NORTHWEST TERRITORIES
LEGISLATIVE ASSEMBLY
TERRITOIRES DU NORD-OUEST
ASSEMBLÉE LÉGISLATIVE

MEETING RP 08-19-20

STANDING COMMITTEE ON RULES AND PROCEDURES

TUESDAY, JUNE 30, 2020
VIDEO/TELE-CONFERENCE
10:00 AM

AGENDA

1. Prayer
2. Review and Adoption of Agenda
3. Declarations of Conflict of Interest
4. Public Matters
    a) Review of the Report of the Chief Electoral Officer on the Administration of the 2019 General Election – Public Hearing with Dr. Aleksander Essex.
5. Date and Time of Next Meeting: At the Call of the Chair.
6. New Business
    a)
    b)
    c)
7. Adjournment

Online Voting in the 2019 NWT General Election

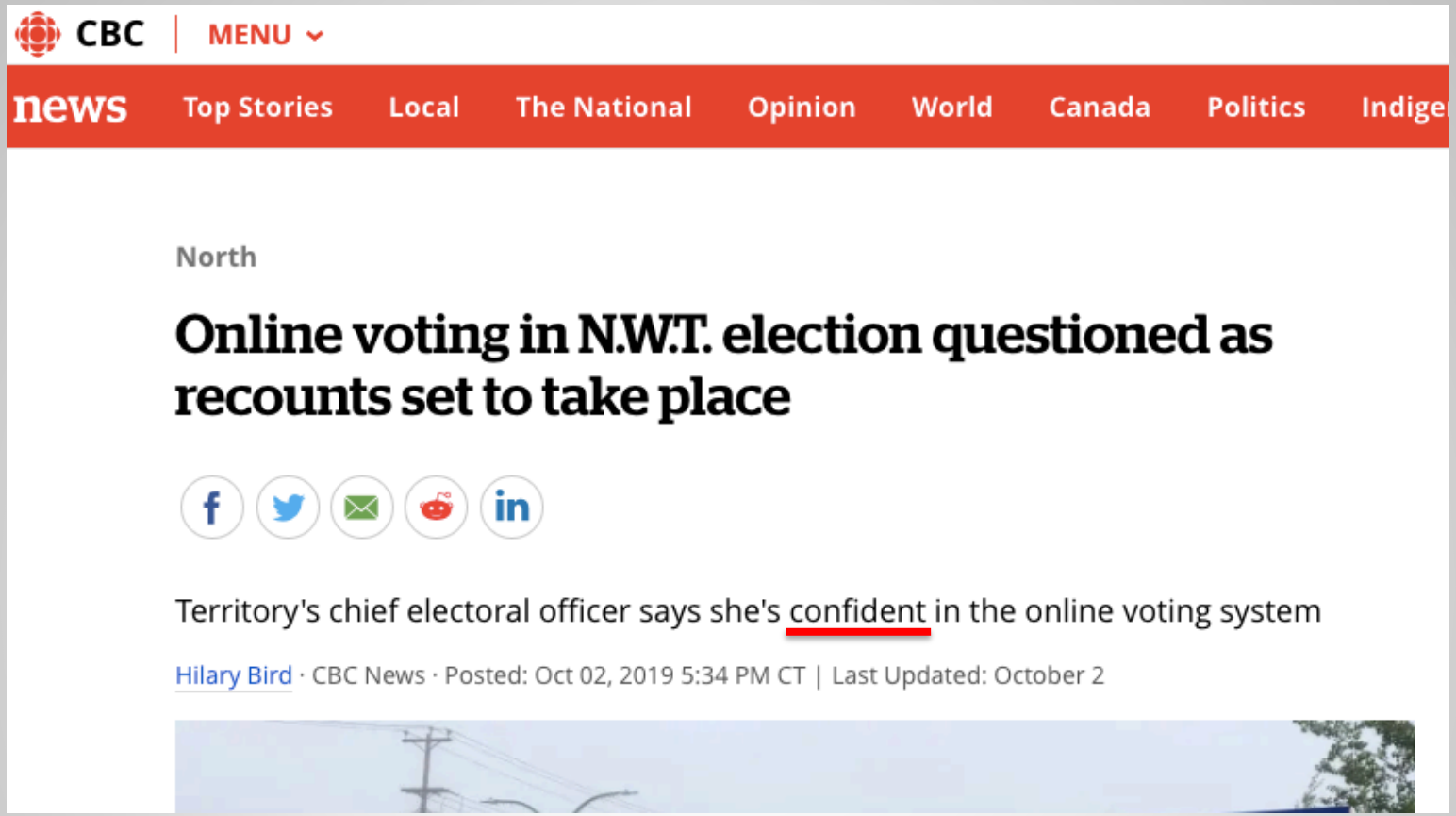
Observations and recommendations

Aleksander Essex, Ph.D., P.Eng.
@aleksessex

Bio

Aleksander Essex is an associate professor of software engineering at Western University in Ontario

- Research specialization in cybersecurity and cryptography. Internationally recognized expert in election cybersecurity
- Published peer-reviewed research in this area since 2007
- Studied online voting extensively in Canada and abroad
- Co-authored Toronto's cybersecurity analysis of vendor proposals for online voting
- Regularly invited to share research with election agencies, electoral commissions, legislative committees, municipal councils and associations. Most recently:
  - House of Commons Committee on Procedures (June 2020)
  - New South Wales Committee on Electoral Matters (Feb. 2020)



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North

Online voting in N.W.T. election questioned as recounts set to take place

Territory's chief electoral officer says she's confident in the online voting system

Hilary Bird · CBC News · Posted: Oct 02, 2019 5:34 PM CT | Last Updated: October 2

- How did the CEO reach a state of confidence?
- Is that confidence justified? Would an independent expert reach a similar conclusion?
- What about the confidence of the electors?

"To ensure the security and integrity of all Elections NWT online environments, and the election process as a whole … a general Penetration Testing methodology was used."

Source: CHIEF ELECTORAL OFFICER'S REPORT ON THE ADMINISTRATION OF THE 2019 TERRITORIAL GENERAL ELECTION

Can a general penetration test ensure security and integrity of the election process as a whole?

No.

Necessary but insufficient: 5 Reasons a Pentest is Not Enough

- **Generic**: Looks at general IT threats, doesn't consider domain-specific requirements, like ballot secrecy
- **Incomplete**: Does not consider key threat actors like insiders, does not consider voter device security
- **Wrong Emphasis**: Tells you about the technology, not whether procedures were followed or whether the results are correct
- **Non-instructive:** Tells you about vulnerabilities. Doesn't tell you what can go wrong and what to what to do when it does
- **Secret**: Report is not public and was only made available to the committee months *after* the election

"As the public becomes more informed about software, malware and manipulation of technology data systems, they are increasingly interested in knowing exactly how election technology preserves the integrity of our electoral process and the confidentiality of their personal information. For the public to trust the integrity of the electoral process they must be assured that:

- Technology used to cast a vote will accurately count the vote as intended
- Technology used to cast a vote will uphold the secrecy of the vote
- Technology used to tabulate votes will be verifiable and protected from tampering
- Technology used to transmit election results will be verifiable and protected from tampering
- Technology will not result in the breach of their confidential and personal information"

Source: Report on Ontario's 42nd General Election. Elections Ontario, June 7, 2018.

Question: Did the Hitachi report accomplish any of this?

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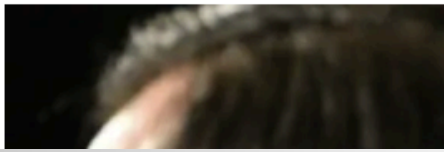
RP-08-009

Calgary · CBC Investigates

Fraudulent emails used to cast votes in UCP leadership race, CBC finds

Lists show members had emails
PINs needed to vote

Drew Anderson, Carolyn Dunn, Al
Posted: Apr 10, 2019 11:59 AM M



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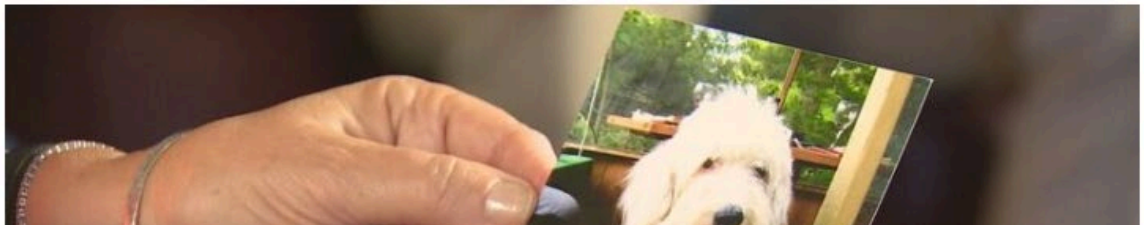
Toronto

Dead dog registered to cast vote in upcoming Mono, Ont. election

Cookie had been gone four years when she was given the chance to participate in local democracy

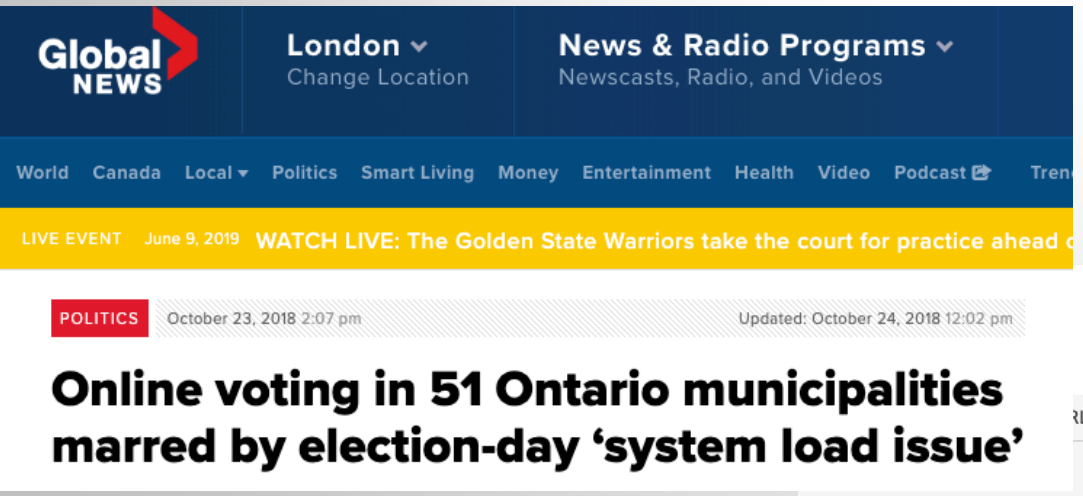
CBC News · Posted: Oct 11, 2018 5:50 PM ET | Last Updated: October 11, 2018



“I don’t have a disaster plan”

–Ontario clerk 6 months before 2018 election

RP-08-010



SECRECY OF THE VOTE

Requirement for secrecy

117. (1) Every person in attendance at a polling station or other place where, under this Act, voting is conducted or votes are counted, shall maintain and aid in the maintaining of secrecy of voting.

Prohibitions

(2) No person shall

(a) at a polling station or other place where, under this Act, voting is conducted or votes are counted,

(i) interfere or attempt to interfere with an elector who is marking his or her ballot,

(ii) attempt to obtain information as to the candidate for whom any elector is about to vote or has voted, or

(iii) attempt to obtain information as to how a person is about to vote or has voted on a plebiscite;

(b) at the counting of votes, attempt to ascertain the number on the counterfoil of any ballot;

(c) at the counting of votes, attempt to obtain or communicate any information as to the elector who cast a vote on a particular ballot;

(d) at any time, communicate any information as to the manner in which any ballot has been marked in his or her presence;

(e) at any time or place, directly or indirectly, induce or endeavour to induce any elector to show his or her ballot after

Did you know?

The act of voting online requires a voter to send the following information to the voting server:

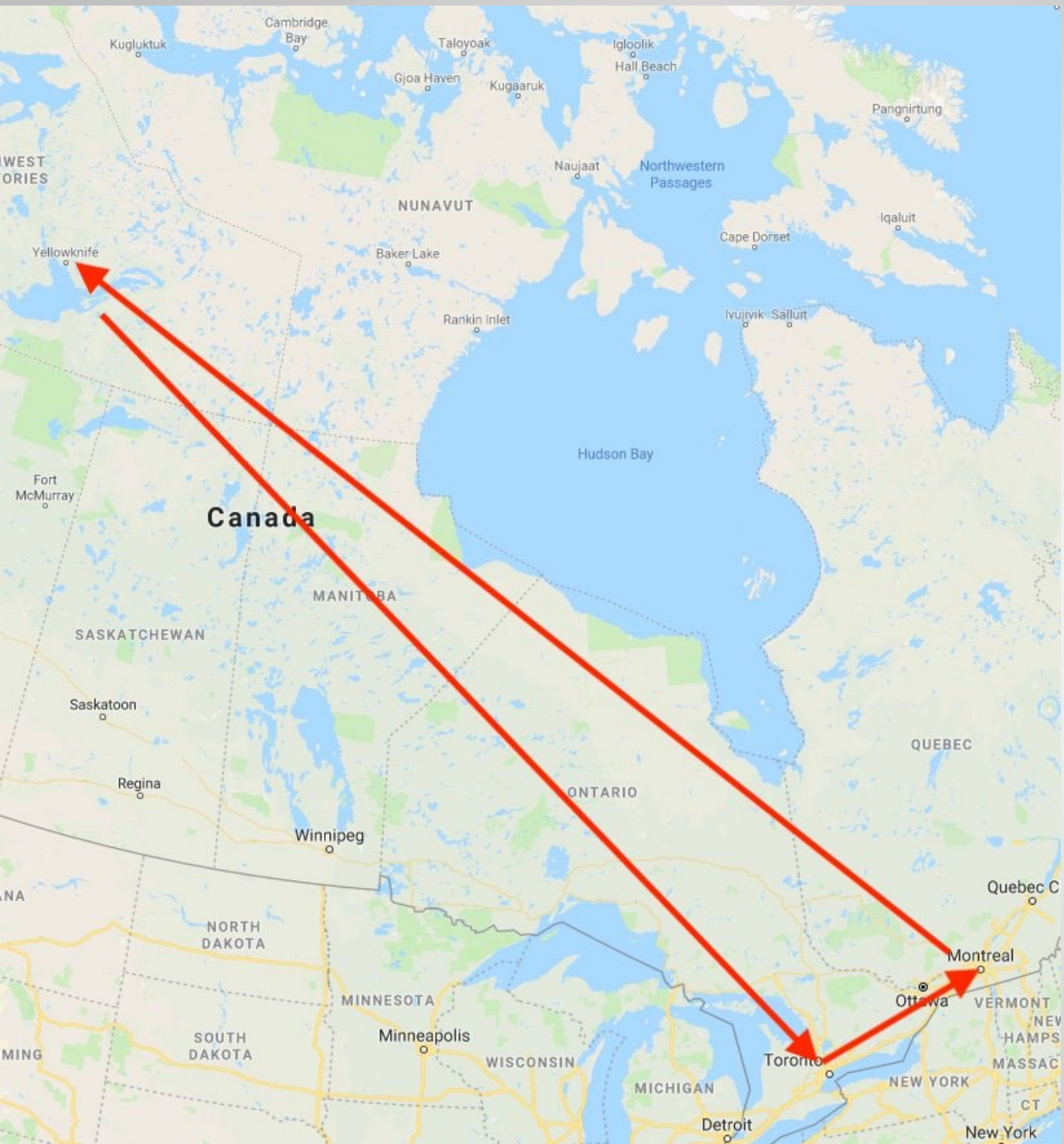
- Elector's identity*
- The candidate for whom the elector has voted

*Either directly or indirectly identifiable from their login information

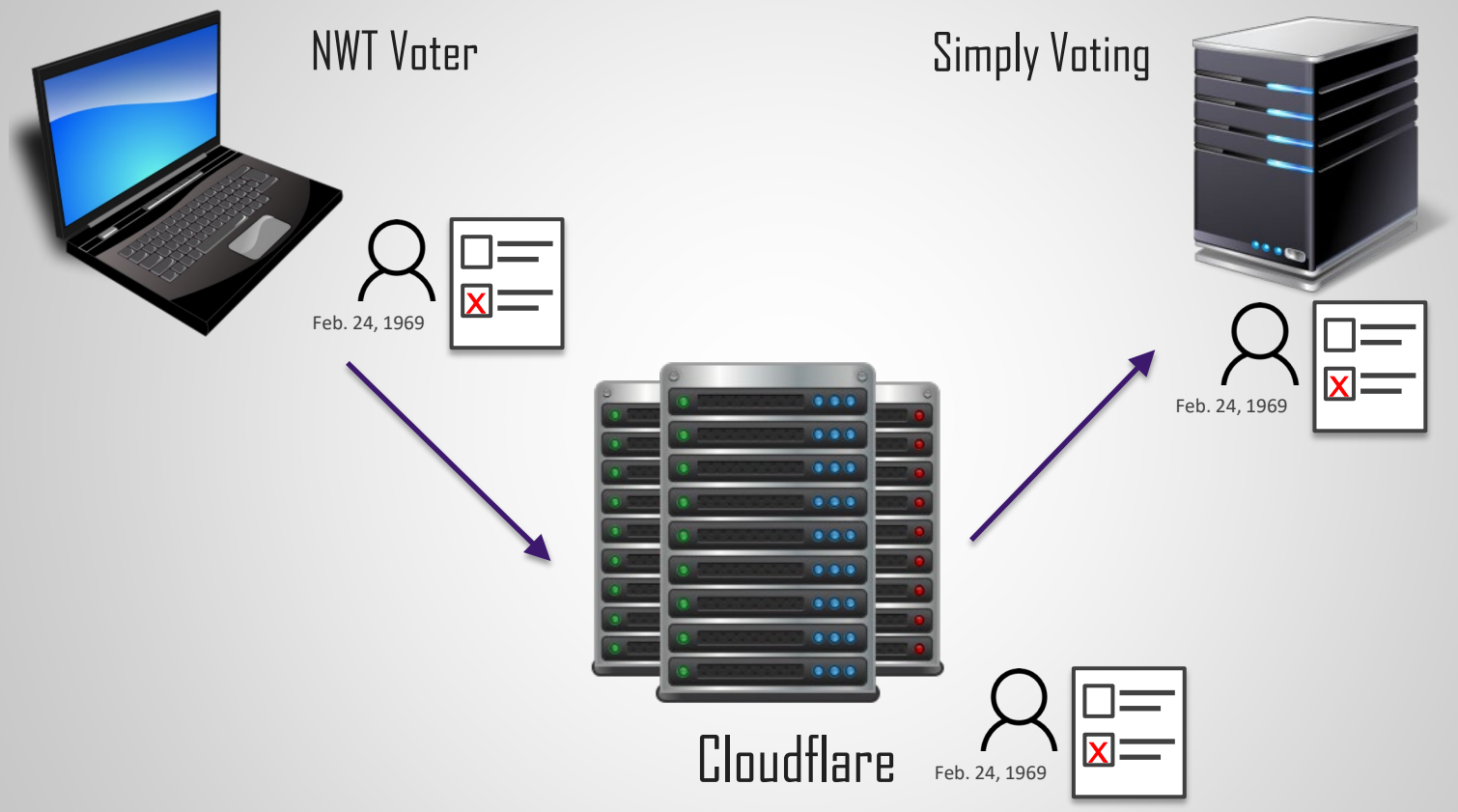
Re-identification risk

		$k = 1$		$k = 5$	
Vendor	Eligible Voters	Max Affected	% of Eligible	Max Affected	% of Eligible
Dominion	1,323,194	531,758	(40.2%)	1,181,876	(89.3%)
Intelivote	917,733	631,098	(68.8%)	902,177	(98.3%)
Simply Voting	304,479	190,097	(62.4%)	294,912	(96.9%)
Scytl	196,689	15,781	(8.0%)	69,411	(35.3%)
Total	2,742,095	1,368,734	(49.9%)	2,448,376	(89.3%)

49.9% of Ontario's online voters were uniquely re-identifiable by their login credentials



Online elections are not local elections


NWT Voter
Simply Voting
Feb. 24, 1969
Feb. 24, 1969
Cloudflare
Feb. 24, 1969

Trust Implications of DDoS Protection in Online Elections

RP-08-015

Chris Culnane[1], Mark Eldridge[2], Aleksander Essex[3], and Vanessa Teague[4]

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University of Western Ontario
aessex@uwo.ca

The Cloudflare Global A

The Cloudflare network spans 200 cities in more th

Your Organization :: Online Voti

demo.simplyvoting.com/vote.php?mode=getBallot&election=61934

Your Organization

Online Voting

YOUR LOGO

Home | How It Works | English | Español | Français | Logout **Julia**

Election 2020

Is it possible to hack a voter's computer?

You may select **one** of the following.
To write-in your vote, select **Write-in** and then type out your choice.

- [x] **Yes**
- [ ] **Yes**

USB RUBBER DUCKY

$49.99

Imagine plugging in a seemingly innocent USB drive into a computer and installing backdoors, exfiltrating documents, or capturing credentials.

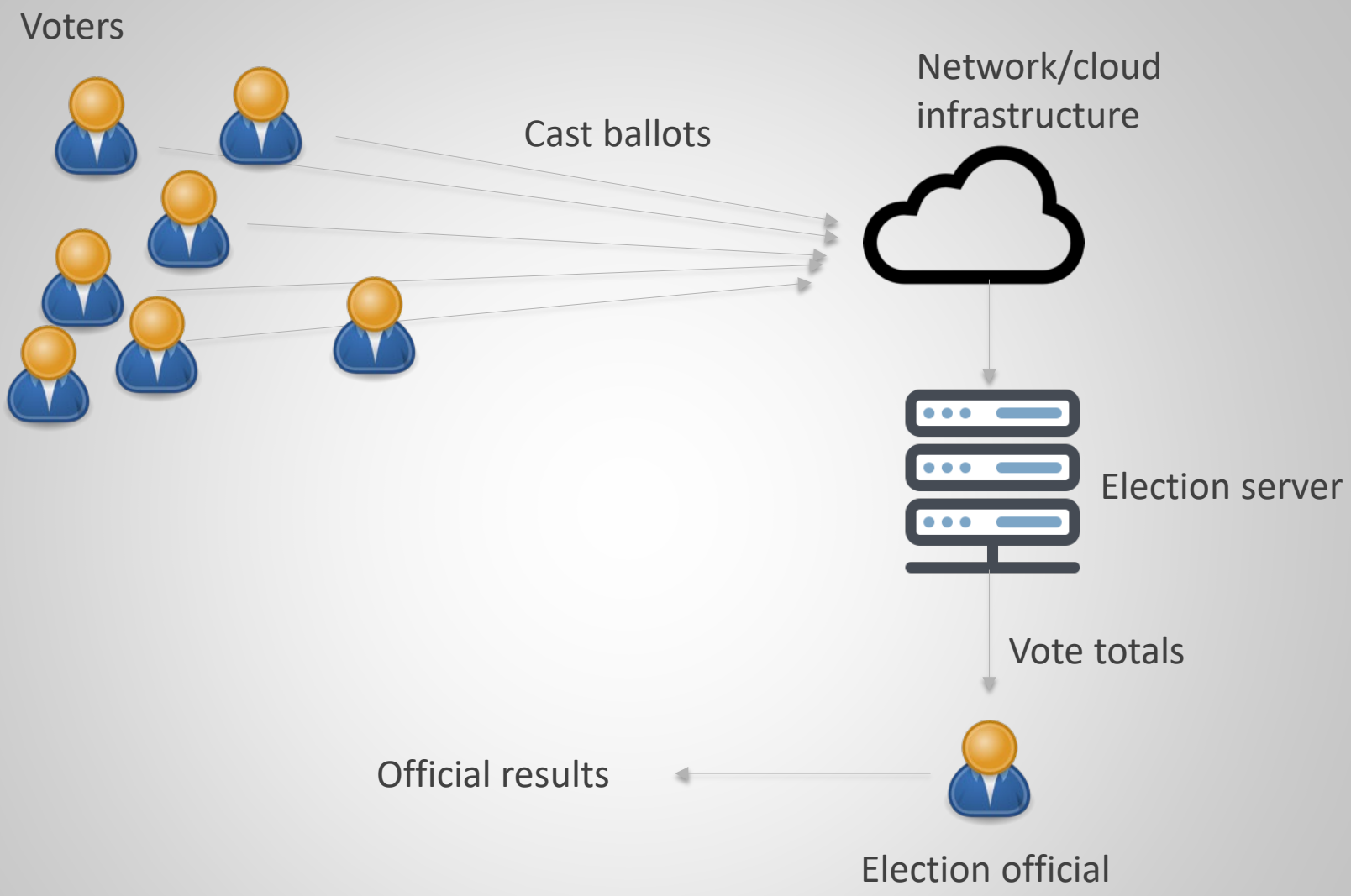
With a few well crafted keystrokes anything is possible. If only you had a few minutes, a photographic memory and perfect typing accuracy.

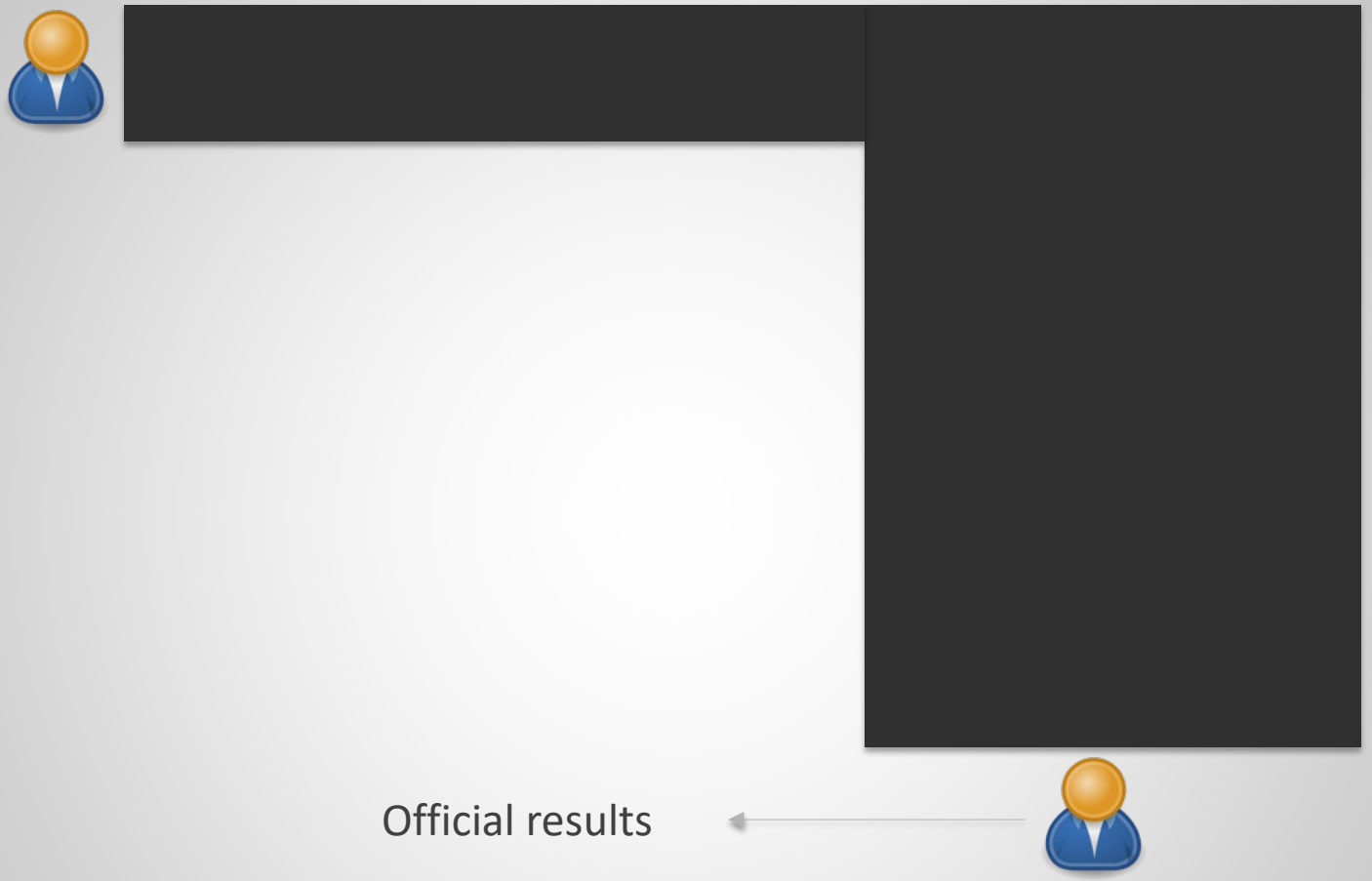
The USB Rubber Ducky injects keystrokes at superhuman speeds, violating the inherent trust computers have in humans by posing as a keyboard.

Inventing keystroke injection in 2010, the USB Rubber Ducky became the must-have pentest tool. With a covert design and simple "Ducky Script" language, this bad USB infiltrates systems and imaginations the world over.

USB RUBBER DUCKY DELUXE	HOTPLUG ATTACK COMBO KIT
$49.99	$199.99 (SAVE $20.00)

— 1 + ADD TO CART


Voters
Cast ballots
Network/cloud infrastructure
Election server
Vote totals
Official results
Election official

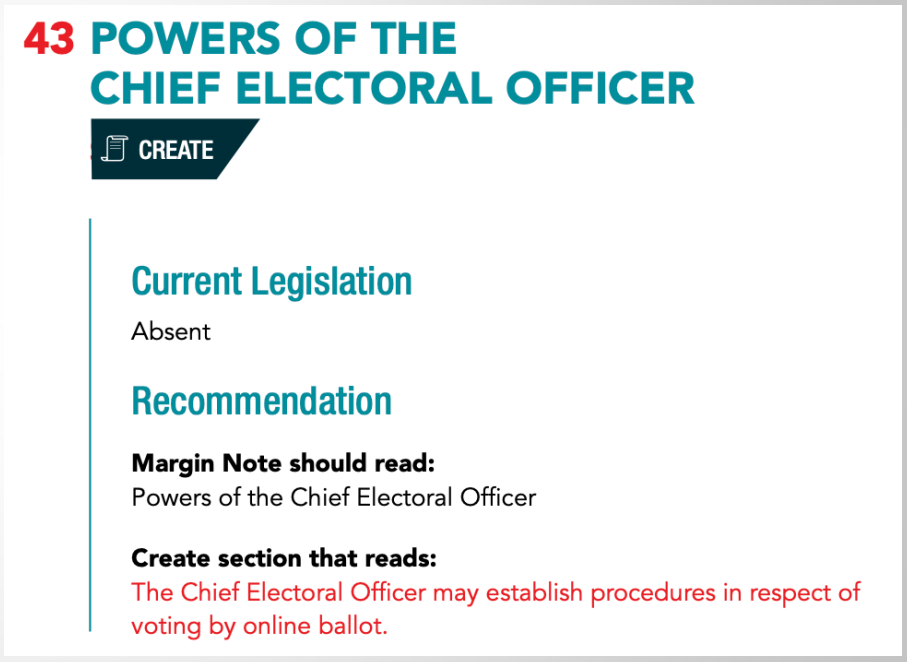


What voters and candidates see

Recommendations

- *Do not* amend the Elections and Plebiscites Act to allow online voting for general population until technical cybersecurity standards are developed

- Encourage Elections NWT to work toward standards development either alone or in partnership (e.g., through Association of Canadian Electoral Partners, Canadian Council of Election Officials)



43 POWERS OF THE CHIEF ELECTORAL OFFICER

CREATE

Current Legislation

Absent

Recommendation

Margin Note should read:
Powers of the Chief Electoral Officer

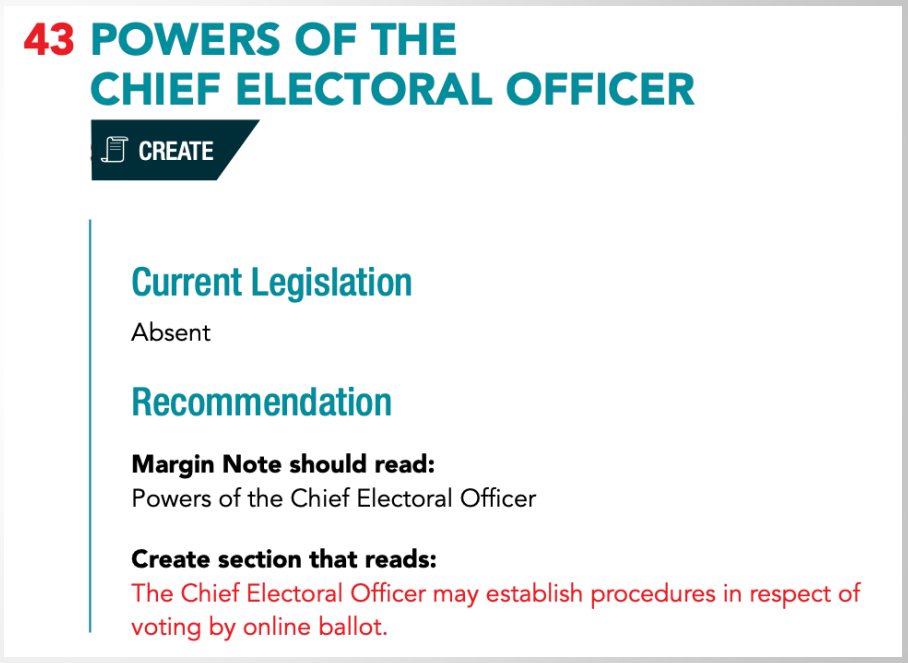
Create section that reads:
The Chief Electoral Officer may establish procedures in respect of voting by online ballot.

Source: CHIEF ELECTORAL OFFICER'S REPORT ON THE ADMINISTRATION OF THE 2019 TERRITORIAL GENERAL ELECTION

Recommendations

If online voting is used again:

- Require Elections NWT provide the electors with some form of independently-verifiable evidence that their online vote was correctly counted and ballot secrecy was maintained



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