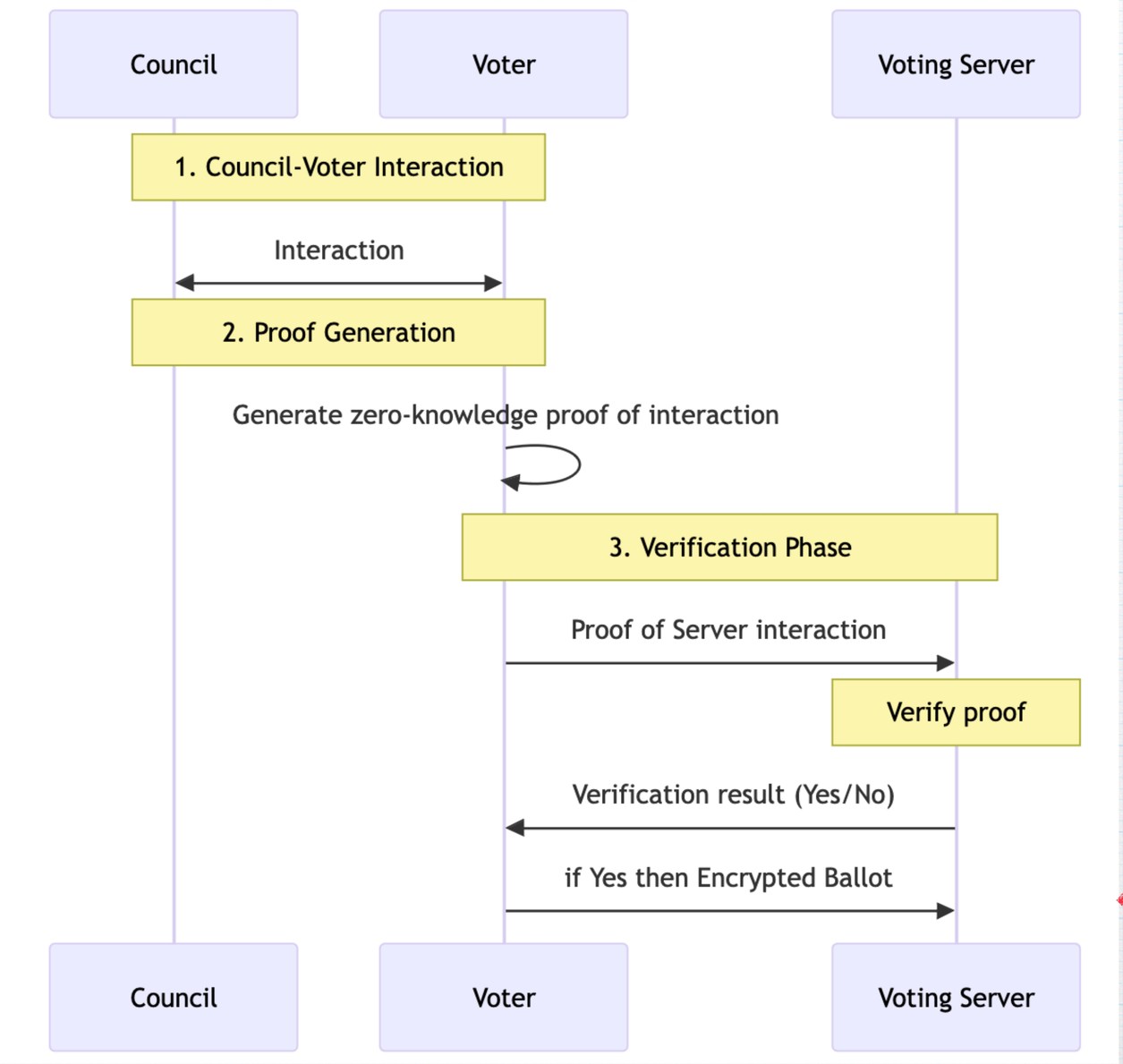
1856: Secret ballot introduced and all adult men given the vote

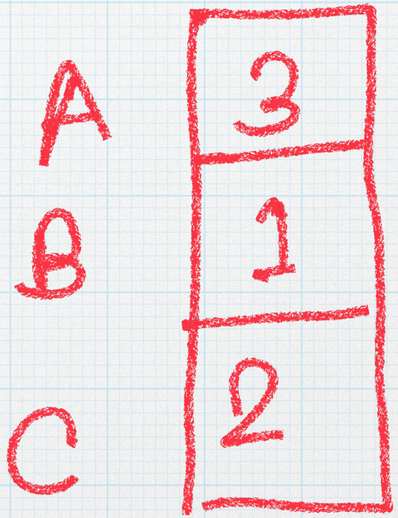
SEE OUR CLASSROOM RESOURCE



A NORTH BOURKE CANDIDATE ADDRESSING HIS CONSTITUENCY ON A "NATIONAL" QUESTION.

Anonymity / Anonymous Credentials)





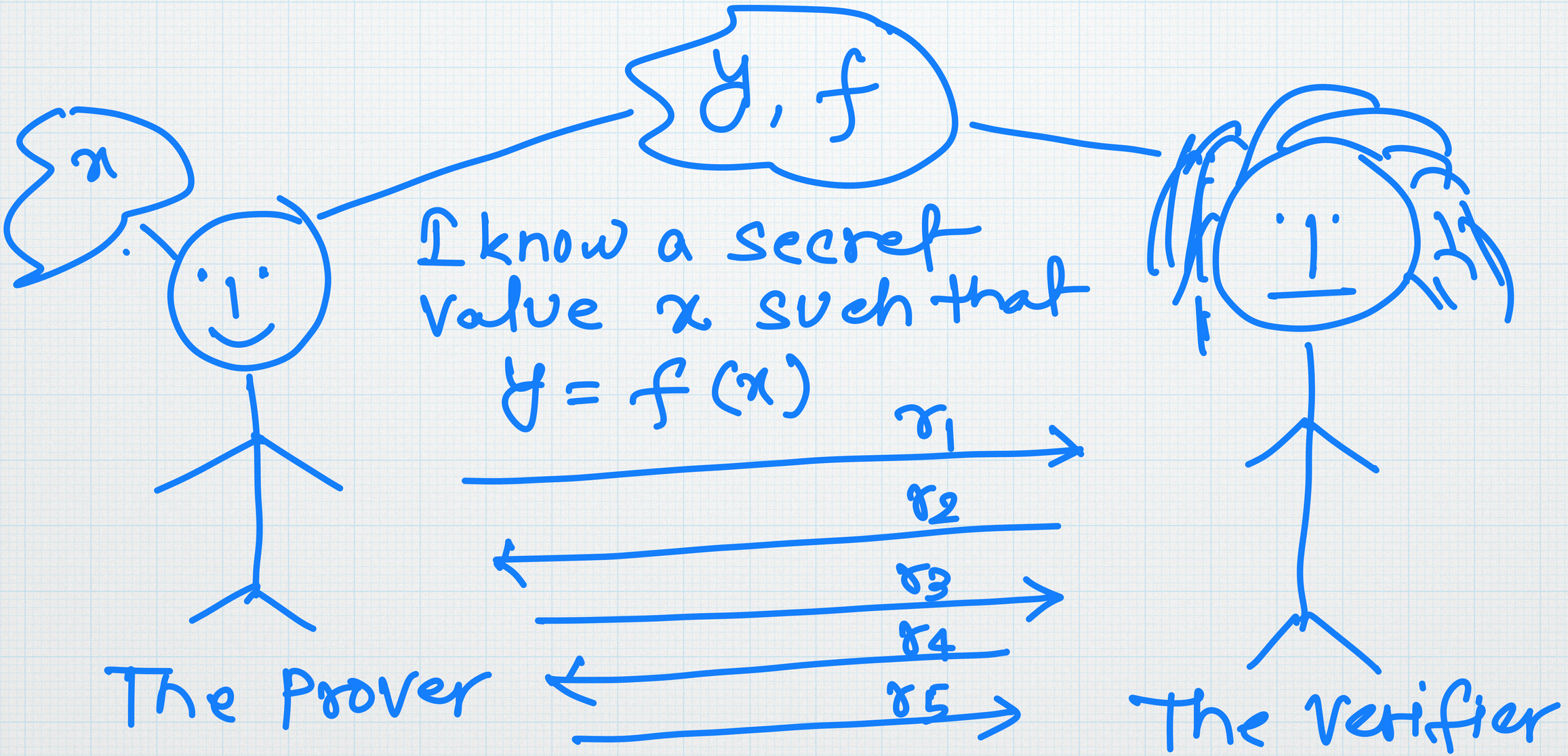
← Important for ranked-choice ballots (STV)

Security

A voter's identity should remain confidential, even in the event of collusion between the council and the voting server.

Zero-knowledge Proof

Zero-Knowledge Proof



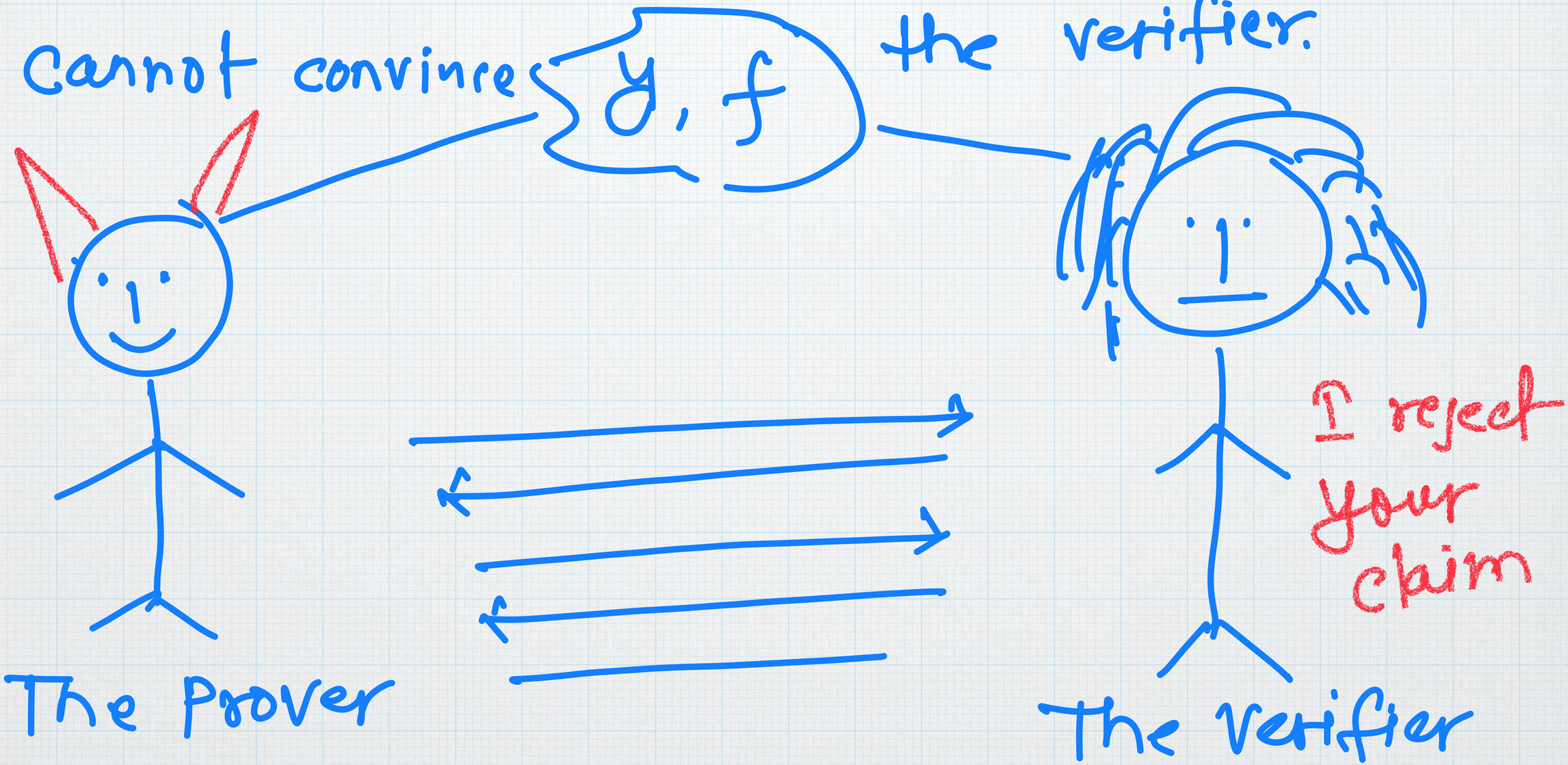
Zero-Knowledge Proof

$V(y, f, m_1, m_2, m_3 \cdots) ==$ True / False

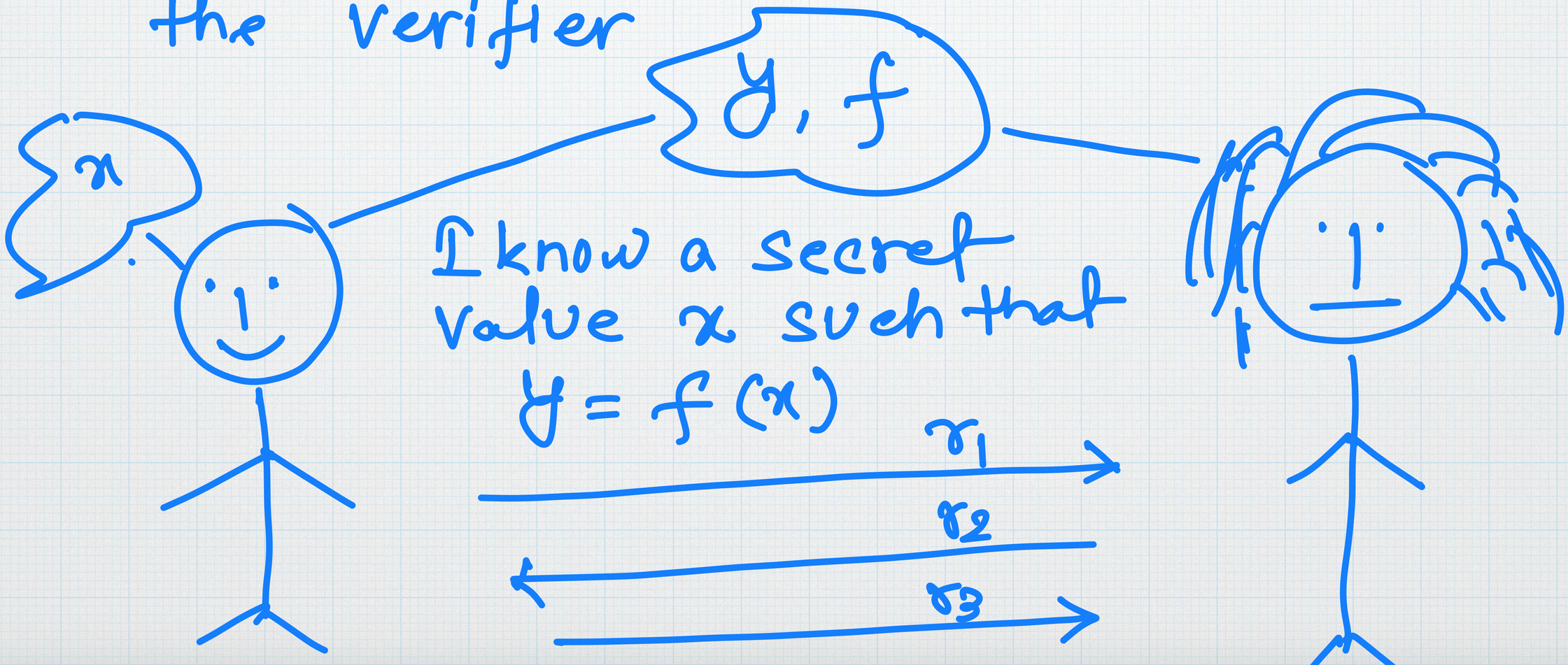
1. I accept this proof
   (the prover's claim is true)
2. I reject this proof
   (the prover's claim is not true)

The Verifier

Soundness : a dishonest prover cannot convince the verifier.



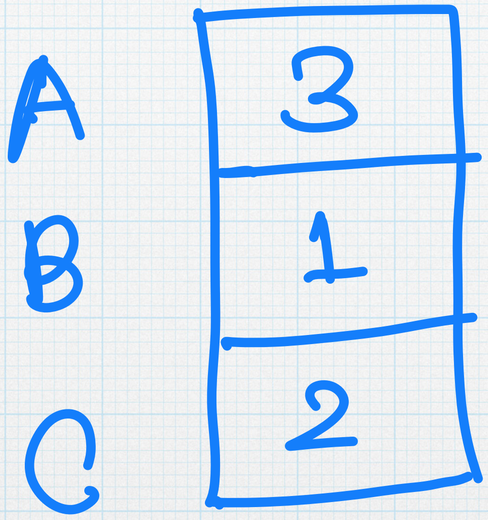
Completeness: if the statement is true, the prover can convice the verifier



Zero-knowledge: the verifier learns nothing about the secret beyond the fact that the prover knows it.

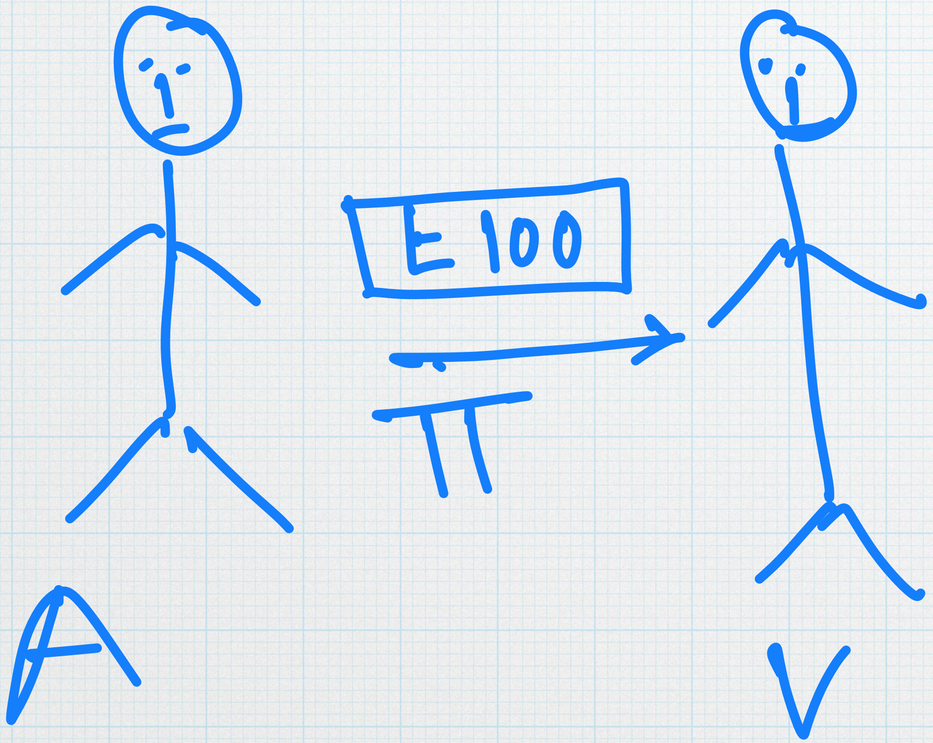
This property precisely allows a voter to remain anonymous, even if the Council and the voting server are colluding.

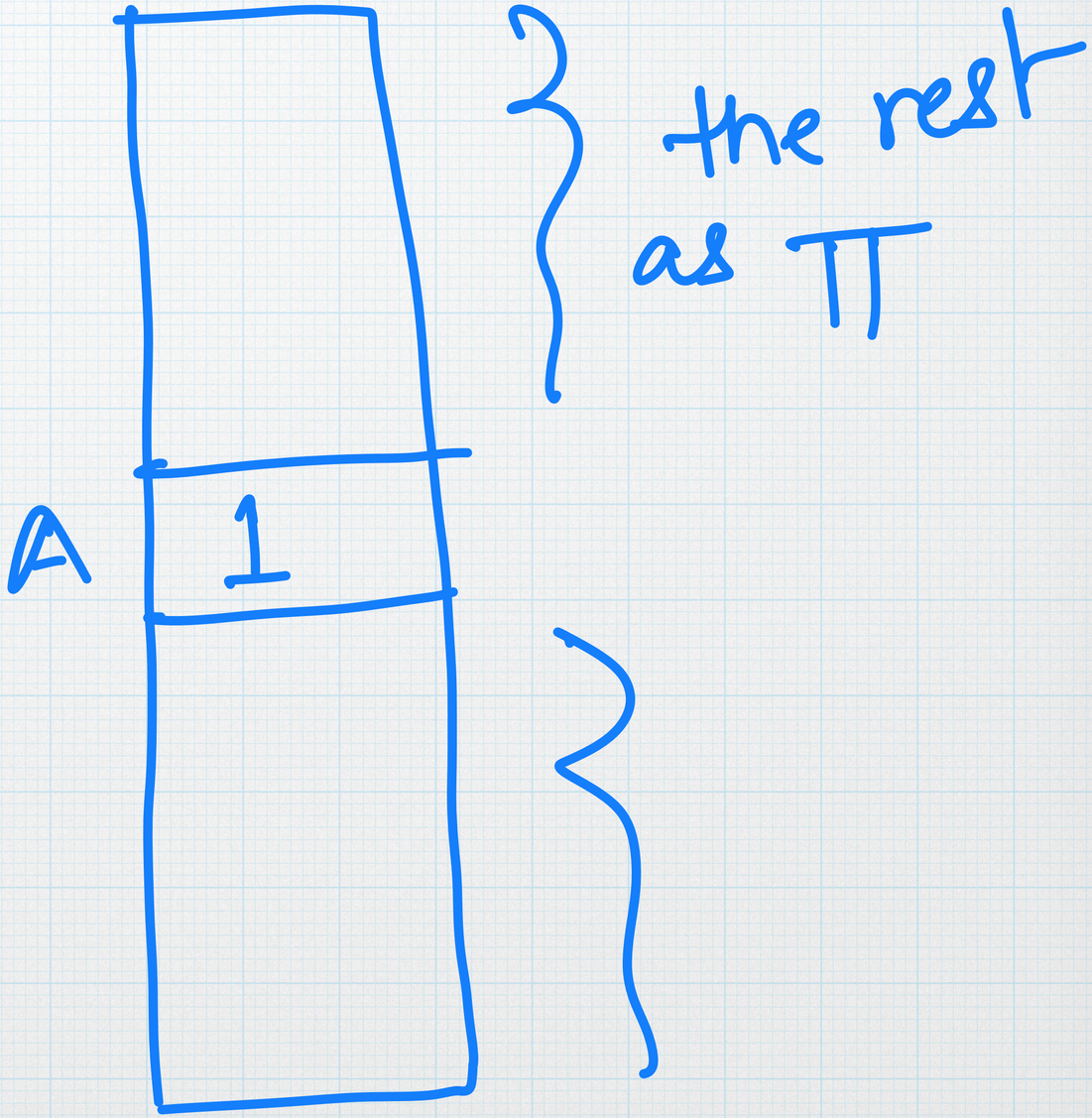
Second question: Encryption of ballots are necessary for ranked-choice ballots.



Let's pick a voting method: STV

Attack.





Dr Kevin Bonham

ELECTORAL, POLLING AND POLITICAL ANALYSIS, COMMENT AND NEWS FROM THE PEOPLE'S REPUBLIC OF CLARK. THOSE WHO WANT TO BAN TEENAGERS FROM SOCIAL MEDIA ARE NOT LETTING KIDS BE KIDS, THEY'RE MAKING TEENAGERS BE KIDS.

Friday, June 28, 2019

Most Tasmanian Senate Votes Were Unique

Over the last week or so I've been looking at some statistics relating to the uniqueness (or not) of Senate votes in Tasmania, and some other aspects of Tasmanian Senate voting. At the moment I'm only doing this for Tasmania, but it can be extended to other states if anyone else wants to do so. **This article has been rated 4/5 on the Wonk Factor scale** - it is obviously out and out wonkcore but the maths is not as tricky as in some of the stuff on this site.

All Senate votes are scanned by optical character recognition and the scans are verified by human data operators. The AEC publishes files of all formal Senate preference votes that can be used by outside observers to verify that the AEC is getting the right results and computing the count correctly. This year's formatting of these files is a lot more user-friendly than in 2016. On downloading the files one can find all the numbers recorded as entered in the system for any vote recorded as formal. Sometimes this includes both above the line preferences and below the line preferences (if both are formal, below the line takes precedence, an issue I will come to later on.)
One minor change is that ticks and crosses are no longer indicated by special characters, an aspect that was the source of some confusion among the easily confused at the last election.

One of the issues I was interested in was how often below the line votes were unique, and in what circumstances below the line votes weren't unique. Determining whether a vote is a valid below the line vote in the current Senate system is quite easy - the voter is asked to vote 1-12 but under the savings provisions 1-6 is accepted, so the vote must have each of the numbers 1,2,3,4,5,6 below the line exactly once. That means a product of six COUNTIFs (or equivalent depending on what system you're using) will

Federal 2PP Aggregated Polling Estimate

50.2-49.8 to ALP

Last update 3 Dec (Essential) This is a "what I say the polls say now", not a prediction. Click here for methods summary.

One Nation adjusted estimate

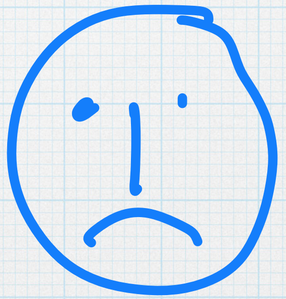
50.4-49.6 to L-NP

(This alternative figure assumes One Nation preferences will shift to the Coalition as seen at the Queensland election and Fadden by-election.)

Support welcome!

Donations to help me spend more time working on this site or recognise work I've done are very welcome. Please only donate if you are sure you can afford to do so.

Currently there is no known "end-to-end" verifiable STV method for encrypted ballots.



Single Transferable Vote (STV)

RESEARCH

Implementation of a Single Transferable Vote system for local elections in Wales

To explore the introduction of a Single Transferable Vote (STV) system in future local elections in Wales as laid out in the Local Government and Elections (Wales) Bill 2021.

This is the latest release

Released: **3 March 2021**

Last updated: **3 March 2021**

The aims of this research were to assess the relative merits of different variants of Single Transferable Voting (STV) and its implementation.

RELATED

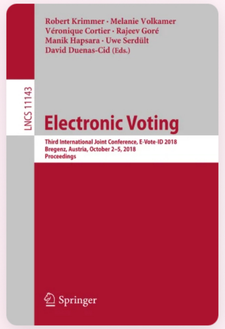
Statistics and research

Coq Implementation

Modular Formalisation and Verification of STV Algorithms

Conference paper | First Online: 06 September 2018

pp 51–66 | Cite this conference paper



Electronic Voting

(E-Vote-ID 2018)

Milad K. Ghale, Rajeev Goré, Dirk Pattinson & Mukesh Tiwari

Good Morning

The Political Group Leaders have discussed STV. There are no plans by Swansea Council to adopt STV. There are no recorded reasons for the views of the Political Group Leaders therefore there is no requirement for a public consultation.

Regards

Cyngor Abertawe Swansea Council

Alison O'Hara CMgr MCMI Milm
Arweinydd Tîm Gwasanaethau Etholiadol
Electoral Services Team Leader

From: Mukesh Tiwari <mukesh.tiwari@swansea.ac.uk>
Sent: Saturday, August 17, 2024 11:15 AM
To: Elections <elections@swansea.gov.uk>
Subject: Re: Regarding STV in Swansea Council

Hi Micheal,

I came to know that Powys council is having a consultation about STV [1]. I am wondering if Swansea had one? If so, where can I find the findings of the consultation?

Best,
Mukesh

[1] https://www.haveyoursaypowys.wales/stv-consultation

Thank you!