The Patchwork of Internet Voting in Canada

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***Abstract*— Internet voting developments in Canada are growing quickly, with activity focused in local elections, political party leadership votes and unions. In some instances, the federal structure of the Canadian state facilitates Internet voting use, while in others it inhibits it. The result of this system of divided jurisdiction is that Internet voting use in Canada resembles a patchwork, showing strong concentration in some areas and no penetration in other places. In addition to scattered geographic use, a variety of approaches to implementation are employed. In some cases online ballots are complementary to paper, while in others elections are now fully electronic. I-voting can be a two-step process requiring registration or a more direct one-step voting procedure. Likewise, Internet voting is offered in the advance portion of certain elections, whereas in others it is available for the full voting period. Finally, given that private companies administer the Internet voting portion of elections there is also a mixture of technology.**

Keywords—Internet voting; Canada; federalism; elections

I. INTRODUCTION

Canada possesses a multi-level governance structure[1], one where the various units often have effective control over their own electoral methods. This has resulted in a patchwork of Internet voting implementations within the country. Electoral Management Bodies (EMBs) with effective implementation power include Elections Canada (federal elections), provincial bodies like Elections Ontario, and offices of municipal government in hundreds of local areas. These agencies are subject to relevant legislation or regulations issued by federal and provincial parliaments, and by municipal councils. At times, this has resulted in instructions to implement trials of electronic voting methods, and in other instances specific prohibitions have been issued to prevent the use of such alternative voting methods. At other times, election agencies are left to make their own decisions, though they have usually sought approval from legislatures or councils before undertaking actual electoral trials.

This system of divided jurisdiction has resulted in the development of a substantial amount of Internet voting over the last decade. At the local level, nearly 2 million people have had opportunities to vote by Internet. These Internet elections have been concentrated in two provinces, Ontario and Nova Scotia. In Nova Scotia about one-third of communities have used Internet ballots, while in Ontario about one-quarter of the municipalities will do so in October 2014, comprising one-fifth of the provincial electorate. Supportively worded legislation in these provinces has enabled municipalities there to decide which voting methods to use. The Canadian constitution provides for overall provincial supervision (and ultimate control) of municipal governments. Municipalities are bound to carry out elections based on the framework established in *Municipal Elections Acts* written by the provinces. Providing a supportive legislative framework is in place, municipal governments have relative autonomy to implement experimental voting methods, and there is a substantial amount of local experimentation occurring.

This pattern is mirrored in another layer of Canadian governance, that of First Nations communities – bands of Aboriginal groups settled across the country. The overall system for governing First Nations elections is complex, but in many cases they are able to determine their own voting method. First Nations communities are now beginning to adopt Internet ballots in band elections and other types of votes such as referendums; to date they have been used in the provinces of Ontario and British Columbia.

Two further sets of Canadian institutions have made extensive use of Internet voting in their own internal operations. Many political parties at both the federal and provincial levels use the Internet to conduct leadership votes (local elections are nonpartisan), in keeping with the trend to choose their leaders by one person-one vote procedures involving the membership of the party [6]. Use of Internet voting for leadership votes is becoming so popular it is now the norm rather than the exception. Secondly, Canadian unions and professional/business associations have been steadily adopting Internet voting for their elections, with hundreds of these organizations making the switch to online ballots. Some Internet voting service providers report that these defined-group elections provide the bulk of their business [22].

II. INTERNET VOTING IN CANADIAN GOVERNMENTS

A. Federal Government

Federal elections in Canada are the responsibility of Elections Canada (EC). At present, EC is responsible for the administration of elections, regulating donations and campaign finances, and a variety of outreach and education initiatives. The bulk of its responsibilities surrounding the management of elections are laid out in the *Canada Elections Act* [4]. A bill recently passed in the House of Commons and now pending approval in the Senate, called the *Fair Elections Act*, made a number of changes to the role of the agency. Though Internet voting has not been trialed federally, current legislation requires that EC obtain approval from a parliamentary committee prior to moving forward. The *Fair Elections Act*, however, now requires that a provision for online ballot use be

[1] Federalism in Canada divides powers of government between national, sub-national and local levels, each which manage their own elections.

approved in both houses of the federal Parliament (including the unelected Senate), severely reducing the likelihood of Internet voting trials in federal elections.

EC has been researching Internet voting for some time and previously committed to carrying out a trial as part of its 2008-2013 Strategic Plan. Various operational considerations delayed this experiment, pushing the prospective trial back to 2015, and then again to 2019. Difficulties in relations between EC and the current Conservative government have made the agency more hesitant to undertake a trial, and it is now unclear when or if it will take place.

B. Provinces

Elections in Canada's ten provinces are administered by EMBs in each province. These are modelled on EC, led by a Chief Electoral Officer (CEO) accountable to the provincial legislature, and report to the legislative assembly either directly, through a committee, or in some cases via the Speaker of the House [15, 16, 18, 21, 23]. Various protocols surrounding the operation and management of provincial elections are outlined in pieces of legislation which typically include a primary *Elections Act*, an act pertaining to election finances, and various other regulations. In many cases EMBs have the authority to make recommendations to the provincial parliament.

No province currently has a legislative provision that would specifically permit the use of Internet voting in a general election; however, some have sections in their *Elections Act* that permit the CEO to test equipment in a by-election, which could allow an Internet voting trial. Elections Ontario, Elections Alberta, and Elections New Brunswick, for example, have such clauses in their *Elections Acts*. It is on this basis that Ontario plans to carry out an Internet voting trial in a future by-election. The introduction of these clauses has been part of a trend to support the modernization of electoral processes, perhaps triggered by declining voter turnout figures and needs to improve accessibility. Elections Alberta, for example, introduced new wording in 2008 to provide the opportunity for the CEO to test technology in hopes of modernizing the electoral process there [23]. Provinces without this section in their electoral legislation would need to have a provision added before proceeding with such a trial.

Most provincial EMBs have been researching the possibilities of Internet voting for about a decade, but trials have not occurred as early as originally expected. Elections Ontario, for example, was given a legislative mandate in 2010 to research 'network voting' and report back to the legislature, but this was pushed back due to financial considerations. Twelve interest groups were consulted in this process as well as the public through an online questionnaire. A report was issued in 2013, which suggested a test would not be as soon as expected [10]. Elections British Columbia recently issued a report that was the result of consultation with experts and some public input, whose findings recommend not proceeding with Internet voting at this time [9]. Elections Saskatchewan has taken a similar stance, issuing a public statement stating that online voting will not be implemented in the next general election (2015/2016). Smaller eastern provinces such as Prince Edward Island and New Brunswick have felt reluctant to be first to trial the technology and await the lead from a larger province. It seems Ontario has the greatest likelihood of proceeding with Internet voting in the near future. Because of online voting activity at the municipal level in Ontario, many of the province's electors have become familiar with this voting method.

Finally, we should note the lack of information and resource sharing among governments and between levels of government. There is some coordination at the top of EMB organizations, as the CEOs meet annually. Several provincial EMBs have come together in a national Electoral Voting Working Group facilitating some horizontal cooperation and information sharing regarding Internet voting, albeit the last meeting was held in 2012 [15]. At lower layers of the provincial bureaucracies, however, there is not the same institutionalized collaboration. Vertically, between national, sub-national, and local levels of government, there is not much dialogue either.[2] This lack of discourse has resulted in federal and provincial EMBs and local governments carrying out research and preparing reports in their respective silos. Even once a report is prepared, a series of internal approvals must often be sought before the document can be shared with other EMBs and governments, let alone the public. In the case of Ontario, for example, a Business Case for Internet voting was prepared, but the document was not available for sharing within the EMB community for six months, while approvals to circulate were obtained [21]. It is likely this lack of dialogue contributes to the patchwork of use and also implementation, explored below.

C. Municipalities

Municipal clerks have the responsibility to administer elections at the local level in Canada, and these local election officials have considerable independent authority to implement elections as they see fit.[3] This responsibility comes from the *Municipal Elections Act*. Clerks have the independent authority to determine how the election is administered, providing it complies with the requirements in the *Act*. However, some election aspects such as the voting method, the length of the advance voting period, and voting hours, must be approved by city councils before the administration can move forward [3]. In this sense local officials are bound not only by legislation written by the provinces, but also by the decisions of local councils when it comes to being able to implement Internet voting programmes.[4]

In their *Municipal Elections Acts,* at present, only the provinces of Ontario and Nova Scotia have clauses supporting the use of and/or experimentation with alternative voting

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[2] Saskatchewan started a program this year where the CEO of Elections Saskatchewan meets with six city clerks (five from larger municipalities and one from a more rural community) to discuss elections in the province. There is no standard format for how this will proceed, but it has provided a starting point for dialogue between the province and some municipalities [16].

[3] The one exception is the province of New Brunswick, which runs both provincial and municipal elections [15]. In some other areas (e.g. Prince Edward Island) the provincial EMB assists municipalities with the administration of elections [18].

[4] Municipalities are groups of communities that comprise a province. They range in population, population density, and land area and are responsible for the administration and delivery of local services.

methods. In British Columbia, municipalities including Vancouver and Nanaimo passed resolutions to enable the use of Internet voting, but were halted from moving forward when the province refused to support use of the voting method in local elections. The provincial election agency, Elections BC, assembled an independent electoral panel in September 2012 to advise on the possibility of using Internet voting for provincial and municipal elections. The panel eventually recommended to the provincial parliament that Internet voting not be implemented for local or provincial elections at this time [9]. In this way, the current structure of provinces controlling the legislation governing local Canadian elections has inhibited Internet voting as much as it has enabled it.

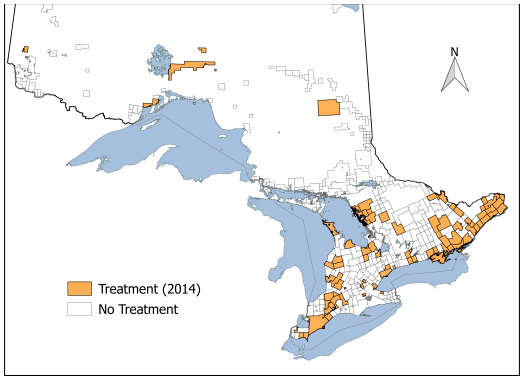
Municipalities in Alberta have been eager to pursue the use of Internet ballots in local elections. In 2012 the City of Edmonton, Alberta, conducted a mock online election (where voters cast a ballot for their favourite colour jellybean), and also conducted a public consultation through a public opinion survey and Citizens' Jury. These avenues of consultation indicated strong support for the use of Internet ballots in Edmonton's local elections, yet city council voted against the proposal. Seeing this, the provincial Ministry of Municipal Affairs declared a moratorium on Internet voting, thwarting the ability of communities still interested in its adoption, such as Grand Prairie, Wood Buffalo, and Strathcona County, from proceeding [8, 14]. In this case elected officials at both levels of government blocked the introduction of Internet voting.

In Ontario the province has put in place a legislative framework that supports the use of alternative voting methods and leaves the determination regarding types of ballots offered to the discretion of local government. A key example of cities adopting Internet voting has been the City of Markham, the first major Canadian municipality (over 100,000 electors) to use the technology. Officials in Markham supported Internet voting based on its perceived ability to enhance accessibility and convenience of the election process, improve voter turnout, focus on citizen-centered service, and to be recognized as a leader in e-government [19]. Another widely cited case involves the city of Peterborough, which has used Internet voting since 2006 [12]. Not all municipalities that consider the idea decide to implement it, however. Newmarket, Ontario is an example where the use of Internet voting was supported by city administration through research and planning and by the public through data collected from a household survey, but council voted not to allow its use in the 2014 elections. Part of this decision was due to concerns regarding security and privacy, but a lot of resistance developed from elected representatives who believed the option of Internet voting might encourage participation from electors who are not part of their voter base and typically abstain from elections (e.g. young people) [3].

In Ontario use of Internet voting in municipal elections has mushroomed. In 2003 twelve Ontario communities were the first to trial the technology. This number has increased with each round of elections growing to a potential of 98 communities out of 414 elections forthcoming in October 2014 representing about one fifth of the provincial electorate (see Fig. 1). In some cases, such as Markham, this has involved making online voting available in the advance voting period only, and included a two-step security procedure whereby electors were required to register to vote online to be able to access an Internet ballot [12]. In other situations, particularly elections in smaller municipalities (under 25,000 electors), Internet voting is offered during the entire election and does not require registration.[5] In these latter cases Internet voting is typically used in conjunction with telephone voting, making the entire election electronic. Larger municipalities (over 25,000 electors) have tended to stick with paper ballots and often only add Internet, excluding telephone. The result is a patchwork not only of adoption, but also Internet voting models.

In Nova Scotia, Internet voting use began in 2008 with four communities adopting the method, growing to fourteen in 2012. [6] Local officials have projected the number of communities offering online ballots will double in 2016, rising to 32 communities out of a potential 54 [24]. Much like Markham and other Ontario municipalities, motivations to introduce Internet voting have included becoming a leader in e-government, and improving access, convenience and electoral turnout [19]. In most Nova Scotia communities, with the exception of the provincial capital, Halifax, the Internet voting option has been kept open beyond the advance voting period to include election day. In a few cases, such as Digby Town, Truro, and Yarmouth, paper balloting on election day was done away with, and the entire election was carried out by Internet and telephone ballots

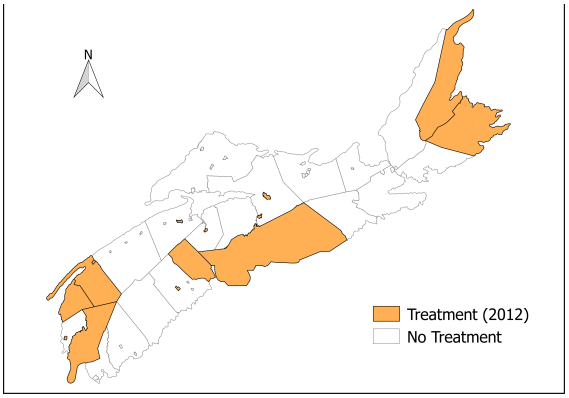
Though Internet voting has been adopted by some larger municipalities (Halifax, Markham) it is more likely to be used in smaller communities. It is especially favoured by communities that have large seasonal populations or have relied on voting by mail in the past. A majority of smaller communities use Internet voting for the full election, including election day. Fig. 1 and Fig. 2 depict Ontario and Nova Scotia municipalities that will have used Internet voting in binding local elections by October 2014, visually demonstrating the patchwork of adoption.



a. Sample Government of Ontario. Municipal Boundary - Lower and Single Tier. Ontario
b. Geospatial Data Exchange, Ministry of Natural Resources (OMNR), Peterborough, Ontario, Canada.

[5] It is important to note that 70 percent of Ontario municipalities have an electorate of 10,000 or less.

[6] Internet voting use was legally approved in sixteen Nova Scotia communities, however, only fourteen officially proceeded given that all seats in one area were acclaimed, and another determined they were unable to afford the cost at the last minute [11].



a. Sample of a Tab Government of Nova Scotia. Municipal Boundary File. GEONova, 2014.

D. First Nations

In the 617 First Nations communities in Canada, elections for Chief and band council can be governed in one of four ways (see Table 1). In 238 communities, the *Indian Act* (a federal piece of legislation) governs elections, with each participating First Nation community being responsible for carrying out their elections in accordance with the act. In April 2014, the *First Nations Elections Act* became law, providing another mechanism to govern elections in First Nations communities. This intent of this law was to create more modern electoral provisions than found in the *Indian Act:* some changes include longer terms in office, penalties for misconduct, and a common election day [13]. Communities can choose to opt-in to this legislation by passing a band council resolution, but it is presently unclear how many will do so.

A third approach to governing elections is the passage of Community or Custom Election Codes. These are election codes determined by the individual community with no interference from the federal government. Many of these codes are in fact derived from the *Indian Act*, but have been amended by communities [2]. An example of an amended provision includes the ability for off-reserve members to vote in band elections. The original wording of the *Indian Act* only allowed for First Nations members living on-reserve to cast a ballot and many communities wanted all members to be able to participate. This provision was challenged legally and the Supreme Court of Canada ruled that it violated the *Canadian Charter of Rights and Freedoms* and was unconstitutional [5]. As a consequence both on and off-reserve community members have been able to participate in Chief and council elections ever since. This change in the number, and nature of, eligible voters prompted the use of mail-in ballots in many communities. Internet voting is now appealing to many bands with large off-reserve populations that presently rely on vote by mail [2]. 2014 saw large increases in Canadian postal rates, and the beginning of a phase-out of home mail delivery, developments which will likely accelerate interest in Internet response alternatives.

Finally, 36 First Nations are considered self-governing. These communities develop their own laws to govern elections independent of any outside government and these codes are usually unique to each community based on their needs [13]. Typically, self-governing communities are distinguished by the fact that they have expanded law making authority [2].

The Indian Act and First Nations Elections Act are written to provide for paper ballots and vote by mail as methods. The ability to introduce online ballots would require a provision be added to these pieces of legislation. Communities with custom codes and those that are self-governing, however, may choose to introduce Internet voting by passing their own resolutions.

TABLE I. FRAMEWORKS FOR FIRST NATIONS ELECTIONS IN CANADA

Legislation	***# of Bands***
Indian Act and *Indian Band Election Regulations*	238
Custom and community election codes	343
Self-government agreements	36
First Nation Elections Act	*To be adopted, passed April 2014*

As the above table indicates, 379 bands could now use Internet voting methods. Overall tabulations of how many now do so, or are intending to do so, are not yet available. Some examples do exist, however. Several bands in the provinces of Ontario and British Columbia have used i-voting for various referendums and votes, although online ballots have yet to be used in a binding contest to elect band government. Nipissing First Nation, in Ontario, used Internet voting to complement paper and mail-in ballots to ratify their own constitution between November 2013 and January 2014 [7]. In British Columbia, a number of votes have taken place by Internet. Squamish First Nation used online ballots in March 2013 for a membership amendment referendum. One self-governing community in British Columbia, the Huu-ay-aht First Nation, has explicitly included a provision in their *Election Act* (Section 49(1)) to permit the use of electronic types of voting [17]. In September and April 2011 Talhtan First Nation used Internet ballots for votes regarding band member status and the introduction of power transmission lines. Talhtan will become the initial First Nation community in Canada to elect its band representatives by Internet in July 2014 [22].

Associations of First Nations are also beginning to make use of Internet ballots. The Union of Ontario Indians, an organization representing 39 First Nations communities, conducted a public consultation of all its members in early 2014 concerning a controversial piece of education legislation crafted by the federal government. Much like at the municipal level, the varied pieces of legislation governing elections provide the foundation for a relative patchwork of adoption. Providing communities have their own codes to govern elections, they are free to move forward with the implementation of digital technology with support from band council. Internet voting appeals to First Nations communities given the presence of sizable off-reserve populations (in many cases two thirds of band members live off-reserve). Even if Internet access and connectivity is an issue, online ballots may still be adopted to facilitate accessibility for those who live off the reserve lands [2].

III. Internet Voting and Other Actors

A. Political Parties & Unions

Federal and provincial political parties have been gravitating toward the method to facilitate their leadership votes. These organizations are free to use election methods as they see fit and have the power to introduce Internet voting providing it is permitted by their constitution. Internet voting is particularly attractive to parties to combine with, or replace,

TABLE II. Political Party Leadership Votes Using I-Voting

National (Canada)	Date	Overall Turnout	Methods	Use of Method
New Democratic Party	January 2003	54%	P, T, I	N/A
	March 2012	71%	P, I	
Liberal Party of Canada	April 2013	82.2%	I	82.2% I
Sub-national (province)				
Alberta Party	May 2011	58.7%	I, T	49.9% I 11.8% T
	September 2013	58.1%	I, T	50.7% I 7.4% T
Liberal Party of Alberta	September 2011	29.8%	I, T	21.2% I 8.6% T
Liberal Party of British Columbia	February 2011	62.4%	I, T	51.4% 11% T
British Columbia NDP	April 2011	71.3%	I, T	48% I 23.3% T
	September 2014	ACC	I, T	ACC
New Brunswick Liberal Party	October 2012	78.5%	I, T, M	38.8% I 15.1% T 24.5%M
Newfoundland & Labrador Liberal Party	November 2013	62.8%	I, T	30.5% I 32.3% T
Ontario NDP	March 2009	55%	I, T, M	25.4% I 4.6% T 25% M
Saskatchewan NDP	June 2009	72.4%	I, T, M	20.2% I 6.1% 46.1%M
	March 2013	77.9%	I, T, M	44.1% 7.6% T 48.3%M
TOTAL		**Avg**		**Avg i-vote**
12 parties, 8 provinces, 3 national votes	13 leadership votes	64%		41.8%

[a.] Please note "I" represents Internet voting, "T" represents telephone voting, "M" denotes vote by mail, "P" recognizes the use of paper ballots, "ACC" stands for acclaimed, and "N/A" not available.

voting by mail. To date a combination of vote by mail, Internet, and telephone ballots have been used to facilitate thirteen national and provincial leadership votes (see Table 2), with two additional e-vote elections expected in the coming months. Although first trialed in 2003, it has only been used regularly since 2009. Mostly center and left of center parties have been attracted to online voting, while comments from conservative organizations often focus on how the introduction of Internet voting may encourage participation from those who are not typically part of their membership base (e.g. young people). Two provincial conservative parties are considering Internet voting, however. The Progressive Conservatives in Prince Edward Island will likely use online ballots in their fall leadership election, and the Alberta Conservative Party is contemplating use for their upcoming leadership vote [1]. Overall, Internet voting appears to have helped improve turnout for these types of votes and seems to be the preferred method of participating for party members.

Unions representing blue and white collar workers have also embraced i-voting as a means of engaging members in elections and other votes. There are four levels of unions in Canada: international unions, national unions, regional unions, and local unions. I-voting is being explored by unions at all levels, but there is greatest interest at the local and regional levels. Online ballots have been used to date for union strike votes, ratification votes, collective bargaining, and union elections. In some cases local levels of unions are free to implement i-voting in elections, while in others they require approval from the national body [20].

B. Internet Voting Vendors

All the Canadian Internet elections held so far have been contracted to private companies, hired to carry out the electronic portion of the election. Six companies currently provide service in Canada: CanVote, Dominion Voting, Everyone Counts, Intelivote, Scytl, and Simply Voting. CanVote, Intelivote, and Simply Voting originated in Canada, while Dominion Voting and Everyone Counts are American, and Scytl is headquartered in Spain. In 2003 CanVote and an American company, Election Systems & Software, provided e-ballot service in Canada. Since then there has been an influx of companies providing a wide range of election services, including online poll training for workers, modules for candidates to track whether electors have voted (but not who they voted for) and target their get out the vote efforts. It is worrying to some that there are currently no minimum security standards in Canada for these elections, although some larger companies have been pushing for these regulations. In terms of Canadian market share Intelivote seems to lead the pack having hosted ten party leadership votes and securing 50 percent of municipal business for 2014. Scytl has carried out two leadership votes, Dominion Voting one, and each have about a quarter of the municipalities offering Internet voting subscribing to their services. The remaining companies hold less than five percent of municipal business.

IV. Conclusion

Canada's Internet voting deployment resembles a patchwork in a number of respects. First, most activity takes place at the local community level in two of the ten provinces, with a considerable amount in some other political organizations. The nature of divided jurisdiction and division of electoral powers has in some cases prevented the use of Internet voting, but in others the presence of supportive legislation and local autonomy has allowed its implementation. Second, the relative sovereignty of local councils to implement election changes, providing these adhere to the legislative framework written by the provinces, means that councils which have adopted Internet voting have taken a variety of approaches to implementation. This includes differences regarding the portion of the election in which i-voting is offered (e.g. advance poll or full election), and in the steps that

must be taken for an elector to cast an online ballot (e.g. whether online registration is required or not). In some cases paper ballots continue to be offered, while in others local elections have converted to being completely electronic. Limits in horizontal communication (within levels of government) and vertically (between them) has handicapped information sharing and hindered consistency in adoption and the type of model deployed.

In addition, there is a relative patchwork of technology employed given the different companies in the market and their e-voting solutions. While levels of government in other federal states considering or actively using Internet voting (such as the US and parts of Europe) have come together and implemented certification standards related to security, there is currently no such model in Canada. A lack of standards has caused concern regarding the level of security surrounding municipal elections, especially since governments with smaller budgets may be inclined to award contracts to vendors on the criterion of price. The result is a mixture of security standards regarding the Internet portion of the election.

In sum, there is a considerable amount of Internet voting in Canada. Various elements of the federal structure of authority and the decisions of local authorities have enabled Internet voting use to prosper in some areas, while in others development has been suspended. In one sense, a variety of 'policy laboratories' has allowed considerable innovation, but in another, the lack of consistency and standards provides cause for concern.

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