

Research Study

# CONSULTATION AND EVALUATION PRACTICES IN THE IMPLEMENTATION OF INTERNET VOTING IN CANADA AND EUROPE

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## NOTE TO THE READER

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This paper was prepared by the Strategic Knowledge Cluster Canada-Europe Transatlantic Dialogue for Elections Canada. Canada-Europe Transatlantic Dialogue is a network of experts on the European Union and European affairs funded by the Social Sciences and Humanities Research Council of Canada under its Strategic Knowledge Clusters program, with the goal of more effectively bringing research findings to stakeholders and the public. Authors of the report: Jon H. Pammett and Nicole Goodman. The observations and conclusions are those of the authors. The authors would like to thank all of those who took the time to be interviewed for the report, and hosted us while we visited various jurisdictions.



The use of Internet voting as an alternative method of voting in elections is increasing. To date the most frequent use of Internet ballots in binding elections has occurred in a number of European countries and in Canadian municipalities. The primary rationales for its introduction in these jurisdictions have included the possibility of positively impacting voter turnout, enhancing accessibility and convenience for electors, increasing citizen-centred service, stimulating greater youth involvement in elections, and taking the lead in e-government, whether in the local region, nationally, or internationally.

This report examines consultation and evaluation practices associated with the consideration or adoption of Internet voting systems in Canada and Europe. Our findings indicate that consultation efforts are modest and often take place after the decision to proceed with Internet voting has been made. In Europe, consultations have been relatively limited in scope, often occurring with specific groups, including parliamentary or government committees, political parties, specific groups that seek Internet voting for reasons of accessibility, and committees of experts. In Canada, consultation regarding Internet voting has been concentrated in discussions between government officials and city councillors. Efforts to connect with the public typically occur after an Internet voting program has been decided upon and focus mostly on informing citizens about available voting options. In some cases this is combined with outreach communication that seeks to impart the importance of electoral participation. Recent consultation efforts in the City of Edmonton and Province of British Columbia, however, are setting new standards in Canada about what consultation surrounding Internet voting might entail.

In both Europe and Canada, Internet voting is evaluated as part of overall voting operations. However, specific evaluations of Internet voting are slightly more refined in Europe given the presence of international agencies that participate in this component of electoral administration. The involvement of outside agencies results in the use of well-defined evaluation criteria. In cases where additional evaluations are commissioned, sets of evaluation criteria may be further expanded. Evaluation of Internet voting in Canada, by contrast, is not as well-established, and overall criteria have yet to be developed that would allow comparison between jurisdictions. Resource constraints, differential contextual factors, and undecided responsibility for evaluation all contribute to this variation. Some Canadian communities are now working toward establishing distinct evaluation criteria.

The report concludes with a set of recommendations relating to desirable principles for widespread public consultation when Internet voting is being considered, and for evaluation criteria to be employed when trials are held. It specifically recommends that Elections Canada take a leadership role in assembling and transmitting knowledge about Internet voting.

## Background

In recent years, the Internet has quickly penetrated our economic, social, and political way of life. While it took radio 38 years to reach 50 million users, the Internet amassed the same user base in a mere four years. By 2012, more than 2.3 billion people were using the Internet. In developed countries, about 70 percent of households are online (ITU 2012). This uptake has far-reaching consequences for the activities that are carried out online and the goods and services citizens expect to be able to access digitally. As an increasing number of services are made available online, governments and election agencies around the world have been exploring the possibility of Internet voting systems in hopes of enhancing the accessibility of the electoral process, improving rates of electoral participation, and moving toward a more citizen-centred service model. In the past decade a number of countries have embraced Internet voting in elections at various levels of government. The focus of these jurisdictions, and of those studying Internet voting development, however, has primarily centred on the outcomes of these attempts, operational details of the models, impact on voter turnout, and security components of the systems (for example, Alvarez and Hall 2004; Alvarez, Hall and Trechsel 2009; Bochsler 2010; Goodman, Pammatt and DeBardleben 2010; Jones and Simons 2012; Madise and Martens 2006; Trechsel and Vassil 2010). There has been little focus on consultations undertaken prior to the deployment of Internet voting systems and the evaluation protocols undertaken afterwards.

## Scope

The lack of attention to these topics in the literature is in part a reflection of the unsystematic way in which consultations have been undertaken in the various jurisdictions that have implemented Internet voting trials. Post-trial evaluations have been sporadic as well, particularly in the Canadian jurisdictions. This report focuses on consultation and evaluation procedures and processes used in some European and Canadian jurisdictions where Internet voting has been introduced or studied. Specifically, it examines the nature of public and group consultation that has been carried out in a variety of contexts in which Internet voting was established. Most jurisdictions have continued to use Internet voting methods after the initial trials. **However, this situation should not be regarded as an endorsement on the part of the authors of this report of the consultation or evaluation methods used, or of Internet voting itself.** The Internet voting trials and studies examined in this report took place in the European countries of Estonia, Norway, and Switzerland, and the Canadian provinces of Nova Scotia, Ontario, Alberta, and British Columbia.

Elections Canada's *Strategic Plan 2008–2013* focuses on three key objectives: Trust, Accessibility and Engagement. All three of these aims are intimately involved with any evaluation of Internet voting. Trust in the fairness, security and transparency of electoral administration needs to be maintained, if not enhanced, while voting is being undertaken over the Internet. Only if the voting method meets these tests can it be successful. Accessibility is an important goal of all remote voting operations, including those using the Internet. Finally, the degree to which Internet voting promotes engagement of the citizenry, particularly youth, is central to debates over its utility. Based on these considerations, this report pays particular attention to the three key dimensions of trust, accessibility and engagement as reasons for public consultation about the introduction of Internet voting trials, and as bases for the evaluation of those trials.



## Terminology

The focus of this report is on Internet voting, also referred to as I-voting, online voting, or online ballots for purposes of stylistic relief.<sup>1</sup> This denotes the casting of a secure ballot using a device that is connected to the Internet, which typically takes place in an uncontrolled environment (Carter and Bélanger 2012; E-voting.cc 2013). The term “electronic voting,” by contrast, may refer to casting a ballot via an electronic channel, which may or may not be using an Internet connection. In this report, “electronic voting” is used to reference a combination of Internet and telephone voting (in the Canadian cases) and in other instances to signify methods of casting electronic ballots that are not necessarily supported by an Internet connection. “E-voting” is also used as a short form for electronic voting.

## Methodology

Internet voting has been used in a number of European countries. For example, a number of the constituency trials in the United Kingdom employed this voting method between 2003 and 2007, often in combination with other experiments, such as widespread use of postal voting, voting by telephone, and by text message (Boon, Curtice and Martin 2007). France, too, employed Internet voting for the parliamentary elections of June 2012 for its citizens abroad (OSCE-ODIHR 2012c). The European illustrations in this report are drawn, however, primarily from three European countries – Estonia, Switzerland and Norway – which have seen the most extensive uses of Internet voting to date and where, in the first two cases, this procedure has been employed over a longer period of time. Additional interview material was obtained from these three countries in the fall of 2012, which allowed for specific questions to be asked about consultations. Evaluation frequently results in published reports, where the criteria employed may be readily ascertained, but interviews also included this topic.

Canada also has made extensive use of Internet voting in regular local elections. This first occurred a decade ago in twelve municipalities in the Province of Ontario. Since then there has been notable uptake by about 60 municipalities in the provinces of Ontario and Nova Scotia. This report closely examines the two largest municipalities to have used Internet voting, Halifax and Markham, Ontario. Halifax has offered Internet voting in two regular elections and one by-election and Markham has incorporated online ballots in three consecutive elections. Cape Breton Regional Municipality, the second-largest municipality in Nova Scotia, is also studied here, given the research and development that municipal officials carried out prior to implementation. As well, a smaller Nova Scotia community, the Town of Truro, is included because of some of the unique features of its model and application. Finally, the City of Edmonton and Province of British Columbia are examined based on their consideration of Internet voting and the different types of consultation processes they have employed to assess the appropriateness of online ballots for elections.

Some information for this report was gathered from secondary sources, including printed materials and reports. Primary research comes from personal interviews conducted by the authors during field trips to the locations in the fall of 2012.<sup>2</sup> These interviews were formally unstructured, but followed an overall script designed to address relevant aspects of consultation and evaluation procedures (see Appendix 1 for specific questions). Questions addressing consultations were designed to inquire about the nature of the consultations, which groups and individuals were consulted, the stage of the proceedings at which consultations occurred and whether official reports were made. Questions regarding evaluation examined the criteria and indicators that

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<sup>1</sup> This differentiation in terminology is reflected in the literature addressing Internet voting (see for example, Bélanger and Carter 2010; Carter and Bélanger 2012; Carter and Campbell 2012; Goodman, Pammett and DeBardeleben 2010; Stenerud and Bull 2012).

<sup>2</sup> A list of these interviews is included at the end of the bibliography.

were used, the degree of formality of the process and whether written reports were produced. All interviewees were made aware of the nature of the research prior to speaking. Those interviewed were selected based on their role in a particular organization, agency, or jurisdiction and their knowledge and experience with consultation and evaluation procedures related to Internet voting.

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## CONSULTATION AND EVALUATION IN CONTEXT

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Consultations come in many forms. Approaches to public consultation and tools used to engage citizens vary depending on the specific context, policy process or program development (Sheedy 2008). Widespread public consultations are a relatively open process, in which submissions are invited from any group or individual wishing to express a view. This could be organized in any number of ways, but the common denominator would be a process that does not select a particular kind of person, with a particular kind of view, as a participant in advance. A completely open process is the least restrictive method for selecting participants, whereby participants are a self-selected subset of the population (Fung 2006). Ideally such a process would attract people with set views, occasionally extreme views, as well as a number of people who have not yet made up their minds about the issue. Public consultation processes can produce sharply conflicting results, or even deadlock, but at other times the prevailing opinion can point in one direction. Deliberations can often point to recommendations that might be generally subscribed to, or at the limiting extreme, form a consensus. If public consultation processes can suggest a generally arrived at opinion or result, support will be generated for a policy choice that goes far beyond that of a select group of representatives (in a parliamentary committee, for example).

A different kind of support for a policy decision is that provided by a committee of experts, whether these experts are technically proficient in the field concerned, or more diverse. Consultations can therefore be deliberately structured with groups who have expert knowledge of a subject, or who are most likely to be interested in the subject, potentially because they might benefit from it.

Evaluations, by comparison, can be formal or informal. In more formal, written, evaluations, criteria are specified to consider whether, in this case, experiments with Internet voting have been “successful” and are worthy of being continued. Formal evaluations such as those conducted by the Office for Democratic Institutions and Human Rights of the Organization for Security and Co-operation in Europe, which are outlined later on with respect to the three European countries referenced in this report, have a number of established criteria, such as the conformity of Internet voting with legal or constitutional provisions in the country concerned, and the ways they have helped the country meet provisions of human rights statutes like those requiring equal access to the ballot for all citizens. There are also other evaluation criteria that make a formal or informal appearance on the scene and that are heavily dependent on the context.

The types of evaluations and consultations employed, or indeed whether they are employed at all, are closely related to the context in which Internet voting is being considered. From our investigations of the cases specified above, we have identified different kinds of contextual factors that are related to the consultation and evaluations methods used and help account for why jurisdictions may or may not have engaged in consultation or evaluation and why they made the particular choices they did. A summary of the primary rationales for the consideration of the adoption of Internet voting can be found in Table 1. These factors help put the following discussion into perspective, demonstrate commonalities, and highlight differences.

**Table 1: Primary Reasons for Considering or Adopting Internet Voting**

Jurisdiction name	Voting turnout	Leadership role in e-government	Accessibility	Convenience	Citizen-centred service	Greater youth involvement	Counting efficiency
Estonia	X	X	X				
Switzerland	X	X	X	X			
Norway			X			X	X
City of Edmonton		X	X	X	X		
City of Markham	X	X	X	X	X		
Halifax Regional Municipality	X		X				
Cape Breton Regional Municipality	X	X	X				
Town of Truro	X	X	X	X		X	

First, there are particular problems or situations for which Internet voting is suggested to provide some solutions. These include a drop in voting turnout, a desire to increase accessibility of the electoral process, and a wish to increase opportunities for external voting, especially for those not present in the country. A second group of factors is more broadly contextual, and includes factors that are raised in support of or opposition to Internet voting operations. This often involves a general extension of e-government operations, desires to stimulate technological development in a country or jurisdiction, concerns about the security of Internet voting, and concerns about voting secrecy where voting does not take place in the polling place. Finally, there are overall elements of context that are more general still, such as a general expectation among the population for more personal control over voting, similar to that which has occurred in other areas of life.

When some of these contextual considerations are more prominent, authorities may be more or less motivated to undertake public consultations. Concern with voting turnout, for example, might be widespread and lead authorities to mount public consultations. Desires to increase accessibility for persons with disabilities, or for groups of citizens residing outside the country, could motivate consultation with specific groups representing those affected. Concerns for security, because of the technical nature of online voting, may lead only to consultation with specific experts who understand the technical aspects of the situation. This section of the report considers several of the most important contextual factors and examines how they relate to the degree to which consultation and evaluation mechanisms have been used. Recommendations will later be made about the desirability of including them in a framework for evaluation.

## Concern Over Voting Turnout

Over the last two decades, many countries have experienced a decline in their levels of voting turnout. It is not the task of this current report to document this trend, but reference may be made to previous reports for Elections Canada (Pammett et al. 2001; Pammett and LeDuc 2003). The situation of low and/or declining turnout has been an important background factor to motivate examination of ways to improve access to the vote, on the premise that such structural changes may bring about changes in the participation situation. Thus,

examinations of the electoral system have occurred in several Canadian provinces, and different systems have been put to public referendums, on the premise that public interest in voting might be revived by electoral systems that are better at representing their choices than the current one.

The interest in Internet voting fits into the general context of concern over voting participation because it is perceived by many as a means of increasing voting turnout by making the electoral process more accessible for potential voters. In particular, there is an assumption that remote Internet voting will be especially appealing to young citizens given their heightened rates of use of digital and mobile technologies compared with other cohorts, and their frequent participation in social networking forums. Without reviewing the literature on the turnout decline in detail (reviews can be found in Blais and Loewen 2011; Milner 2010), we can note that the much lower voting rates among young people and their tendency to congregate on and use the Internet makes online voting especially tempting for governments and policy-makers. For many, it has seemed a natural connection to examine the possible contribution Internet voting could make to boost the voting rate of the young. The straightforward hypothesis suggests that if young people could vote using their personal computers or other mobile devices, more might do so. This possibility is further supported by the reasons young non-voters give for failing to vote, which includes reasons of being “too busy” or the reduced accessibility associated with being away at college or university and faced with registration procedures that are perceived to be arduous. Furthermore, given that many young persons typically live outside their home constituency while completing their post-secondary education, offering them a simple opportunity to cast a ballot as a voter in their home riding presumably addresses registration concerns.

Hopes to raise, or at least stabilize, voting turnout are always in the background of discussions of Internet voting. Sometimes they are overt goals, as in the Canadian municipalities of Cape Breton, Markham, Peterborough (Ontario), and Truro. This was also the case in Switzerland (Chevallier 2009), where the frequent scheduling of referendums has meant relatively low levels of turnout at any given voting occasion, and has further meant that elections are seen as less important and therefore attract fewer voters than they might otherwise. Switzerland had implemented a system that fostered widespread access to postal voting beginning in the 1990s, and officials concluded that this helped to increase turnout. This history of improved access to the ballot being perceived as a success in Switzerland has led authorities to consider Internet voting as a further extension.

We will see when we examine the European cases in more detail in the next section of this report that any hoped-for “turnout effect” has been elusive; in some cases it was minor and in others non-existent. Caution because of prior findings led Norwegian authorities to explicitly state that increased turnout was not an overt reason for undertaking the 2011 experiment that used Internet voting trials in municipal elections. Nevertheless, it seems fair to say that the hope that it might do so was still there, particularly among advocates for Internet voting. Canadian cases have experienced mixed results where turnout is concerned, though the option of Internet voting is often well used by electors. In instances where telephone voting was also offered, Internet ballots have been the preferred choice by far (Goodman in press).

Contrary to expectations, however, those jurisdictions that cited increasing voter turnout as a goal for the implementation of Internet voting did not undertake public consultations about this proposed plan. This may have been because it was simply assumed that Internet voting opportunities would produce more participation, or it may have been that turnout increases were a secondary goal. It is also possible that authorities did not foresee how consultations would provide useful input on how the policy could be implemented.

## **Desires to Improve Accessibility**

Persons with disabilities can have difficulty accessing polling stations because of mobility issues, vision problems, or other difficulties. Solutions involving postal ballots can be time consuming to arrange if special applications need to be made and materials delivered. Election officials have been conscious of this problem for a long time and have made efforts to improve accessibility of polling stations with ramps, and other modifications designed

to enhance the equality of the electoral process. A number of devices to assist persons with disabilities have been made available in poll locations, and there are provisions for people requiring assistance to have someone of their choice help them cast a vote. It is in this context of widespread public and official consciousness of the needs of persons with disabilities that Internet voting is discussed as a further means of improving accessibility of the vote.

Consultation with this goal in mind has primarily been with groups representing persons with disabilities. These groups have been active in demanding easier access to the vote, among other services, in most countries. Mobility and vision issues have been the most prominent disability areas where groups have been active. In Ontario, for example, the Accessibility for Ontarians with Disabilities Act Alliance (AODA Alliance) issued a letter to Elections Ontario in December 2012 expressing “serious concern” for the fact that the agency has not made better progress on trialling Internet and telephone voting given that “the Ontario Legislature directed Elections Ontario to study these alternative voting options over two and a half years ago” (AODA Alliance 2012).

In 2010, the Canadian Human Rights Tribunal heard a case on behalf of elector James Peter Hughes regarding his inability to vote because of accessibility problems in a 2008 federal by-election and subsequent regular general election. Part of the Tribunal’s ruling stipulated that Elections Canada should make efforts to improve facility accessibility for potential voters. Improvement of accessibility is a common theme in electoral discussions at all levels of government because it is necessary to ensure equality of the vote and maintain the integrity of the electoral process (*Hughes v. Election [sic] Canada*). As a result of increasing numbers of requests from citizens with disabilities and advocacy groups to move to electronic voting, many Canadian municipalities have made the decision to do so primarily to bolster efforts to accommodate persons who may encounter difficulties exercising their democratic right to vote. The communities of Cape Breton, Edmonton, Halifax, Markham, Truro, and the other cases featured in this report have expressed these sentiments.

## External Voting

The context of external voting is also relevant to the topic of accessibility. The impetus to develop I-voting systems in several countries has been stimulated by a need to provide improved electoral accessibility for citizens of that country living abroad than the traditional voting methods allow for. These traditional methods have generally required citizens abroad to request a paper ballot and return it through the mail at a point in advance of the election. This is a cumbersome procedure, even when election dates are known well in advance. In voting systems where choice of specific candidates is a requirement, the names of these candidates may not be known long in advance of the election. Where choice of candidates within a party is an option, external voters may not be able to exercise that option, and may be limited to choice of party. In either case, the full range of privileges of democratic electoral choice is not available to them, simply because they are not in the country at the time of the election.

*Voting from Abroad: The International IDEA Handbook*, published in 2007 by the International Institute for Democracy and Electoral Assistance, lists five methods of external voting (International IDEA 2007). These are voting in person (generally at embassies or consulates in the foreign countries), voting by proxy, voting by post, voting by fax transmission, and I-voting. Sometimes these methods are available in combination. At the time the handbook was published, a few countries were experimenting with I-voting systems and several others (i.e. Switzerland, France, Spain, Austria) had expressed an interest in it. Since then, interest in offering this method of external voting has increased.

In Estonia, the use of I-voting systems by foreign situated citizens has been limited by the necessity of having the Estonian national identity card and the required card reader attached to their personal computer to read it. Since Estonians residing abroad on a long-term or permanent basis had little need for this card, most had not acquired it. Furthermore, foreign countries where large numbers of Estonians lived lacked importers that would bring in the card readers for sale (Martens, October 15, 2012). For Estonians living in Canada, these problems have since been resolved.

In Switzerland, a group for overseas voters called the Organisation of the Swiss Abroad, headquartered in Bern, the federal capital, has been very active in demanding voting rights for their membership. Switzerland has since implemented I-voting for the Swiss living abroad, and its use has not been encumbered with the restrictions implemented for Internet voting in the territory of Switzerland itself.<sup>3</sup> In Canada, many municipalities have noted that citizens living abroad or travelling have made use of Internet voting to cast ballots. In the 2012 Halifax election, for example, questions from those residing afar even came in via Twitter (McKinnon, December 11, 2012).

Another group of people with a special concern about being away from their polling stations during election time is students. Elections, whether regularly scheduled (a growing trend in Canada) or held irregularly after a dissolution of the legislature, are frequently held at precisely the time when students are most likely to be away from home and least able to vote conveniently in them. This is most evident in the fall, which is the most popular season for Canadian federal elections (LeDuc and Pammett 2006). For university students attending school in locations other than their hometown, this presents difficulties in either voting at home or changing their registration to permit voting in their school location, if they are able.

In Nova Scotia, for example, recent legislation allows a student from another municipality who has lived in the community for at least one year and is enrolled in the second year or greater of a post-secondary school program to be added to the voters' list and cast a ballot in that community (White, October 15, 2012). Voting in school locations can be made arduous, however, by requirements for identification connecting students with their new address. For these reasons, attention to student voting demands has involved examination of the possibility of Internet voting. An Internet voting option can allow students to maintain their home registration address and cast a remote vote for the contest in that location (Goodman 2011).

## Extension of E-Government

E-government is a development that has occurred in most countries, but to varying degrees. It signifies the use of Internet technology to connect government with citizens and citizens with government. The government-to-citizen connections relate to such things as information about citizen entitlements to government services like pensions, employment insurance, and health care. As well, citizens increasingly have the option to file income tax returns electronically and get answers to questions about government policies. While the government-to-citizen component of the relationship is relatively well established, the citizen-to-government aspect of e-government has unrealized potential. The Internet technology of communication can theoretically allow citizen input into government as well as the reverse.

European governments that have piloted Internet voting all have extensive e-government operations. Estonia has coordinated these into the application of a national identity card, which can be inserted into a card reader attached to a personal computer and used to access all government departments where e-government services are offered. It gains access to items such as personalized tax services, and pension and health information. It can also be used to access banks and other personal information outside the government arena. Interaction between the public and government takes place on a regular basis over the Internet, and in this case the extension to voting seems both expected, and normal (Tallo, October 16, 2012). In Canada, this trend is also established, and some cities and townships have tried to use social media as a tool to inform and engage electors at election time (Goodman and Copeland 2011).

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<sup>3</sup> France has also implemented an Internet voting system for the French living abroad. A feature of the French election system calls for French citizens abroad to elect representatives to 11 special seats in the National Assembly.

If there is a system of e-government in place, electronic voting is often presented as a natural, almost organic development. In this way, it is seen as an extension of the ways in which citizens and government interact over the Internet. The establishment of one service after another is treated in such states as a normal and expected development. Furthermore, if citizens are accustomed to interacting with government electronically and are satisfied with doing so, they will expect further electronic interactions. In such circumstances, formal public consultations may be perceived as unnecessary. Furthermore, the results of such consultations might be demands that the process be implemented fully, or right away, whereas governments may want to proceed cautiously.

Furthermore, another set of attitudes accompanied the implementation of Internet voting trials and systems in the European countries under examination, notably a faith in technology and consequent high Internet penetration. Internet World Stats, a marketing organization, ranks Norway second in the world in Internet penetration (97.2 percent of the population), Switzerland 13th (84.2 percent) and Estonia 28th (77.5 percent) (Internet World Stats 2012). Cellphone use is virtually universal. (Norway uses cellphones to receive codes that verify voting choice, and Estonia is developing such a system.) Government policy in these countries supports Internet expansion and use. In such an atmosphere, arguments for extending voting methods to include the Internet are regarded by many as natural extensions of current practice.

Rates of Internet penetration in Canadian municipalities are fairly robust. Recent studies report that Canadians are the most frequent Internet users worldwide, spending an average of 45 hours per week using the Internet (Ladurantaye 2012). Statistics Canada data from 2009 confirm extensive use among Canadians, reporting an average usage rate of 80 percent among citizens, 96 percent of whom access the Internet from their homes. Worries about unequal access to fast connection speeds are also dwindling, as 94 percent of those from communities with more than 10,000 residents say they have a high-speed Internet connection. Rates of Internet use among Canadians are reportedly highest among British Columbians and Albertans (at 85 percent), followed by Ontario residents (at 81 percent) (Statistics Canada 2011). In Nova Scotia, where there has been significant uptake of Internet voting, about 76 percent of residents have Internet access, 74 percent from home (Statistics Canada 2010). Despite this slightly lower rate of penetration, the provincial government in Nova Scotia has made delivering high-speed Internet access a priority, declaring it “as essential as electricity and telephone service” on the government website (Government of Nova Scotia 2012).

## Stimulating Technological Development

For some European governments, such as those in Estonia and Switzerland, the development of Internet voting systems has played a part in stimulating the local science and technology industries. For Estonia, its position in Northern Europe in proximity to Finland, home to Nokia cellphone development, gave an impetus to the development of its own technology industry. Electronic voting in Estonia was a way to provide a challenge to homegrown experts (Martens, October 15, 2012); experts were assembled to consider the feasibility of e-voting, and presented with the challenge to develop it. Switzerland, as well, with its long tradition of developing precision instruments, was home to a pool of experts, who could be tapped to develop an Internet voting system as an outgrowth of the establishment of other e-government services. Norway, very advanced in terms of Internet penetration, was stimulated by the remoteness of some of its hinterland communities.

For the three European countries under examination, Internet voting has become something of a symbol, an internationally recognized manifestation of the advanced developed nature of the country. We may refer to this as a “branding strategy” whereby the country becomes known throughout the world for its advancements in technology generally. It creates an image of a country that is in touch with its own people, and with its experts. The eye-catching, and democratically important, Internet voting area becomes a leading edge of a country’s technological prominence generally. This is important, not only for development of indigenous entrepreneurs and business, but also for attracting foreign capital to invest in technology industries. Estonia in particular is known worldwide for the fact that it has the most extensive system of Internet voting in all elections. People

visit Estonia to study it, and national pride becomes involved. In the case of a perceived need to stimulate technological development, an assembly of experts would be a way of ascertaining the particular means of doing so. In such a case, the policy direction has been determined in advance, and the consultations are only about the means to accomplish it.

For Canadian municipalities, the advent of Internet voting has not necessarily been seen as a means of stimulating development (because they all contract out their I-voting operations), but for many it has been regarded as a means of becoming a leader in e-government at the municipal level. Being the first major Canadian municipality to introduce Internet voting was a motivator for the City of Markham. Recognition as a leader in e-government is continuing to influence the way Markham uses the Internet to reach out to electors, particularly through social media (Goodman and Copeland 2011). On the east coast, Halifax, Truro, and Cape Breton are examples of communities that hoped adopting Internet voting first in their respective areas would help demarcate their municipality as progressive, trendsetting, and focused on keeping pace with other services in society. Finally, after studying the landscape of Internet voting in Canada, the City of Edmonton identified Markham as a municipal leader it would like to emulate (Kamenova, September 9, 2012).

## Security Concerns

The discussion of Internet voting inevitably takes place in the context of extensive discussion regarding the security of the system. Our purpose here is not to debate the merits of these concerns, but rather to consider the place they play in the deliberations that precede decisions to undertake the enterprise or the evaluations that are made of it. The very fact that security issues – whether they relate to the ability of hostile forces to disrupt an election by “denial of service” or “hacking,” or a more insidious possibility, that changes may be inserted into the choices made by voters so that a false result may be obtained – are always in the background and have affected the ways in which the issue has been presented to the public.

Opponents of Internet voting (Jefferson et al. 2004; Jones and Simons 2012; Simons and Jones 2012) often adopt a stance that asserts that Internet voting cannot (and should not) be safely implemented because security can never be assured. Discussion of this position is not possible for those lacking technical knowledge, so the argument becomes a kind of “take it or leave it” opinion, in which lay audiences are forced to make a yes-no decision with no possibility of compromise. Trust in the operations of the system is attacked, and if the attack is accepted, the project is stopped or delayed indefinitely. Such attacks and commentary halted the US military from proceeding with its plans to use Internet voting in the 2004 election, and though efforts have been made to keep the project alive, a decision was made once again in the 2012 election to not use the system.

The way in which security concerns have been presented has had an impact on the willingness of jurisdictions considering Internet voting trials to involve the public in a deliberative process leading up to the decision. Processes of widespread public consultation will inevitably bring about submissions maintaining that security concerns trump all other factors and that the efforts should be stopped immediately. In this context, some jurisdictions are reluctant to use open public consultation processes. It might be thought that security matters represent threats to public trust that must be overcome if Internet voting is going to be implemented successfully over the long term. Therefore, one might reason, they should be thoroughly discussed and public agreement to proceed secured if such trust is going to be sustained. Our experience, however, is that this does not seem to prevail in most of the cases we have observed. When the topic of security is discussed in public forums, everyone expresses concerns relating to it. “Laypersons” (which includes most citizens) are presented with arguments about either the ability or inability of authorities to maintain the secure transmission of a ballot by Internet, but have no basis for judgment between such arguments. The larger the consultative group, the less likely it is to come to a consensus to accept or ignore security arguments, and the more likely it is to experience deadlock and frustration. Fear of such an outcome can prevent authorities utilizing such consultative forums.



## Vote Secrecy

Internet voting is a system that operates on a shared understanding between voters and administrators that the intended voter is the person who is casting the vote. When voting occurs in person, having the voter mark the ballot alone behind a screen and then place the completed ballot in the box imposes privacy. When votes are cast remotely, voters may be instructed to operate under the same regime of privacy, but there is no observed assurance that this is occurring. When postal ballots are filled out and mailed, and when Internet votes are cast, this process may not have occurred in secret.

Voting was not always done in secret, but this practice changed near the end of the 19th century and it has now become customary to do so. Lack of secrecy is considered to be a problem because there is the possibility coercion may take place during the casting of the vote, by mail or Internet. This is seen as more likely to occur when dominant family members exercise undue influence on other family voters, or when employers attempt to direct the votes of their employees. Some places are quite sensitive to this issue. For example, the two largest cities in Norway, Oslo and Drammen, originally applied to join the Norwegian pilot project in 2011, and those conducting the trials were keen to have them in order to see how the Internet voting system worked in large cities. Both cities later pulled out of participation, a development interpreted as being connected with the fact that these areas are the largest points of settlement of immigrant families in Norway.

Estonia has been sensitive to potential criticism that there may be some influence on Internet voters, and has established a procedure that goes at least some distance toward alleviating it. There is the possibility for an Internet voter to cast subsequent votes, which annul the previous ones. The reasoning for this approach is that if on one occasion a demand is made that a voter cast a ballot a certain way and be observed to do it, another ballot may be cast for the voter's true choice on a later occasion where the influence is not present. There is always the possibility, however, that those keen to influence votes will focus their coercion tactics near the end of the election, where because of time the chance of changing votes is reduced. To prevent this, a voter who has previously voted on the Internet may go to the polls on election day and cast a secret ballot there, which cancels all the Internet votes. Norway implemented a similar system in its 2011 Internet voting trials.

In Canada, voter secrecy has been imposed by reminding electors of the penalties for coercion or not voting in secret or by adopting regulations that provide for strict penalties. In the Town of Truro, for example, pamphlets were distributed to every household informing and educating electors about Internet voting and also reminding them of the importance of keeping their vote private and the consequences of not doing so. In Markham, penalties for breaches of voter secrecy were increased to fines of up to \$10,000 or a potential two years in jail, but to date no charges have been laid.

Secrecy concerns can suffer difficulties when placed in the arena of public discussion. It is easily understood that any form of remote voting cannot ensure the secrecy of the voting process, so discussion tends to be channelled into a couple of corollary issues. One is whether secrecy in a remote voting situation is really important, essentially a values question that is not resolvable. The second issue, and potentially more serious, is the (often implicit) connection of a lack of secrecy with immigrant groups, where patriarchal families supposedly exist, or where patron-client relationships mean that votes are determined by others. Both discussions are difficult to conduct openly, and are not easily resolvable, since anti-immigrant attitudes can be rationalized and expressed as points of principle, tainting the discussion for both those who are expressing them and those who are genuinely arguing a point of principle.

## Personal Empowerment

The computer has not only made it possible for people to do things online, but it has also changed the culture of individual interaction with institutions. This process has been implemented with public acceptance but has been spurred by the actions of those institutions themselves, through positive or negative inducements (lower prices

or “Internet bonuses” on the one hand, and reduced service hours or staffing on the other). One good example is Internet banking, not long ago an occasional activity for many, and now the norm. This situation began to change as a result of the bank machine, but evolved into use of the Internet for paying bills, checking account balances, transferring money, and accessing other services and information. Internet banking allows individuals to do without direct personal contact with the bank altogether, to do things themselves, at the time and in the way they want to. People have become personally empowered with regard to financial transactions, as these actions have become largely under their own control. Other major extensions of the empowering effect of the Internet involve shopping and travel planning.

These increases in personal empowerment have an electoral dimension, even outside the issue of the Internet. There has been a discernible change in the way in which voters interact with electoral institutions. This is most noticeable in the increased use of advance voting options, Internet or otherwise. According to Elections Canada, the number of voters at the advance polls rose in the 2011 federal election to over 2 million, from approximately 1.5 million in the previous two federal elections. Where postal ballots are easily available in order to vote in advance, they are very popular. In Switzerland, up to 95 percent of ballots are cast by mail, a figure that drops to around 80 percent if Internet voting is an option. Recent Canadian provincial elections support the conclusion that advance turnout is on the rise. Increases in advance turnout, however, do not always translate to a rise in overall voter participation. In Canadian municipalities that have offered Internet voting in advance polls, there has been a dramatic change in turnout. Before its introduction in the City of Markham, for example, advance turnout was limited to a couple of thousand votes. For the past two elections, around 10,000 voters have cast their ballots online in the advance portion of the election (Goodman in press). Advance turnout in Halifax has also noted a dramatic change. Whereas 27 percent of those who voted, voted online in the 2008 advance polls, in 2012, 59 percent of voters made use of the Internet option (McKinnon, December 11, 2012). Where available, Internet voting seems to promote voting in advance polls.

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## EUROPEAN CASES OF INTERNET VOTING

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The following two sections provide more detail about three European country cases and six Canadian municipal and provincial cases where Internet voting has been introduced, was contemplated, or is being studied. In the course of discussing these examples, we examine the nature of consultation and evaluation methods used in these jurisdictions.

### Estonia

Estonia has the most comprehensive system of Internet voting in Europe. It has used Internet voting since 2005 during two sets of local elections (2005, 2010), two sets of elections for the national parliament (2007, 2011) and the European Parliament elections of 2009. Internet voting is used only during the advance polling period, originally for three days and more recently for seven days. The use of the Internet voting option has grown substantially over the course of these five elections, from 1.9 percent of all votes cast in the local elections of 2005 to 24.3 percent of votes in the 2011 parliamentary election. There are other methods of advance voting in Estonia, but I-voting constitutes a majority, 56.4 percent, of all advance votes (Madise and Vinkel 2011). Estonians living abroad cast external votes from 105 countries in 2011.

Ivar Tallo, Director of the e-Governance Academy in Tallinn, and formerly a Member of Parliament, gave the background of the establishment of Internet voting in Estonia (Tallo, October 16, 2012). The idea surfaced around 2000 in parliamentary committee discussions on constitutional affairs. The idea originated with the Minister of Justice at the time, who was the leader of the Reform Party. The Minister ordered preliminary

reports on the feasibility and costs of an Internet voting option (Maaten, October 19, 2012). In his promotion of an Internet voting option, he was supported by the Social Democrats, of which both Tallo and his colleague, Liia Hänni, were members (Hänni, October 18, 2012). Not all parties were in favour; the Centre and People's Union parties were opposed at the time, and continue to be. (The People's Union party has since changed its name.)

The context in which Internet voting was originally considered in Estonia is important. Regular competitive elections were established only after the 1990 collapse of the Soviet Union, and 2000 marked a decade of use of electoral institutions. The Constitutional Committee of Parliament was reviewing a range of possible modifications to the electoral rules at that time, including the continuation of a personalized proportional representation electoral system, the electoral boundaries of the districts used to elect the members and the system of party financing. Advance voting was also being examined, and in this context the Internet voting idea was a relatively minor part of the total review (Tallo, October 16, 2012).

Voting turnout was an important factor in the consideration of I-voting in Estonia. "One of the declared aims of launching online voting in Estonia was to increase voter turnout, which perhaps could be described more realistically as broadening access possibilities and stopping the decrease in participation" (Madise and Vinkel 2011, 6). The Office for Democratic Institutions and Human Rights of the Organization for Security and Co-operation in Europe (OSCE-ODIHR) reiterated these points in its Election Assessment Mission Report for Estonia for 2007: "the main goals of introducing the Internet modality of electronic voting were to sustain and increase voter turnout, attract younger voters, and improve the convenience of voting" (OSCE-ODIHR 2007, 9).

The decision to proceed with Internet voting was made by the Estonian Parliament early in 2003, but the original goal of having the system implemented for the 2003 elections was postponed, and 2005 was made the target election instead. This had the added feature that the 2005 elections would be for the local level of government, and hence the system could be tried in a lower profile setting (Tallo, October 16, 2012). Project manager Tarvi Martens was chosen in 2003 to develop the project, and gathered a group of about 30 people with technical expertise to plan it (Martens, October 15, 2012). Consultations were limited to this group of experts, to the parliamentary committee and to the National Electoral Committee, which established a "supervisory board" to oversee the electronic voting development (Martens, March 26, 2013). As it happened, the 2003 parliamentary elections saw a large-scale turnover in membership, and an education process needed to begin again to renew the approval for the system to be implemented (Martens, October 15, 2012). The political parties were therefore the main entities consulted, and their primary concern was that they not be disadvantaged through the Internet voting system. Such an eventuality was feared if supporters of other parties were more likely to be Internet savvy. While, as already mentioned, there was some partisan opposition on this basis, the multiplicity of voting channels, both in advance polls and election day voting, meant that no one was required to use the Internet, and meant that the parliamentary majority was willing to try out the system, given some of the turnout and convenience goals.

The e-Governance Academy was established in 2002, and Tallo and Hänni developed a code of conduct to govern I-voting. All political parties were invited to a conference on this document, and most signed it (Tallo, October 16, 2012). The e-Governance Academy has continued to consult with the parties every year after that (Tallo, October 16, 2012). Parties are also invited to training courses before each election; however, few of them choose to participate (Maaten and Hall 2008).

Accessibility for those with disabilities and external voting were two additional criteria for implementation of I-voting. According to Martens, the main group of people with disabilities consulted was the blind. He mentioned that some early problems for the blind were resolved after consultation by certain technical adjustments (Martens, October 15, 2012). Other groups of people with disabilities were not mentioned. The provision of a better channel for external voting was a result of the continued development of I-voting. Regarding the Estonian community in Canada, only recently (through suggestions of Martens to the embassy in Canada after a 2010 visit to Ottawa) has an importer brought in the inexpensive card readers needed to vote by computer. These Canadian Estonians are mostly in Toronto. Voting would be one of the few uses of an identity

card for a citizen abroad, since most other services would not be relevant to someone living permanently outside Estonia. There appears to be some hope that the popularity of I-voting among Estonians abroad will in future allow some savings by curtailing other methods of external voting, but no changes have been made as yet. The national government is very sensitive to any potential charges that the Internet voting system is being required of anyone, or even privileged.

Given the goal of increased turnout, or at least stabilization of voter participation, it is no surprise that considerable attention has been given to the results, now that five Internet elections have been held in Estonia. The most extensive study addressing this was carried out by Trechsel and Vassil in 2010. This was before the 2011 parliamentary elections, but involved the four previous elections. Their conclusion was that “turnout in the 2009 local elections might have been up to 2.6 percent lower in the absence of Internet voting” (Trechsel and Vassil 2010, 63).

Formal published evaluation reports by OSCE-ODIHR were issued after the 2007 and 2011 parliamentary elections (OSCE-ODIHR 2007, 2011). These reports evaluated the elections in general, but a substantial portion of the review was devoted to the Internet aspect. The main criteria used were the legality, security, transparency and observability standards commonly used by this international organization. It should be noted that the OSCE-ODIHR is currently developing a handbook for the observation of Internet elections (Krimmer, October 26, 2012). The security aspect of the elections was also mentioned as an evaluation criterion by Madise and Vinkel (2011), as was the fact that the election was open for observers (Madise and Vinkel 2011). Related to this openness was the transparency of the operations for audit purposes (Madise and Vinkel 2011).

An evaluation criterion not specifically set out in reports, but still in the background, is cost. Given the Estonian long-term commitment to I-voting, the costs are seen as reasonable, much less than for a paper voting system (Martens, October 15, 2012). Since the I-voting operation was and is an add-on method, there is no overall saving for it, and in fact there is an extra cost. However, the more people use it, the more fixed costs are offset. Martens said that there would be no consideration to reducing regular polling stations to reduce costs, since this might be seen as disadvantaging those who wanted to go to a regular station and might have to travel a longer distance.

Satisfaction with Internet voting as measured by public opinion surveys is another evaluation criterion. Trechsel and Vassil (2010) demonstrate high levels of public support for I-voting. As might be expected, this support is much higher among I-voters themselves, but those who vote at the polling place are also favourable, as are non-voters. This pattern of support was found in all four of the elections studied (Trechsel and Vassil 2010).

In the 2011 OSCE-ODIHR evaluation report, a recommendation was made in the security area, regarding the verification of voters' electoral choice (rather than just the verification that a vote was received) so that an assurance can be given that their vote was not changed by some “malicious software” (OSCE-ODIHR 2011, 13). As a result of this recommendation, the constitutional affairs committee of Parliament set up an expert working group to develop recommendations to implement this verification system. A law was recently passed to do this, and also establishes a permanent e-voting committee, which reports to the National Electoral Committee and is charged with running the Internet voting part of the elections. Both committees are served by the Department of Elections, which actually conducts the regular elections (Martens, March 26, 2013). Martens is the chair of the e-voting committee, which has seven members. It is an operational group, composed of experts on topics such as security and equipment, and is charged with running the I-voting component of elections. The validation system will be tested in the next local elections, and probably also in the European Parliament ones in 2014. It will work in the following manner: “After making your I-vote, a code will be displayed on the computer screen. You take your mobile phone, start a verification app and take a picture of the code. Then the phone will connect to the voting server for data exchange and the choice will be displayed on the mobile phone screen” (Martens, March 26, 2013). For test purposes, only users of one phone operating system, Android, will be used (Martens, November 6, 2012).

The evaluation of the verification system will be performed by the e-voting committee, which will issue a report. It will monitor public contacts received through support and complaint lines, and assess the overall performance. If public opinion polls are held, some questions could be added about public understanding and trust in the system. If these complaints are not substantial and there is a lack of technical problems, those would be the evaluation mechanisms.

## Switzerland

Switzerland has embarked on Internet voting trials for almost a decade. Its main locus has been at the level of the canton, where Geneva, Zurich and Neuchâtel have conducted referendums, and some elections, since 2004 (with a few preliminary tests in 2003). In Geneva, the best documented of the three cantons, there have been 28 electoral opportunities to date where Internet voting has been permitted (Geneva 2012). Almost all of these have involved referendums, rather than election of representatives and parties. They have involved a varying selection of communes (municipal areas) within the cantons; at times these differed, but Geneva has been offering Internet voting in the same communes since 2008 (Chevallier, February 18, 2013). Electoral legislation originally limited the percentage of voters using the Internet to 20 percent of the citizens residing in a canton and 10 percent of the Swiss population as a whole; this limitation was implemented by restricting the number of communes eligible for Internet voting. As of 2012, the federal government raised the limit to 30 percent of the citizens in the same canton eligible to vote online (Geneva 2012), and Geneva has conducted three referendums in which citizens of all 45 communes within the canton were eligible to vote online. On these three occasions, in May and November 2011 and October 2012, approximately 240,000 citizens were eligible to vote online. Given the fact that the turnout in these Swiss referendums varied between 30 percent and 40 percent overall, the number of Internet voters was moderate. In the referendum with the highest overall turnout (40 percent in May 2011), 21.8 percent of all votes were cast online (Geneva 2012).

Switzerland has proceeded cautiously in expanding the use of Internet elections, as witnessed by the limits mentioned above of the numbers of citizens who are eligible. In October 2011, however, there was an Internet voting trial in the elections for the Swiss Federal Assembly, one of the few occasions where elections (not referendums) were the subject of the voting, and where the election took place in the whole of Switzerland. There was a limited trial in this election, whereby citizens of Switzerland living abroad and registered to vote in 4 of the 26 cantons were eligible to vote by Internet. These cantons, Aargau, Basel-Stadt, Graubünden and St. Gallen, used Internet voting systems developed for the three original trial cantons. Eligibility only for Swiss living abroad in those four locations meant that 22,000 residents were eligible to vote by Internet (OSCE-ODIHR 2012a). The percentage of those eligible who used the Internet to vote in that election was not immediately available.

The concentration of the federal electoral pilot of 2011 on the Swiss living abroad in four cantons exemplifies one of the major purposes of the Internet voting experiments in Switzerland: an effort to improve the circumstances for external voting. The Swiss Abroad is a formal interest group, headquartered in Bern, the federal capital. This group is of substantial importance (Serdült, November 6, 2012) and has put pressure on all Swiss governments to allow Internet voting for Swiss citizens residing outside the country. In order to vote, Swiss citizens permanently living abroad must register to receive their voting materials by mail. Traditionally, there have been problems in receiving voting materials early enough to complete and return the ballots, problems which may increase in future given the uncertain state of the world's postal services (Driza-Maurer et al. 2012). The Swiss Abroad have been successful in getting citizens living outside the country exempted from the percentage limits on the number of people in any canton who are eligible to vote online. The Swiss Abroad has become something of a hub for others interested in expanding Internet voting to work through (Serdült, November 6, 2012). The group worked collaboratively with a youth organization responsible for developing a youth parliament to organize petition drives in 2012 asking for the expansion of I-voting (Taglioni, November 7, 2012). The Swiss Abroad petition achieved 15,000 signatures and was presented to the Federal Council.

The fact that interest groups are important in making policy demands in the I-voting area is in keeping with the operations of Swiss democracy. Little original consultation is centrally organized, but commentary and demands are expected to emerge from civil society organizations. These are not regulated in terms of finance or advertising. They may create policy initiatives that are put to referendums, and referendums are also used for votes on government legislative measures. In 2009, Geneva passed a cantonal constitutional provision in a referendum with over 70 percent of the vote that authorized Internet voting.

Increased voting turnout was an important goal for the introduction of Internet voting in Switzerland. The introduction of the postal voting option, which occurred at various times in the Swiss cantons between 1978 and 2005, is estimated to have increased the voting rate by over four percentage points (Luechinger, Rosinger and Stutzer 2007). Postal voting has become so popular in Switzerland that the vast majority of votes are cast by this method. In the absence of an Internet option, up to 95 percent are cast by post, with the remaining 5 percent being dropped into the ballot box in the limited time that the polls are open. There were hopes that the introduction of an Internet voting option would accomplish a further increase in the voting rate (Chevallier, November 8, 2012).

An early analysis was very hopeful that the voting rate would increase in Geneva when Internet voting was introduced (Auer and Trechsel 2001) and later analyses continue to be optimistic (Gerlach and Gasser 2009). The Internet voting option is used, though at somewhat lower rates than when first available (Serdült, November 6, 2012). The elections in Geneva show that the Internet voting option generally constitutes between 15 and 20 percent of votes cast (Geneva 2012). In a statistical analysis of the November 27, 2011, cantonal votes, the communes within the city varied between 26 percent and 11 percent in their use of Internet ballots, with an average of 17.2 percent (Geneva 2012).

Similarly, the Internet voting option was seen as potentially appealing to young people, who vote at lower levels in Switzerland, as in most places where a turnout decline or low turnout rate is present. For example, in a tabulation of voting participation rates by age group, under-25-year-olds voted at less than half the rate of those in their sixties at four referendum opportunities in 2012. A study of the voting by means of the Internet in the referendum of November 27, 2011, however, showed that those in their twenties were only slightly below those in their thirties in the likelihood of using the Internet to vote. There is also some evidence that Internet voting particularly appeals to “occasional voters” (Chevallier 2009, 35) who also, of course, are more likely to be found in younger age groups.

Several other factors have led to the widespread acceptance of Internet voting in Switzerland, as exemplified by the 70 percent approval in the Geneva referendum mentioned above. The OSCE-ODIHR report in 2011 referred to the high trust that the remote voting system involving postal voting enjoys. There is also an underlying goal of improving Swiss performance in the whole information technology (IT) area, which given the democratic proclivities of the country seemed to fit together well with an I-voting operation. In particular, Geneva hopes to make itself an IT centre. Political science contributions to a feasibility study on this started as early as 1998 (Chevallier, November 8, 2012; see also Gerlach and Gasser 2009).

Switzerland has a formal consultation process between the federal and the cantonal governments. In fact, the Internet voting project (the “vote électronique”) is called by the Federal Chancellery “a joint project between the Confederation and the Cantons.” The co-operation is carried out by a working group of federal officials and those from the cantons. This working group is concerned with the exchange of best practices and with improving the voting experience for those with disabilities, particularly the blind, who may be better able to use an enhanced electronic voting computer screen than a paper postal ballot (Taglioni, November 7, 2012).

The federal-cantonal working group is following a vote électronique “roadmap” (Taglioni, November 7, 2012) that has five main areas of concentration: the establishment of a joint strategy between the confederation and the cantons, security, expansion, transparency and costs. One of the main areas of concern for this working group is security. A security subgroup has been established, which has instructions to develop a vote choice verification procedure that assures the I-voter that his or her choice has been correctly registered, rather than

just a vote received. The leader of the vote électronique project, Geo Taglioni, believes that a successful resolution of the verification question will be a key to any expansion of Internet voting in Switzerland. The Swiss Federal Council will make an analysis of the trial period (2006 to 2012) and outline the development of the project. The third report was to be published in July 2013.

Switzerland has had a relatively sporadic set of evaluations of the I-voting trials. The Federal Chancellery produced in 2006 a lengthy report on the Internet voting pilot projects. This report emphasized the costs of the three trials in Zurich (contracted to global information technology company Unisys), Neuchâtel (contracted to global electronic voting company ScytI) and Geneva (which runs its own system). It examined the legal basis, the security aspect and the uses of the three trial systems.

The OSCE-ODIHR Election Assessment Mission Report for 2011 looked at the legality, security, management and testing of the Internet voting in the four test cantons, and recommended that future evaluations be undertaken by an independent body (OSCE-ODIHR 2012a).

In Geneva, after the referendum authorizing Internet voting was passed in 2009, an implementation law followed in 2010 (Chevallier, November 8, 2012). It established a Central Electoral Commission, which in turn charged the longstanding Commission for the Evaluation of Public Policy with implementing an evaluation of the I-voting law that was to take place within three years. Professor Pascal Sciarini of the University of Geneva is in charge of the evaluation, indicating collaboration between the university sector and the government.

Sciarini's evaluation study is currently underway, and will be evaluating the Geneva I-voting operation on four criteria (Sciarini, November 7, 2012). These are, first, the impact on participation, particularly turnout. The second criterion is the effects on subgroups, particularly the young, but also "selective" (occasional) voters, as well as late deciders. There is always a rush at the end of the advance polling period with postal ballots to mail the ballot so that it arrives in time to be counted. With Internet voting, late deciders can wait a little longer, up to noon on Saturday, whereas the mail ballots need to be mailed by Thursday (Sciarini, November 7, 2012). The election itself takes place on Sunday morning. Additional evaluation criteria for Sciarini are the characteristics and attitudes of Internet voters, and finally a model of the determinants of online voting, which will investigate, among other things, whether the effects of the I-voting system are neutral among the political parties or the referendum sides.

## Norway

Norway is a relative latecomer to Internet voting trials, but even so it took seven years of planning. The Ministry of Local Government and Regional Development appointed a working committee in 2004, and received a report in 2006 (Nore et al., October 22, 2012). This committee, chaired by political scientist Bernt Aardal, was composed of a variety of experts including some political scientists, technical people and some from the local governments and the Ministry. Some were there for practical expertise and some because they were in a policy-making position. It encompassed a variety of positions of support and included some who were skeptical of the idea. This committee recommended a slow step-by-step approach, involving successive pilot projects, to deal with any technical problems and to build support for the reform (Aardal et al., October 23, 2012). Initially, the thinking was to have Internet voting take place at central locations, but it was then reasoned that any security breaches were actually less likely to be widespread if the voting took place from personal computers. That way, if viruses existed or security was breached, it was more likely to be limited to the individual computer, rather than a central server affecting many (Nore et al., October, 22, 2012).

A variety of goals precipitated the initial interest in Internet voting in Norway. Accessibility was a major focus (Nore et al., October 22, 2012). Turnout was in the background, but the general literature consensus that Internet voting did not provide a big boost to turnout mitigated against it being made a major goal. There was also an aspect of efficiency in vote counting as a goal. The Norwegian electoral system includes not only a choice of party (for a proportional representation system) but also a choice of candidates within the selected party list.

There are different systems for national, county and municipal elections. It is possible to vote for individual candidates in national elections, but in practice this has no effect at this level. At the county and municipal level, in contrast, personal votes partly determine which candidates are elected. In municipal elections, voters can also give personal votes to candidates from *other* party lists than the one they vote for. Although such a system (known as “panachage”) may be counted by hand with difficulty (as it is in Switzerland), in Norway the ballots are often scanned in and counted by computer. It was hoped that Internet voting would improve the speed and accuracy of the counting process (Nore et al., October 22, 2012).

When the Aardal committee released its report in 2006, it was distributed to stakeholders and anyone interested, and there was a public hearing on it (Nore et al., October 22, 2012). The Ministry emphasizes that this is the normal process, and that it is open to anyone who is interested to get a copy of the report and participate by sending a comment on it. In 2008, a budget was given to the Ministry of Local Government and Regional Development to start preparing a trial. In 2009, there were two reference groups established. The first was a group of political party representatives and the second was a professional group, with some repeat members from the original Aardal committee, and others added for a total of about 35. The intention of the Ministry was to coordinate plans with both groups; there were presentations (by prospective vendors), a website, and a blog. However, it is the opinion of the Ministry interviewees that this consultative process did not work very well in practice, as there was little feedback, a shortage of time once the trial was decided on for 2011 and a need for more staff to organize the consultations.

The announced plan to go ahead with a trial in the 2011 local elections (for municipal and county councils) was debated in the Norwegian Parliament in November 2010 in the context of a private member’s motion to stop the trial. Comments made by those in opposition to Internet voting mainly involved questions of its legality, the possible improper influence on voters where the process of voting from remote computers was not secret, the cost and the lack of evidence that it would improve voting turnout. Those speaking in favour mentioned the need for a trial to see whether there were positive effects, the expected improvement in accessibility, and the need to try to involve young people and keep up with the times (Parliament of Norway 2010).

The ten Norwegian municipalities that used the Internet in the 2011 trials are scattered around the country. After they were chosen from among those who applied, the Ministry further undertook a boat trip to consult with those along the coast. The local press was invited to meet the Ministry and local authorities at each stop to provide publicity about the upcoming event. The local municipalities were required to do a pre-pilot test of the system with some local question of interest on the ballot, but there were low turnouts to these (2–10 percent). Local politicians were also informed about the system, but there were no formal training courses (Nore et al., October 22, 2012).

Through a competitive bidding process, a contract for the evaluation of the Norwegian Internet voting trial was awarded to the Institute for Social Research (ISF) in Oslo. A component of the evaluation was also conducted by the International Foundation for Electoral Systems (IFES). The IFES evaluation was designed to ensure that the Internet voting met “internationally accepted norms and standards for democratic and electoral rights” (ISF 2010, 3). It looked at such things as the efficient counting and transparency of the results, and conducted focus groups with stakeholders and interviews with election administrators (IFES 2010).

The ISF report is available in detail only in Norwegian, but an English summary gives results of a public opinion survey undertaken at the time of the election. It concludes that the short-term effects of the trial on voting turnout are unclear and indemonstrable, but that “the people who voted online are very happy with Internet voting and report that it was easy to cast a ballot in this manner” (Ministry of Local Government and Regional Development 2012, 2). Interviews with participants with accessibility problems revealed that, though there were some operational issues, these voters with disabilities were extremely positive toward Internet voting. Trust in, and approval of, the system are reported as being very high, even among those who did not vote on the Internet. The survey also revealed that public opinion did not consider a lack of secrecy to be an important problem.



The OSCE-ODIHR also prepared an evaluation report on the Internet voting pilot project part of the Norwegian election of 2011. A number of implementation recommendations were made in this report but the general verdict was positive (OSCE-ODIHR 2012b). The report dealt with the testing and set-up of the system, the production of the polling cards, the voting, the counting, and the disposal of the data; recommendations to clarify these procedures were offered in the report. Several aspects of the security of Internet voting were also examined, and recommendations were offered in the report. It should be noted that a number of features of the Estonian Internet voting system were adopted here, including the repeated possibility to vote on the Internet, with each subsequent vote cancelling out the previous one. Also, an election day paper ballot would cancel any previous Internet votes. A major innovation in Norway was the use of a “return code” whereby the voter received a cellphone message giving a code that could be matched with the voter’s personalized voting card to verify the party the voter had voted for. The operational success of these return codes has motivated demands in Estonia and Switzerland, previously mentioned, for the development of similar verification systems in those countries. The OSCE-ODIHR report recommended that a review of the return-code system be carried out. The IFES evaluation of the compliance of the Norwegian electronic voting in 2011 concluded that it was compliant with most of the 112 recommendations for the electronic voting standards (many of them technical) issued in 2004 (Segaard, Baldersheim and Saglie 2013).

There is still a division of opinion in Norway about the Internet voting method. A recent paper points out that the cleavage lines behind this difference of opinion are not necessarily predictable. The authors posit that this split falls along a centre-periphery dimension, with parts of the “national elite” in the capital and larger cities very doubtful and concerned about secrecy, and those on the ground in the municipalities actually undertaking the Internet voting extremely positive toward it (Baldersheim, Saglie and Segaard 2012). The municipalities felt this was a positive element in their image, and gave them the reputation of being more technologically advanced. The generally positive reception of the 2011 local election trials in Norway has resulted in the government announcing that further trials will be held in September 2013 during the national parliamentary election. The same locations will be involved, and two new ones added (*The Norway Post* 2012).

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## CANADIAN CASES OF INTERNET VOTING

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### City of Markham

The City of Markham first made the decision to introduce Internet voting more than a decade ago. City officials were concerned about turnout, but a more pressing rationale was that they wanted to move toward a service model that was citizen-centered and make the election process more accessible and convenient for electors. The city was also able to negotiate a special rate from Election Systems & Software (ES&S) to become first major municipality in Canada to trial Internet voting. In this way, Markham broke ground as a local leader in Internet voting and e-government. Since 2003, Markham has continued to offer Internet voting as an alternative voting method in the advance poll portion of three consecutive local elections. Furthermore, it has managed to develop the most comprehensive approach to evaluation of all the Canadian jurisdictions. Markham’s approach to consultation, however, has been much like that of other communities in the sense that election stakeholders have been mostly informed of Internet voting plans after the fact, once details were approved by elected members and solidified by municipal administration, and no open consultation was carried out (Froman, November 12, 2012; Huycke, December 21, 2012).

Markham conducted considerable research prior to proceeding with Internet voting, which included speaking with other jurisdictions and hiring a Ryerson University professor to write a risk analysis report that explored the increased risk associated with using an online voting system compared with other methods of voting and that

urged consultations with Internet voting vendors and information technology companies. Markham has continued to stay abreast of Internet voting developments; its recognition as a municipal leader in I-voting has attracted many requests for discussions with other jurisdictions, which has resulted in frequent consultations. In addition, travelling to speak and conversing with officials from other areas about Internet voting has helped to increase Markham's knowledge base and keep city officials informed of any Internet voting trends or emergent developments elsewhere. Markham has also extensively consulted with Toronto-based digital strategy firm Delvinia regarding education and outreach campaigns related to Internet voting before each election. In 2010, this involved crafting a multi-channel social media strategy using Facebook, Twitter, YouTube, and Flickr to inform and engage the public (Goodman and Copeland 2011). The public was not consulted about aspects of the Internet voting model, but they were able to ask questions and communicate with city officials through these channels. Greater stakeholder engagement in Markham has been incorporated into the evaluation process.

Markham partnered with Delvinia in 2003, 2006, and 2010 to collect survey data from voters to learn about and better understand the motivations to use Internet voting and the impacts of doing so. Survey questions were developed with the help of expert market researchers and, in 2010, with the help of academics. Markham also played an important role in question selection. In particular, city officials ensured that key items probing feedback regarding accessibility were included. In all election years an exit-poll survey was made available to online voters once they had successfully cast their ballots. Participation was optional and questions probed information such as satisfaction with Internet voting, use of the Internet and knowledge of computers, and likelihood of future use locally and at other levels of government. In 2010, a survey of candidates was added and distributed to all candidates. Completion was voluntary. Questions focused on candidate satisfaction with Internet voting as an alternative voting method, the effects of online voting on the campaign process, and other benefits or drawbacks they encountered as a consequence of Internet voting. The surveys developed through this partnership have given Markham the benefit of examining data on the effects of Internet voting over time.

Delvinia compiled and issued reports analyzing the survey data after all three election cycles. Markham officials were given access to these to help with evaluation and in understanding the effects of online ballots on voters and candidates. Other data analysis, including demographic analysis, and any additional surveys or research conducted by Delvinia was also passed on to the city as part of their collaborative relationship. Markham also issued its own survey to candidates in 2006 and 2010 to assess what worked and what did not with respect to the election, including Internet voting (Huycke, December 21, 2012).

In terms of documents and reports, the Markham election team conducts "lessons learned" sessions throughout the election process. This includes one session after the election and some informal meetings throughout to debrief key election officials on any important issues. A final report is prepared about this debrief and presented to council after the election. In addition, a "lessons learned and feedback document" is saved on a shared staff drive so that it is accessible to everyone. Any important information or details about how the election proceeded can be recorded here and is reviewed afterward (Huycke, December 21, 2012).

Finally, two types of audits were carried out for Internet voting in Markham. Prior to the 2010 election, a security company, under a confidentiality agreement, conducted an audit of the Internet voting vendor's program code. Although this review did not identify any weaknesses, a few enhancements were made to the Markham model as a result. One notable change, made as a result of evaluations of Internet voting operations in previous elections, was to add date of birth (DOB) as a security credential for online voting registration. Previously only a personal identification number and the creation of a personal security question had been required. During the Internet voting period, and afterward, an IT staff member who was independent of the clerk's department conducted an overall process audit. The auditor was provided with PIN codes to check that the system was performing as expected. Since Markham used the same vendor as the Cape Breton Regional Municipality did in its most recent election, the process to close down the online polls is similar and described in more detail later on (Huycke, December 21, 2012). Markham has plans to use Internet voting once again in its 2014 election.

## Halifax Regional Municipality

With an electorate of about 310,000, the Halifax Regional Municipality (HRM) is the largest municipality in Canada to have offered Internet voting to electors in a binding election. HRM first offered Internet and telephone voting options in its 2008 regular municipal election and in a 2009 by-election. These alternative methods were again used in the regular election of 2012 and have now become an accepted means of participating in the municipality's electoral process. The primary reason for using electronic ballots in HRM was to enhance the accessibility of the electoral process and to establish the viability of electronic voting (Goodman, Pammett and DeBardeleben 2010).

Prior to the introduction of Internet voting, HRM conducted extensive research and consulted with other jurisdictions that had piloted e-voting. Despite requests, however, municipal officials did not provide specific details about the approaches used for consultation and evaluation prior to 2012. HRM continues to monitor Internet voting developments and practice. Much like Markham, HRM is recognized as a model case given its size, the fact that it trialled Internet voting early and its experimentation with different Internet voting techniques (i.e. offering I-voting through the advance period up until and on election day in the 2009 by-election). As a consequence, HRM frequently consults with other jurisdictions. Most recently, city administrators observed the City of Edmonton's Citizens' Jury on Internet Voting and played a key role as a presenter in a gathering of all 54 Nova Scotia municipalities organized by the provincial department Service Nova Scotia and Municipal Relations (SNSMR) along with the Association of Municipal Administrators, Nova Scotia (AMANS) (White, December 17, 2012).

HRM Council ultimately makes the decision as to whether Internet voting is offered as a voting channel. Formal consultations with election stakeholders were not conducted prior to the 2012 election, but forums for feedback existed and stakeholders were provided with information about Internet voting through the pre-election process. Information sessions for candidates were held in the spring as well as a session for city councillors wherein attendees were able to ask questions or offer comments. The majority of questions from candidates centred on the campaign and how Internet voting impacted the traditional process. More generally, HRM received some questions about security and anonymity (McKinnon, December 11, 2012). Discussions were also conducted with HRM's accessibility committee to discuss plans for Internet voting and prospective poll locations for paper balloting.

As the 2012 election neared, social media, particularly Twitter, was used to reach out to electors, seeking to inform and engage them. This method was predominantly used to remind electors of the electronic voting options, to indicate where physical poll locations were, and to clarify the documentation required for registration. However, some electors asked questions back, even those located overseas (McKinnon, December 11, 2012). Overall, there was not a perceived need on the part of HRM staff to reach out to the public or other stakeholders, probing opinions or thoughts, since Internet voting has been offered twice previously and electors and other relevant parties were assumed to be aware of the option (McKinnon, December 11, 2012).

Other activities were undertaken during the pre-election process that could be considered consultations, notably discussions with technical experts. HRM hired a security company to conduct tests and try to expose vulnerabilities in the Internet voting system as they developed the proof of concept. Aside from work with the third party and technical experts from the vendor, development of the system and consultation with IT personnel was conducted internally (McKinnon, December 11, 2012). Council was also consulted prior to the election. A report was presented to Council in September 2011, which detailed the Internet voting options, the costs associated with the plan, and any legislative amendments that would be necessary to proceed. The only major change discussed was the extension of the advance voting period (McKinnon, December 11, 2012).

In terms of evaluation, the primary rationale for offering Internet voting was to improve accessibility, but assessing the effectiveness of this goal proved difficult due to measurement problems. Turnout, by comparison, is much simpler to assess, although a positive effect on voter participation was not necessarily a central goal. In

the 2008 HRM election 10 percent of overall turnout came from ballots cast electronically during the advance-voting period (the time during which e-voting was offered). During the longer e-voting period offered in 2012 (sixteen days instead of four), 22 percent of all ballots cast were cast in advance electronically. Another 15 percent chose to vote via paper ballot on election day. While turnout remained 37 percent overall in both elections, the proportion of voters using e-voting increased substantially. Although not a direct goal, the impact on electoral participation is an important one and certainly positive effects are a key consideration in the election review process for HRM officials.

HRM's election post-mortem involved city election staff, internal IT, communications, and marketing groups. Meetings also took place with an accessibility committee to provide feedback on all aspects of the election – those related to Internet voting and traditional, paper ballot proceedings. HRM also received a good deal of public opinion through unsolicited e-mails and phone calls. Municipal officials did not reach out to citizens for feedback this time, but would consider doing so in the future.

As the 2012 evaluation was proceeding, there was a judicial recount. An initial recount was performed by HRM staff at the request of the second-place candidate in district 3, who challenged the results in that riding given that there was a difference of only six votes (a fraction of a percent) between himself and the winner. HRM returning officer, Cathy Mellett, indicated that the recount revealed a mistake had been made at one poll station wherein the results had been called in twice. The recount declared the second-place candidate as the rightful winner with a 68-vote lead. Shortly after, an application was put forward for an official judicial recount and a Supreme Court of Nova Scotia judge supported the request (CBC News 2012).

A procedure for recount of the Internet voting component was established in 2008 with the adoption of the HRM e-voting bylaw (HRM 2008). The recount process (protocol) permits the Returning Officer to re-run the electronic results report and therefore effectively recount all of the electronic votes in this way. The judicial recount confirmed that the second-place finisher was actually the rightful winner of the race. The results of the e-vote tally did not differ in the recount (McKinnon, December 11, 2012). A report was prepared on the 2012 recount in HRM district 3, which explained the circumstances for the challenge and provided details of the recount procedure. A Specified Auditing Procedures report was compiled by Ernst & Young. This report is a pre-defined list of procedures to verify that the system maintains the integrity of the e-voting electoral process. In this case the vendor also provided HRM with a formal report that included information regarding the number of electors who voted, how the votes flowed in, and how many votes were cast online compared with those cast by telephone (Crutchlow, November 29, 2012). Finally, a report was prepared for HRM council and Service Nova Scotia and Municipal Relations by HRM staff. An oral debrief was also delivered at the post-election meeting of Nova Scotia municipalities, organized by SNSMR and AMANS (McKinnon, July 15, 2013).

With regard to the evaluation of security, HRM chose an electoral board to help oversee the security process in addition to an independent auditor. This board consisted of two auditors from Ernst & Young, an election officer, the assistant returning officer, and the returning officer. Each member of the electoral board was given a piece of a master key that been broken into smaller pieces and saved on smart cards. These cards were kept separate to ensure no overhead administrator could tamper with the election and these cards were put together or "reconstituted" after the election to tally the results. In addition to the auditor's role as a key holder, and to compile an official report, the auditor in HRM's 2012 Internet voting model actually began work long before the election, participating in the development of the e-voting proof of concept (Crutchlow, November 29, 2012).

Finally, in terms of cost assessment, keeping within budget is a useful means of evaluating expenditures. HRM election coordinator, Lori McKinnon, was pleased, commenting on the evaluation of the financial component of the election by noting that with the incorporation of Internet voting, HRM "ran a pretty lean election this time around" (McKinnon, December 11, 2012). The cost of the Internet and telephone portion of the election was \$450,000 in 2012, the same as in 2008. This amount included the Internet and telephone voting contract, external auditor, and technology consulting and equipment. The total cost of the election remained a constant

\$1.6 million in 2008 and 2012. Since there were more eligible electors in 2012, the cost of carrying out the election on a per-voter basis decreased in 2012 (McKinnon, May 22, 2013).

## Cape Breton Regional Municipality

Cape Breton Regional Municipality (CBRM) is the second-largest municipality in Nova Scotia, with about 83,000 electors. CBRM offered remote Internet and telephone voting for the first time in October 2012 as part of its advance poll period, which took place from October 9 to 16. On election day, electors were able to vote only by paper ballot at a polling location. CBRM made the decision to introduce Internet voting primarily because officials were increasingly concerned with falling levels of voter turnout. While national averages of voter turnout for Canadian cities and towns range between 25 and 30 percent, turnout in the CBRM area was upwards of 70 percent in the 1990s but dropped to 50 percent in the 2008 election (White, October 15, 2012). Since levels of turnout have traditionally been robust in this community, the trend of decline was especially worrisome for the municipality. Having followed HRM's experience closely, and observing the positive impact on turnout in other communities such as Markham, council added the alternative voting method in advance polls (White, October 15, 2012).

CBRM engaged in a couple of different types of consultations prior to implementing online voting. First, it consulted heavily with other Canadian jurisdictions that had successfully implemented Internet voting programs, notably HRM and Markham. Officials from the CBRM election office also sat on the steering committee for HRM to participate in discussions regarding Internet voting (White, October 15, 2012). A great deal of discussion was also conducted with different information technology companies and Internet voting vendors. This was done to learn about the different systems and processes available, to help determine which approach would be most beneficial for the CBRM community. Research with both sectors had gone on for some time.

CBRM had considered implementing electronic voting for the 2008 election, but had refrained because of a proposed electronic plebiscite that would ask residents as a pilot test for e-voting whether they wanted a reduced council. Officials did not want the public associating the advent of online voting with the controversial topic of downsizing the council and so delayed the introduction until 2012. Ironically, the proposed e-vote plebiscite never went ahead (White, October 15, 2012).

CBRM has established no systematic process of election evaluation, but the incorporation of Internet voting and the additional elements and issues that come along with it has led to staff rethinking that they may need to create one. Generally, all election issues and results are well documented and an official meeting is held to discuss these items with key staff members. Poll workers are also surveyed for their input and feedback from their experiences. In addition, discussions take place with senior citizens' clubs, candidates, and more informally with the media. All of this information is placed in a file, where staff members can add information or notes, and this is kept until preparation for the following election begins. Assessing the response of the electronic voting call centre and call centre staff was something new for 2012, specific to the introduction of electronic voting (Campbell, October 15, 2012; White, October 15, 2012).

Also unique to Internet voting is the audit or evaluation process that takes place once the electronic ballot box closes. Different vendors may suggest that jurisdictions follow alternate processes, but the main companies offering service in Canada require the election office or government to hire an independent auditor. CBRM hired Debbie Rudderham, Chief Information Officer for Cape Breton University, to carry out the audit and provide an independent report commenting on the security of the system. Evaluation for the auditor starts before the election begins. Rudderham was required to test the system before the election commenced, during the voting period, and once it closed to ensure electors were able to cast ballots when the electronic polls were open, but unable to vote when the online voting period had ended. The system used in CBRM provided by Intelivote included an "auditor module," which allowed the auditor to view the audit votes and see whether they had worked or not (Smith, October 16, 2012).

Once the electronic polls were officially closed, Rudderham, the auditor, waited for any voters who accessed the system prior to closing time to complete their selections, cast their ballots, and officially exit the online voting portal. She then printed a summary of the votes and placed the document in a sealed envelope, which was signed by all observing parties. A separate copy of the vote count report was put on an encrypted flash drive that was password protected. Municipal Clerk and Returning Officer Bernie White kept the file, which was locked in a safe, while the Assistant Municipal Clerk, Deborah Campbell, kept the password but was unable to access the file. This process ensured that the e-voting results were kept secret until it was time to tally the ballots after the polls closed on election day. In addition to the vote count report, which is used to calculate the results on election night, Rudderham prepared a formal report outlining the safety, security, reliability, and accessibility of the electronic voting system (Smith, October 16, 2012; White, October 15, 2012).

In terms of other documents, a brief Report of the Returning Officer was prepared. In addition, summaries of public feedback – usually the best and worst experiences with the voting process – were kept and summarized. An oral report was also compiled and delivered by CBRM Returning Officer Bernie White to the same election post-mortem that Halifax participated in, which was sponsored by SNSMR and AMANS and included all 54 municipalities in Nova Scotia. Internet voting and its effects was one of the main topics of focus addressed at the November 23, 2012, session. Election officials had a particular interest and focus on reviewing stories from across the province from the fifteen Nova Scotia communities that used e-voting technology in the October 2012 municipal elections. Comments regarding the implementation of the new technology were mostly positive. Official minutes were taken, creating a historical record (White, December 17, 2012).

## Town of Truro

In the 2012 local elections, the Town of Truro offered remote Internet and telephone voting to its 10,000 electors for a ten-day period (from October 11 to 20). Internet voting was the only option available to electors, and paper ballots were no longer used. The Town of Truro was drawn to electronic voting because officials saw an opportunity to showcase themselves as progressive and technological leader in the area. Since four other Nova Scotia municipalities had used Internet voting in the previous (2008) election, Truro officials waited to observe the experiences in those communities before deciding to try it themselves. Election organizers in Truro wanted the town to be one of the first municipalities in their area to offer Internet and telephone voting in place of paper ballots until and on election day, and to make their mark on Internet voting development in Canada. Aside from the attraction of being seen as a technological leader, the primary motivation for pursuing electronic voting was to increase voter turnout. Improving convenience and accessibility for electors as well as reaching the younger demographic were also considerations that led to its adoption.

Elections officials consulted with other municipalities that had trialled Internet voting prior to adopting it. In particular, they consulted extensively with the Town of Cobourg, Ontario, because the two communities are approximately the same size and Cobourg had also offered I-voting only in the 2010 municipal elections (Pearson, October 17, 2012). The two towns communicated by conference calls throughout the e-voting development process. This included a call in the early stages while preparing the e-vote proposal for council, another as the public education campaign was formulated and another call before the voting period began. Studying and learning from the approach used in Cobourg was very influential for Truro. In addition to holding consultations with other jurisdictions, and discussions of the proposal with Truro Town council, Truro officials actively sought advice from the local media (Henderson, May 21, 2013).

Immediately after gaining approval from council to introduce Internet and telephone voting, Returning Officer Jud Pearson approached the local newspaper for feedback. Pearson and the newspaper engaged in discussions about the nature of Internet voting, how it would work and what it would mean for the electoral process in Truro. Initially, there was some resistance, but through discussion and explanation the newspaper agreed to allow Pearson to write a regular column once a month for the six months leading up to the election. This column educated the citizens of Truro about the importance of elections, voting, Internet voting, and the potential to

make Truro a leader in digital technology in Nova Scotia. During the election, Pearson continued to work with the local media, particularly the newspaper, by allowing them to publish turnout statistics by ward at the end of each voting day. Though not strictly speaking consultation, these communications helped to get the town population interested in the election and motivated electors to give Internet voting a try (Henderson, October 17, 2012; Pearson, October 17, 2012).

Officials also sought to engage the public through social media by setting up Facebook and Twitter pages, where citizens could comment, ask questions, or obtain information. The Truro election team also went to the local farmers' market for a weekend, where about one third of the town's population congregates, and set up a booth to talk about Internet voting with electors (Pearson, October 17, 2012). While the decision to proceed with Internet voting had been made and these forums were educational in nature, they served an important engagement and public feedback function. In terms of candidates, those not in office did not have a direct say in whether to implement Internet voting, but were provided information early on. Many made use of this knowledge and became advocates for Internet voting, educating electors through their own campaign pamphlets. Overall, consultations about whether or not to proceed with Internet voting were undertaken with council, other jurisdictions, and the media, but there was a robust and consistent effort to make contact with election stakeholders to educate them, provide information, and allow for comments, questions, or feedback. Election officials were keen to implement a thorough education and awareness campaign early on to ensure that a wide range of election stakeholders felt as though they were part of the process and part of something special.

Since increased turnout was the primary goal of the adoption of Internet voting, evaluation of the Truro election, officials explained, would predominately rest on whether voter participation notably increased. In fact, the turnout rose 140 percent from the 2008 election, increasing from 19 percent to 47 percent. This difference is rather remarkable given the older populace, many of whom learned to use a computer for the first time. Part of this success may be attributed to the fact that four special public access points were set up in high-traffic areas around the town: at the library, recreation centre, visitor information centre, and a computer kiosk in Millbrook, a First Nation community. Staff at these locations were trained and educated about the system so that they were able to help electors with the online voting process.<sup>4</sup> Portable computer kiosks were also taken to nursing homes, where staff members were officially sworn in as deputy returning officers so that they could go to an elector's bedside and assist with the voting process. With respect to achievement of goals, officials noted that evaluation largely rests on the turnout numbers (Henderson, October 17, 2012; Pearson, October 17, 2012).

Aside from turnout, officials conducted further evaluation of the election by collecting articles from newspapers and hearing comments from the Chief Administrative Officer. They also discussed the possibility of using the online survey service Survey Monkey or focus groups to gain greater public feedback. Many comments came on their own, however, through phone calls, e-mails, or cards. A meeting was also held with candidates to collect their thoughts and those workers in nursing homes and at other public access points who had been trained to assist voters. Feedback from these actors was deemed a priority for election officials to ensure online voting had improved accessibility for electors (Pearson, October 17, 2012).

The audit portion of the election worked much the same way as in the Cape Breton Regional Municipality. Discussions took place with the auditor and a report was issued regarding the evaluation of election security and its general operation (Pearson, October 17, 2012). One issue that would likely need to be discussed further as part of evaluation was the quality of the election lists obtained from the Province of Nova Scotia, which is maintained using data from Elections Canada, the SNSMR's motor vehicle registrations, vital statistics and other

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<sup>4</sup> Staff could not help with the actual voting beyond helping voters complete the online requirement of DOB because they were not officially sworn in as deputy returning officers.

government sources (Henderson, April 5, 2013). Election staff seemed keen to expand and further develop election evaluation as a consequence of Internet voting and discussed some ideas, especially about obtaining public feedback. No plan was concretely outlined, however.

In addition to the evaluation carried out in the Nova Scotia communities highlighted in this report, the province hosted two evaluation sessions of its own. These sessions did not specifically address Internet voting per se, but they related to issues that impact the operation of Internet voting. For example, Elections Nova Scotia orchestrated one session, which focused on the gathering of information, maintenance, and improvement of existing voters' lists. The election office of Service Nova Scotia and Municipal Relations held the second meeting that discussed recommendations and suggestions for potential revisions to the *Municipal Elections Act* (Henderson, April 5, 2013).

## City of Edmonton

The City of Edmonton has not trialled Internet voting in a binding election, but, in co-operation with the University of Alberta's Centre for Public Involvement, it undertook a rigorous consultation process and pre-trial evaluations to help formulate a decision about whether or not to incorporate Internet voting as an alternative voting method in future elections. To date this process represents the most comprehensive public consultation initiative conducted on Internet voting. The decision to consider an Internet voting option resulted from a desire to make the electoral process more accessible and reduce barriers to voting (Sinclair, November 25, 2012).

Another motivator for city officials, very much in line with the contextual consideration in European jurisdictions, was the desire to be recognized as an international leader with respect to Internet voting and e-government (Sinclair, November 25, 2012). In Canada, the City of Markham has stood out as a community that is taking a leadership role with respect to online voting and adopting principles of e-government. Edmonton wanted to make a name for itself much as Markham has, and possibly do better (Kamenova, September 9, 2012). Enough ground has been broken in Canada that deploying Internet voting is not treading uncharted waters, but the concept is still novel enough that there is opportunity for communities from various areas to sign on and develop unique approaches or refined systems and make a name for themselves as leaders in online voting, Internet service delivery, and e-government.

Although there were other technical elements, the bulk of Edmonton's approach in the consideration of Internet voting for future elections was focused on public consultation. This included questionnaires, a mock Jellybean Election where electors could trial an Internet voting system, roundtable advisory meetings with stakeholders and the first-ever Citizens' Jury on Internet Voting in Canada whose verdict and recommendations were presented directly to elected representatives. The rationale for developing such a robust consultation process was twofold. For one, preliminary research conducted by the city suggested that for Internet voting to be truly successful and accepted by citizens, they needed to be meaningfully engaged beforehand. A high rate of Internet connectivity did not guarantee public acceptance and support, so a commitment was made to not only inform residents, but also solicit their opinions (Kennedy, January 4, 2013).

For the past several years, the city had been working to innovate and learn in the area of public involvement. In 2009 it jointly established the Centre for Public Involvement (CPI) with the University of Alberta, which was to "be a hub of excellence in the theory and practice of public involvement" (Cavanagh, January 8, 2013). The presence of the Centre was a factor in deciding on an extensive public consultation process, in that councillors were encouraging its use. The Centre had organized several previous public consultation programs in the form of citizens' panels. In this case, the decision was made to develop a Citizens' Jury, a method that seemed better suited for the complex topic of Internet voting because it provided participants with more evidence-based education (Cavanagh, January 8, 2013).



The Centre recruited and worked with a Research Committee of professors who helped craft survey items and assisted in the design of the Citizens' Jury process. One member and co-author of this report, Nicole Goodman, composed an *Issues Guide*, which provided an assessment of key issues surrounding the topic of Internet voting based on available literature and the experiences of various jurisdictions. This guide was used as the primary document to inform the Jury. A Citizens' Jury Advisory Committee was also created independent of the Research Committee to oversee the decisions being made with regard to the Jury process.

Six questionnaires were created in total by the Research Committee, which contained attitudinal questions relating to Internet voting, elections, past voting participation, and demographic items. Two of these surveys (a pre- and post-citizens' survey) were written for the general public to complete online and designed to gauge general attitudes of the public toward Internet voting. The pre-survey was made available from September 1, 2012, to December 9, 2012. Links were provided on the CPI website, the City of Edmonton website, and an *Edmonton Journal* article on the topic. The results of the pre-survey were made available to the city for its records and evaluation after the Citizens' Jury proceedings. The post-survey was sent out via e-mail to respondents about six weeks later to see if opinions had shifted in light of the Jury outcome or other information that had been printed in media sources or websites. A brief summary of the responses and questions compiled by CPI Postdoctoral Fellow and Research Director, Kalina Kamenova, is included in Appendix 2 (Kamenova, January 14, 2013).

Two similar survey instruments (of the six) were created specifically for stakeholders (including the public), or special groups of citizens, with whom consultation roundtables were organized. The city designated these special groups of citizens to be: the elderly, persons with mobility issues, and persons with disabilities (Kamenova, January 14, 2013). Participants completed one survey before participating in the roundtable and another afterwards. The final two questionnaires were designed for the Citizens' Jury. The first acted as a recruitment questionnaire, to ensure that chosen participants had a distribution of attitudes similar to that of the general Edmonton public. The second was a post-survey that participants were asked to submit upon completion of the Jury (Cavanagh, January 8, 2013; Kamenova, September 9, 2012).

An initial test of the Edmonton Internet voting system was made in a novel way, as a non-binding election trial to choose a favourite candy colour. The Jellybean Election served as a test for the public to evaluate a prospective Internet voting system and assess its usability, functionality, security, auditability, and voter privacy. The election was open to any citizen. Participants were required to register prior to voting just as Albertans would in a regular election since the province does not have a pre-existing register of electors. The registration period ran from October 8, 2012, at 8:00 a.m. to November 1, 2012, at 12:00 p.m. and required prospective voters to complete a registration form and upload proof of identification. Applications to vote were reviewed by a registration officer and this process took about a day to complete. The voting period went from 8:00 a.m. October 22 until 12:00 p.m. November 2, 2012, and, while over 900 people registered, a total of 497 voted (Cavanagh, January 8, 2013; City of Edmonton 2012).

Although the Jellybean Election served as part of the public consultation process, it also evaluated the shape of a potential future alternative voting system. To more fully evaluate the security of the technology, the city hired an independent company to launch a denial of service attack, penetration and vulnerability testing and review of business processes on the vendor's technology. A security report was issued documenting that the attempt(s) had been unsuccessful (Cavanagh, January 8, 2013; Crutchlow, November 29, 2012).

One of the final steps of the consultation process was the Citizens' Jury meeting itself. The Jury was composed of seventeen randomly selected eligible electors, designed to demographically and attitudinally reflect the Edmonton public.<sup>5</sup> Jurors convened at the University of Alberta from 2:30 p.m. on November 23, 2012, to 5:00

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<sup>5</sup> Eighteen participants were recruited, but one selected individual cancelled at the last minute so only seventeen residents actually participated (Kamenova, January 14, 2013).

p.m. on November 25, 2012, to hear evidence-based testimony from selected expert witnesses, engage in deliberative exercises, and determine whether Internet voting should be used as an alternative voting method in future municipal and school board elections. “Witnesses” giving presentations and answering questions from the Jury included academics, practitioners, and municipal and provincial officials, who addressed issues such as security, authentication, auditability, voter privacy, proprietary and open-source code, the history of Canadian elections, and the experiences of other jurisdictions that have used Internet voting. The Jury reached a consensus verdict, recommending that the city proceed with Internet voting in the forthcoming elections. Though one juror was opposed to the idea of Internet voting he expressed that he could “live with it” to deliver a consensus verdict. The verdict, along with recommendations decided by the Jury,<sup>6</sup> was put into a report that was passed on to the city (CPI 2012; City of Edmonton 2012).

In addition to the Citizens’ Jury, three citizen roundtable advisory meetings were also organized. Two were held at, and organized in collaboration with, senior centres and a third was held at the University of Alberta for the general public. Altogether 60 people attended the roundtables, although only two residents came to the general public meeting. Participants were recruited through the senior homes, or because they had seen information on the city website, CPI website, or Twitter. Roundtable participants completed the pre-survey for stakeholders and were given the *Issues Guide* and information about the city’s plan. Afterward, they also completed a stakeholder post-survey addressing Internet voting. All issues and concerns raised by citizens were recorded and included in a summary report that was compiled by CPI; however, summaries and not the entire report were provided to elected members for review. City staff prepared a report to council, which included summaries of the reports prepared by CPI.

Edmonton City Council was scheduled to meet on January 23, 2013, to determine whether to proceed with Internet voting in 2013 in light of the Citizens’ Jury results, but postponed this decision until February 6, 2013, given that a member of the public had made a request to speak to council (Cavanagh January 8, 2013; Kamenova, September 9, 2012). On January 28, 2013, an Executive Committee composed of six councillors heard from Edmonton computer programmer, Chris Cates, and two Citizens’ Jury participants. While the two former jurors made presentations supporting the decision to adopt Internet voting, Mr. Cates, a public opponent of electronic voting, made the argument that the online voting method is unsafe and poses a potential threat to local democracy. He alleged that he was able to vote twice in the mock election, but did not explain how he accomplished this (Kamenova, May 22, 2013).

Privacy and security of the vote had been the primary goals of the election test, but city administration had wanted people from all over the world to test the Internet voting system so they did not put onerous restrictions on registration. As a consequence, Mr. Cates was able to register to vote twice and therefore cast two ballots. While not directly having bearing on the security of the voting system, this testimony did raise concerns among the councillors. In particular, registration caused some worry given that there is no voters’ list for the local and school board elections of Alberta municipalities.

Additional questions about the technology were raised and city administration provided answers to the best of their ability, but no experts were present to contribute. Councillors were provided with the Jury verdict and recommendations, but not the full report that CPI had prepared about the Jury process. This may have contributed to negative orientations surrounding Internet voting and some misunderstandings among council (Kamenova and Goodman 2013). In the end, Edmonton City Council voted 11–2 against introducing an Internet voting option in 2013.

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<sup>6</sup> The Jury made some recommendations, including “simplified registration process; mobile friendly platform; fourteen consecutive days of Internet voting; proprietary software as a short term solution and open source software in a long run; telephone voting by 2017; services in different languages; increased security; and strong evaluation and research component” (Kamenova, November 29, 2012).

This decision was somewhat controversial given the resources that had gone into facilitating such a robust public participation campaign, which had in general supported Internet voting's introduction. This decision to not support the public wisdom is also a reminder that democratically elected officials have the final say on policy matters. Despite the ending, however, the approach developed in partnership between the city and CPI is a consultation and engagement model possessing aspects worthy of consideration by other jurisdictions seeking public input regarding Internet voting or other policy matters.

## Province of British Columbia

The Province of British Columbia is actively researching and assessing the possibility of offering online ballots in future elections. Internet voting became an issue in BC as municipalities developed an interest to engage in it. The impetus began in 2008 when Nanaimo City Council requested permission from the province to use Internet voting. It grew more intense, however, in May 2011, when Vancouver City Council passed a resolution to allow the use of online voting in its November 2011 elections, an action that also required provincial approval prior to implementation. However, the province did not grant the approval to proceed. News media reported that the province lacked confidence that Vancouver, in particular, had a sufficient amount of time to prepare and develop a "rock solid" plan (CBC News 2011).

Around the same time, like she had during her leadership campaign for the British Columbia Liberal Party, Premier Christy Clark made some public comments supporting online voting in principle and encouraging an examination of its potential use in future BC elections. Partly as a result of these comments, the provincial elections agency, Elections BC (EBC), published a discussion paper on Internet voting (Atcheson, December 10, 2012; Hillsdon 2011). Also, a November 2011 report of recommendations for legislative change by EBC Chief Electoral Officer, Keith Archer, included a recommendation to allow the trial of new voting technologies. These factors supported pursuing research into online voting in BC. Premier Clark made a commitment to request that EBC put together a non-partisan expert panel to review best practices associated with Internet voting in other jurisdictions and possible issues associated with the implementation of online ballots in BC. Attorney General Shirley Bond formally made this request to Archer, in August 2012, also asking if such a panel, chaired by Archer, would assess the use of Internet voting at provincial and municipal levels of government given recent local interest (Bond, August 7, 2012).

The appointment of a panel and the assessment of Internet voting the province is undertaking is a form of consultation with elements of evaluation. An independent group has been convened to review and make recommendations regarding the possible use of Internet voting for provincial and local government elections in BC. The consultation role of the panel involves hearing from and meeting with people who have expertise relating to Internet voting, such as academics and practitioners, including Internet voting vendors. The panel will also release an interim report inviting public commentary. In this way, the panel hopes to engage the public in a type of consultation that is more informed than a general request for input (Atcheson, December 20, 2012).

The evaluation component of the upcoming report rests on the fact that members of the panel are required to make an assessment of whether Internet voting is a suitable alternative method of voting in BC elections at either the provincial or local level of government. In doing so, the panel will bring its own judgments on the issues to bear, rather than relying solely on consultations with others.

The panel was officially created in September 2012 and has held five official meetings; it took a three-month break while EBC prepared for and carried out a general election. A total of five members were appointed, including Archer, who is also the panel chair. The five-member size was selected because it was seen as a small enough group to meet regularly, but a large enough group to allow for a variety of expertise to be represented. Participants were selected based on their expertise and experience, with careful consideration given to ensure appropriate gender and geographical distribution. All panellists live and work in BC (Archer, March 8, 2013). Additionally, it was a requirement that panel members be non-partisan and not have publicly spoken out regarding Internet voting or publicly stated their opinion as a proponent or critic. Given that EBC is a non-

partisan agency of the provincial legislature, it was expected the panel would also embody the principle of independence (Atcheson, December 10, 2012). In addition to the chair, the members are Dr. Konstantin Beznosov, Associate Professor of Electrical and Computer Engineering at the University of British Columbia; Dr. Valerie King, a Professor in the Department of Computer Science at the University of Victoria; Lee-Ann Crane, Chief Administrative Officer, East Kootenay Regional District; and the former Auditor General of British Columbia, George Morfitt. Through this membership the panel represents cryptography, technical expertise, the local government, and an independent former legislative officer (Atcheson, December 10, 2012).

The panel will continue to convene on a monthly or bi-monthly basis until members are in a suitable position to fulfill their mandate and make recommendations regarding Internet voting in BC. While there is not a rigid time frame for the project, to ensure that the process is not rushed, the panel was working toward completing an interim report by the summer of 2013 and a final report in the fall of 2013. Panel meetings are closed to the public, but notes are being taken and published on the panel's website. Along with this, other information about the panel, such as participant biographies, official government letters that established the panel, and other relevant details are publicly available on the EBC website. The work plan is focused on monthly meetings wherein the panel evaluates the opportunities and challenges of Internet voting based on available literature and consultation with experts and practitioners. The panel's final recommendations on whether it would be appropriate to introduce Internet voting in provincial and local government elections in BC will be presented to the provincial legislative assembly sometime after the final report is tabled (Atcheson, December 10, 2012).

The process being used in BC takes a different approach from previous research, deliberation, and decisions regarding whether to use an online voting system. Other approaches have predominantly centred on decision making from government officials and have not adopted such a comprehensive consultation and assessment phase. While the BC example is not as consultative of the public as in the case of Edmonton, the phase of gathering of information phase, through literature and input from experts and practitioners is much more robust than previous consultation models used in Canada. Assembling an independent group to consider Internet voting in the context of BC's political and social climate presents a useful precedent for other jurisdictions seeking a decision-making strategy based on its incorporation of field experts' opinions together with a public contribution.

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## SUMMARY OF CONSULTATION PRACTICES

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A comparative summary of the highlights of consultation practices used in association with Internet voting in the jurisdictions examined in this report can be found in Table 2. Overall, the consultations we have observed in the European examples outlined here have been limited in scope and confined to four arenas. First, there have been discussions at the political level in parliamentary committees, as in Estonia and Norway, or those of subnational units like the Swiss cantons. Committee recommendations to proceed with trials of Internet voting have been approved by legislatures, at times with partisan division. However, the fact that political parties have been involved invokes the second arena of consultation: the political parties. At times these party deliberations have occurred in places other than the legislature. In Estonia, the e-Governance Academy has convoked yearly meetings with the political parties to discuss e-voting operations, as well as such related aspects as a code of conduct for Internet elections, in which the parties agree, for instance, not to embed e-voting links in their campaign material on social media (Tallo, October 16, 2012). In all the European jurisdictions, some political parties have opposed Internet voting trials. There does not appear to have been a consistent ideological division on this matter. In Norway, the Conservative party opposes Internet voting, although the Conservative party officials in the trial municipalities are strongly in favour of it. In Estonia it is the Centre party that is opposed, and

in Switzerland, both the Greens and the Pirate party are opposed. The two primary grounds for opposition are security concerns and secrecy doubts.

The third arena for consultations is meetings with particular groups that have been active in support of the introduction of Internet voting. Groups representing citizens abroad, of which the Swiss Abroad is the most prominent example, have been consulted. Second, groups representing persons with disabilities have been consulted about the format of the e-voting operations. Examples of revisions in the actual I-voting operations after experience with trials would suggest, however, that detailed consultations about exactly how the systems would operate were undertaken only in the sense of a post-election evaluation.

Finally, though not last temporally, have been consultations with committees of experts, who are seen as knowledgeable in actually constructing an I-voting operation. In Estonia, Norway and Switzerland, working groups of practitioners have developed plans for the implementation of I-voting. In one sense, it is quite understandable that decision makers would want to be assured that an Internet voting system was viable before entering into political discussions about its use. On the other hand, the reports of committees of experts provided a momentum for the operation that made it more difficult to question its basic premises.

For the most part, consultations in Canada have been characterized by discussions with municipal councillors and government staff. While many election stakeholders are informed or educated after key decisions have been made, they have not been brought on as part of the decision-making process, or as advisors in development prior to implementation. In general, officials seem to have been so preoccupied with conducting research and assessing elements such as system security and functionality that the thought of incorporating outside opinion from the general public into decision making has been largely missing.

The exception to this picture is the City of Edmonton undertaking, which represents the most comprehensive public consultation process to date with respect to Internet voting. The Edmonton public involvement initiative may establish some ideas regarding the incorporation of public engagement into decision making that is complementary to consultation with particular groups and elected officials. The British Columbia model may also be useful for other jurisdictions. The initial panel in BC is a small group, but it is a diverse one, and opens the process beyond the norm of practitioner “working groups” seen in many other jurisdictions. Our understanding is that the BC panel has plans to include a public commentary component prior to any final decision about an Internet voting trial.

The public consultation precedents being set in BC and Edmonton may cause other Canadian governments considering the adoption of Internet voting to engage in similar strategies to ensure public input. In fact, these approaches seem to have some municipalities already using Internet voting rethinking how they might engage relevant stakeholders between elections to gain feedback for future improvement and refinement of their online election model. This could be part of an evaluation process, or a separate task. As well, some communities that are considering Internet voting have taken note of the importance of consulting with the public. The City of Guelph, Ontario, for example, recently undertook a public survey to gauge public attitudes toward the election experience and Internet and telephone voting.

Interestingly, Canadian municipalities studying whether to implement Internet voting have conducted “evaluations” before the election, leading up to the decision to go ahead with Internet voting, exercises that we might well consider “consultations” instead. Nearly all communities in Canada that we studied have gone to great lengths to collaborate with practitioners, professionals, academics, and other municipal, provincial, and federal officials, where possible, to evaluate the practice of Internet voting and to consider whether it will work well in their area before its implementation.

The question of why more open public consultations have not taken place to match these specialized ones is difficult to answer, especially considering that some of the primary rationales for adopting the alternative voting method are public-focused, such as increases in voting turnout, improvements to accessibility, and more citizen-centred service models. The answer likely has more to do with the precedent set by long-time use of existing decision-making processes and less to do with the topic of Internet voting itself. For the most part it seems to be fairly common practice for government officials to make policy decisions based on thorough research and investigation, and perhaps even with certain stakeholder meetings, but independent of public engagement. If more jurisdictions opt for decision-making processes that are inclusive and transparent, however, citizens may expect to be included in such proceedings.

**Table 2: Comparison of Consultation Methods Assessing Internet Voting in Select Jurisdictions in Europe and Canada**

Jurisdiction	Internet elections held (number, type)	Type of consultation used	Persons and groups consulted		
			<i>Political sector</i>	<i>Academics and experts</i>	<i>Civil society groups</i>
<b>Estonia</b>	2 Local 2 National 1 Extra-national	Discussions with select persons and groups	Political parties Parliamentary committee National Electoral Committee	Academics Technical experts	Persons with disabilities (the blind)
<b>Switzerland</b>	20+ referendums in test cantons (limited eligibility) 1 Federal election (limited eligibility)	Discussions with select persons and groups	Federal-cantonal working group	Academics Technical experts	Organisation of the Swiss Abroad Persons with disabilities (the blind)
<b>Norway</b>	1 Local	Expert committee Public hearing Reference groups Presentations Parliamentary debate Municipal visits	Policy-makers Political parties Elected members Municipalities	Academics Technical experts Internet voting vendors	Public comment solicited on expert committee report
<b>City of Edmonton</b>	None (but mock Jellybean Election)	Citizens' Jury on Internet Voting Roundtable advisory meetings Public surveys Presentations from experts Discussions with other jurisdictions	Elected members Other jurisdictions	Academics Technical experts Internet voting vendors	Persons with disabilities Seniors Citizens' Jury participants

Jurisdiction	Internet elections held (number, type)	Type of consultation used	Persons and groups consulted		
			<i>Political sector</i>	<i>Academics and experts</i>	<i>Civil society groups</i>
<b>City of Markham</b>	3 Local	Discussions with select persons and groups Meetings with digital strategy company (Delvinia) Report from Ryerson University professor	Other jurisdictions in Canada Municipal administration Elected members	Academics IT experts Internet voting vendors Digital strategy company (Delvinia)	
<b>Halifax Regional Municipality</b>	2 Local general elections 1 By-election	Discussions with select persons and groups Information sessions for candidates Meetings with security companies Twitter Fielding questions via phone and e-mail with the public	Other jurisdictions in Canada Candidates Elected members Internal accessibility committee Internal IT personnel Internal legal staff	Security companies Internet voting vendors Technical experts	
<b>Cape Breton Regional Municipality</b>	1 Local	Discussions with select persons and groups Information session with candidates Meetings with other jurisdictions Halifax Regional Municipality steering committee	Other jurisdictions in Canada (notably, Halifax and Markham) Elected members Nova Scotia Municipal Handbook Committee* Candidates	IT companies and professionals Internet voting vendors	



Jurisdiction	Internet elections held (number, type)	Type of consultation used	Persons and groups consulted		
			<i>Political sector</i>	<i>Academics and experts</i>	<i>Civil society groups</i>
<b>Town of Truro</b>	1 Local	Discussions with select persons and groups Information session for candidates Meetings with seniors' facility staff and public library employees Social media outreach (i.e. Facebook and Twitter pages) Farmers' market visits	Other jurisdictions in Canada (especially Cobourg, Ontario) Elected members Candidates	IT companies and professionals Internet voting vendors	Local newspaper Seniors' facility staff Public library employees

\* The Nova Scotia Municipal Handbook Committee consists of appointed municipal returning officers. It is responsible for conducting debriefings after an election and can be used to vet proposed changes or innovations to existing policy (White, July 17, 2013).



Post-election evaluation in the European cases is much simpler to pinpoint than it is in the Canadian municipalities because of the existence of international agencies that take on the task of election observation and the writing of official reports. These approaches are compared with the Canadian cases in Table 3. In Europe, Internet voting operations are evaluated as part of an overall consideration of the electoral practices in a country. Primary among evaluating agencies is the Organization for Security and Co-operation in Europe Office for Democratic Institutions and Human Rights (OSCE-ODIHR), which makes a particular effort to send observer missions to states conducting Internet elections. In all of the European cases as well, these missions were actively invited and facilitated by the states concerned, in order to secure a favourable independent judgment on their election and to benefit from any recommendations made for improvement. Criteria used by OSCE range across security and secrecy issues, from those involving access to the ballot to the transparency of the counting process. OSCE does not conduct research for its reports other than that which can be accumulated from other sources or observed during its missions.

More expanded sets of evaluation criteria may be used in jurisdictions where additional evaluations are commissioned. In Norway, the Institute for Social Research has examined the potential effects of Internet voting on turnout, even though this was not an overt goal of the implementation of the trials. In Switzerland, the project being undertaken by Professor Pascal Sciarini for the canton of Geneva will also look at voting turnout, and will consider the use of the Internet to vote by particular subgroups of the population. In both Norway and Switzerland, the intention of the additional evaluations is to allow academic research to be conducted about the use of the Internet to vote, and the public attitudes toward it. Research tools involve not only public opinion surveys but also focus groups and specific consultations with subgroups of the population.

In Canada, evaluation practices seem to be developing over time. As more jurisdictions sign on to Internet voting, they benefit from the work done by their predecessors, learning about best practices, useful model features, and those items that did not work as well as hoped. As time passes, evaluation seems to be becoming increasingly more rigorous. The City of Markham, with its comprehensive surveys and data analysis, and the City of Edmonton, with its detailed evaluation of the Internet voting consultations through surveys, seem to be the most advanced in this regard. In some of the Nova Scotia municipalities (Cape Breton Regional Municipality and the Town of Truro), there is a broad discussion that takes place among groups of different people. This is not carried out in the form of an official survey (aside from election workers), but rather takes the shape of informal discussions.

For many Canadian municipalities, systematic, documented and research-based post-election evaluation does not take place. It may be that municipal election officials put a lot of effort into a pre-election consideration of whether Internet voting is a desirable policy, and when events seem to transpire as planned during the voting, and satisfaction appears to be high, they do not see a pressing need for a more fulsome, and potentially costly, evaluation process afterward. For many municipalities, regular election evaluation may be composed of a short report to council and election post-mortem meetings, but beyond that, notes stay on a computer or in a filing cabinet until the next election.

To be sure, in those municipalities that have used Internet voting in multiple elections, modifications are made between elections, which indicates that evaluation is taking place. Markham, for example, added voters' date of birth as an additional security credential for registration in 2010 as a direct consequence of reflection and evaluation. However, it seems that once the operation of Internet voting passes the initial test without succumbing to potential pitfalls, it becomes part of the current operational procedure. Realization that more rigorous evaluation would be desirable seems to be taking hold in many municipalities, however, and may lead to a retooling of evaluation procedures and processes. The decision to move forward, however, is not always a

foregone conclusion. Recent decisions by the cities of Kitchener, Ontario, and Edmonton not to proceed with Internet voting in forthcoming elections, but rather re-evaluate at a later date, is evidence of this.

It needs to be pointed out that the current Canadian experiences with Internet voting have all been at the municipal level. Trials at the provincial or federal level would be subject to greater public scrutiny than municipalities, if only because they would have more extensive geographical reach or implications. Consideration of Internet voting by the British Columbia panel certainly involves the evaluation situation. Internet voting is in its infancy, but a consensus is developing that its evaluation procedures must be detailed and rigorous. The attention it attracts and the changes it imposes to the traditional election process create pressure to develop thorough, transparent, and documented evaluation procedures and policies for Internet voting.

**Table 3: Comparison of Evaluation Methods Assessing Internet Voting in Select Jurisdictions in Europe and Canada**

Jurisdiction	Internet elections held (number, type)	Type of evaluation used	Agents involved or consulted		Evaluation criteria used
			<i>Internal agents</i>	<i>External agents</i>	
<b>Estonia</b>	2 Local 2 National 1 Extra-national	Public opinion surveys  Reports and papers (i.e. academic analyses, Organization for Security and Co-operation in Europe Office for Democratic Institutions and Human Rights [OSCE-ODIHR], National Electoral Committee)	E-voting Committee  National Electoral Committee	Academics  IT experts  OSCE-ODIHR Expert working group	Legality  Security  Transparency  Observability  Cost
<b>Switzerland</b>	Numerous cantonal referendums	Reports (i.e. Federal Chancellery, OSCE-ODIHR)  Ongoing analysis by Professor Pascal Sciarini	Federal Chancellery	Academics  IT experts  Commission for the Evaluation of Public Policy  OSCE-ODIHR	Turnout  Sub-groups  Public attitudes  Determinants of online voting  Legality  Security  Transparency  Observability  Cost
<b>Norway</b>	1 Local	Reports (i.e. ISF, OSCE-ODIHR)  Focus groups  Interviews  Public opinion survey	Ministry of Local Government and Regional Development  Election administrators	IT experts  International Foundation for Electoral Systems  Institute for Social Research  OSCE-ODIHR	Legality  Security  Transparency  Observability  Cost

Jurisdiction	Internet elections held (number, type)	Type of evaluation used	Agents involved or consulted		Evaluation criteria used
			Internal agents	External agents	
<b>City of Edmonton</b>	None (mock Jellybean Election)	Reports (i.e. risk assessment report, security report, Citizens' Jury on Internet Voting report, public opinion survey response report, report from the roundtable advisory meetings)  Roundtable meeting with city project team	City project team  Centre for Public Involvement team  Municipal administration  Centre for Public Involvement staff	Auditor (Securis)	Usability  Functionality  Security  Auditability  Voter privacy
<b>City of Markham</b>	3 Local	Online voter surveys and 2010 candidate survey (Delvinia)  Markham candidate surveys  Reports (i.e. Delvinia reports, city evaluation report)  Audits and documentation (i.e. audit report, program code evaluation, internal security audit)  Internal lessons learned sessions	Municipal administration  Election officials	Ryerson University  Security company  Delvinia  Online voters  Candidates	
<b>Halifax Regional Municipality</b>	2 Local (2 regular elections, 1 by-election)	Audits and documentation (i.e. independent audit, auditor's report, independent security audit)  Reports (i.e. report on recount in district 3*, report for council and Service Nova Scotia and Municipal Relations, report from Internet voting vendor)  Internal meetings	Municipal administration  Electoral board  HRM election staff  Internal groups (i.e. IT, communications, marketing, accessibility committee)	Independent auditor  Security company  Internet voting vendor	Accessibility  Transparency  Cost  Security  Maintaining the integrity of the vote

Jurisdiction	Internet elections held (number, type)	Type of evaluation used	Agents involved or consulted		Evaluation criteria used
			Internal agents	External agents	
<b>Cape Breton Regional Municipality</b>	1 Local	Meetings with key staff Poll worker survey Discussions and interviews with select persons and groups Internal election review folder Audits and documentation (i.e. independent audit, auditor's report) Reports (i.e. report of the Returning Officer, report from Internet voting vendor)	Municipal staff Poll workers E-vote call centre staff	Auditor (Chief Information Officer, Cape Breton University) Internet voting vendor Senior citizens' clubs The media Candidates Other Nova Scotia municipalities	Safety Security Reliability Accessibility
<b>Town of Truro</b>	1 Local	Meetings with key staff Discussions and interviews with select persons and groups Internal election review folder Collection of media clippings Returning Officer's Report Report from Internet voting vendor Independent audit Auditor's report	Election staff Auditor Chief Administrative Officer	Internet voting vendor News media Candidates Nursing home workers and those who worked other public access points (i.e. the library)	Voter turnout Accessibility

\*This is not a regular part of the evaluation protocol of elections, but rather was requested by a candidate after a close race separated the top two candidates by less than one percent of the vote.

## RECOMMENDATIONS FOR IMPLEMENTATION OF BEST PRACTICES FOR CONSULTATION AND EVALUATION

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The cases examined in this report and other research gathered to prepare this project lead to a number of recommendations about the consultation and evaluation procedures that could best be employed if future Internet voting trials are to be considered or implemented. The recommendations are designed to relate to the Elections Canada strategic goals of expanding trust, accessibility and engagement. Some of these recommendations are also applicable for jurisdictions seeking consultation to refine existing approaches to Internet voting or ameliorate present evaluation procedures associated with I-voting.

Many of the cases explored here have commonalities between the approaches used to conduct consultations and evaluation. However, they also possess distinct elements associated with discussion and assessment that merit individual strategies for Internet voting development in the coming years. Given that each jurisdiction, in Canada and internationally, faces unique contextual factors, recommendations should be considered with these in mind. While robust public consultation may be important in one area, it may be redundant or not needed in another. If public involvement strategies are incorporated, the type, design, and scope of the consultation method is best achieved without a one-size-fits-all approach. Although we cannot make specific recommendations or detail a recipe for Internet voting deployment or policy development with respect to consultation and evaluation practices, we are able to suggest some general recommendations that governments, election agencies and policy-makers may wish to consider adopting when considering Internet voting for the first time or refining existing models.

### Consultation

First, **we recommend that a policy of openness and transparency be adopted when plans for Internet voting are being developed.** Trust and transparency are closely linked. The more open and forthcoming a process, the more likely it is the public and other stakeholders will have faith in decision making and outcomes. Trust is essential to ensure confidence in the electoral process, which must be maintained to preserve the legitimacy and integrity of the system. Types of trust (social and political) are also needed to foster social capital, which helps promote citizen engagement – at the core of participation in elections.

Trust in government and changes to electoral institutions and processes are well supported by regular communication with the public and by ensuring electors are informed as plans proceed. In Canada, for example, in the case of the Town of Truro, election officials were able to foster trust in an electronic voting system through extensive communication and information efforts. This included disseminating pamphlets to every residential address, writing a regular column in the local newspaper for the six months prior to the election, hosting a booth in a local farmers' market, engaging the local media, and educating local librarians and nursing home workers about the process so that they could assist electors and act as ambassadors. The success of this approach is evident by the 140 percent increase in voter turnout the community experienced while doing away with in-person polling station voting. In Norway, too, transparency of the communication plan helped promote confidence in electronic ballots. Communication involved an open call for municipalities to participate, informational visits to the communities by the Ministry responsible for conducting the voting, local publicity, and an open trial operation of the system before voting day. These examples were unique to the locations mentioned, but had in common an openness to public input.

Our second recommendation is to **adopt strategies that foster public engagement**, although the scope and type of engagement should depend on the particular circumstances. Generally, there is a need for additional and improved forums for public engagement. Given that Internet voting is considered to be a citizen-centred service initiative and would have its success in large part judged on how well accepted and used it is by citizens, it is



important that residents be consulted prior to its adoption. With a few exceptions, existing consultation mechanisms exist mostly with elites (i.e. government officials, policy-makers, technical experts and specific interest groups) but lack a general public focus. To expand the scope of consultation, jurisdictions might also consider using digital and mobile technologies to engage with electors, particularly through social media applications or another kind of online portal that enables virtual and interactive communication. If we are moving toward a more digital world and Internet-based service model, it seems only logical to facilitate public consultations through those same forums, in addition to more traditional approaches to public consultation, such as meetings or focus groups.

The Truro example cited above is a good illustration of the use of information and education-focused strategies to promote public engagement, but it should be noted that the town has a relatively small population to reach (with an electorate of about 10,000). For larger communities, additional tactics should be considered to involve the public. The Edmonton case, using public opinion surveys, citizen roundtable meetings, a mock election and a Citizens' Jury on Internet Voting, offers a good example of the use of additional options.

A third recommendation is to consider **developing outreach programs** that combine information about Internet voting with a focus on citizenship education more generally, emphasizing the importance of electoral participation for the renewal of democratic health. Such programs would fit well with school curriculums that teach civic education, and further the strategic goal of enhancing youth engagement with the electoral process. Unfortunately, we have not encountered examples of such educational programs for schools in our cases of study, but Markham and Truro did include some elements of an appeal to citizen participation in their informational campaigns. Whereas Markham focused on using digital technology to involve and engage electors, Truro employed traditional strategies by going out and speaking to people, and contemporary tools through its engagement of social media. In Europe, the tradition of electoral authorities encouraging electoral participation is less well established, and this is usually left to political parties.

Aside from a focus on engagement of the general public, a fourth **recommendation is to involve and/or consult with other election stakeholders, notably candidates, the media, and if applicable, advocacy organizations.** Techniques may include training sessions for political candidates (and political parties, if applicable), meetings with the media, or discussion with other groups. An Internet voting option particularly affects candidates. In communities where candidates have been consulted, they have been more likely to embrace Internet voting as an alternative voting method and even promote it in their campaign literature. Since the introduction of Internet voting option in 2005, Estonia has offered training sessions for political parties contracted to the e-Governance Academy in Tallinn. In Halifax, by comparison, candidates were more receptive to the technology after attending information sessions about Internet voting. Since Internet voting changes the nature of campaigns when it is made available in advance polls, by placing the emphasis on the beginning of the campaign instead of the end, candidates can be incorporated into the process or at least educated about it (Goodman in press). Candidates and media are particularly salient sources for elector information, making it important that this information is accurate.

Fifth, the timing is important. We recommend that **discussions proceed on multiple levels at an early stage.** Government administrators should provide discussion forums for elected officials and political parties (if applicable) as well as other groups. Once political support is established and additional research is conducted, time should be allocated to survey all stakeholders and consult with them openly. Conducting consultations before a steadfast plan is in place is important to ensure that feedback from stakeholders can be incorporated into program development and could be useful for building trust and support.

Sixth, **the collection of systematic data using quantitative and qualitative methods** is needed to gain information for future development. Specifically, information of this nature will be helpful for jurisdictions deciding whether to explore methods of Internet and electronic voting. If they decide against it, this information could help provide justification for not proceeding. If an area decides to move forward, data obtained for consultation purposes would help administrators and elected officials determine which digital options may be

appropriate for that particular area. Data obtained from consultation practices can also be compared with information gathered through evaluation procedures, offering multiple data points for which administrators can assess the impact on the electoral process.

In all three European countries cited in this report – Estonia, Norway, and Switzerland – survey research has been conducted, but it has been at the evaluation stage, once the trials have been held. Canadian federal election studies, and other polls, ask at times about the hypothetical use of an Internet voting option, but little survey data have been collected from cases where Internet voting has been used. Edmonton is an exception, having obtained survey data through its public consultation initiative. In addition, as noted above, the City of Guelph commissioned a survey to consult with the public about voter experiences, the potential impact of Internet and telephone voting, and whether electronic voting methods would be desirable, as officials there determine whether to introduce an online voting option. The collection of additional data from Canadian municipal jurisdictions of varying characteristics (i.e. geographic location, size, eligible electorate) would provide a good start to conduct more thorough assessments and analysis. This information will be an important tool as governments increasingly grapple with the decision of whether to offer online voting.

In terms of communications methods, we recommend that electoral management officials utilize **direct communication methods that are appropriate to the circumstances**. For example, we would reference visits to remote communities by boat in Norway and the staffing of a booth at the farmers' market in Truro. Appropriate methods will depend on the contextual factors present and particular features of the jurisdiction. Places where large segments of the electorate congregate would be a good start. As well, a combination of traditional communications methods and some new strategies, particularly via digital and mobile technologies, is probably a wise approach to ensure as many potential electors are targeted as possible.

Finally, **forming partnerships and building relationships with other jurisdictions, universities, research institutes, advocacy organizations, or practitioners** can be extremely beneficial for collecting knowledge, conducting research, and generating strategies to deal with potential problems. Learning from the consultation strategies of others or working with partners to help develop unique and engaging consultation methods can make the process more cost-effective, efficient, and thorough. In Canada, Edmonton's partnering with the University of Alberta's Centre for Public Involvement is a prime example of this. Meeting with other jurisdictions has been beneficial, such as Edmonton hearing from Markham and Halifax, but greater collaboration and information sharing among jurisdictions and levels of government could be encouraged to save on information gathering, improve cost-effectiveness, and deliver greater insight for system development. This is true in a Canadian context and internationally. Areas such as New South Wales in Australia, for example, are currently working toward an online voting model, but find locating current and thorough research challenging.

## Evaluation

The first and most important recommendation for jurisdictions is **to develop rigorous evaluation frameworks**. This means preparing a detailed plan in advance for how evaluation will be conducted and the criteria upon which the assessment will take place. Many of these criteria should be based on the core values of election operations in the jurisdiction and the goals of election administration. For many Canadian municipalities, evaluation procedures consist of varied ad hoc activities and/or compilation of written documents. There are some similarities across municipalities, but each evaluation system currently employed seems to be unique to that community. In many jurisdictions, evaluation processes should be made more systematic and could also benefit from the sharing of best practices and the adoption of similar evaluation frameworks among cities and towns. For the most part, existing protocols seem to work well for the officials who run them. Many officials have been around for a long period of time, know the area and culture well, and are extremely perceptive at analyzing the operations and making improvements where necessary. However, more rigorous processes are needed to assess Internet voting given that concerns about security, voter privacy, authentication, and fraud make it subject to greater public scrutiny.

In Europe, jurisdictions that conduct Internet voting options have benefited from formal evaluation reports conducted by the OSCE-ODIHR. These have been augmented by formal evaluation reports commissioned from independent institutes in the countries concerned. The report from the Institute for Social Research in Norway (ISF 2010) and Professor Pascal Sciarini of the University of Geneva in Switzerland (Sciarini 2011) are examples. Criteria used in these evaluations could usefully be scrutinized by other jurisdictions planning Internet voting trials.

The contextual areas discussed at the beginning of this report (in the Consultation and Evaluation in Context section) can provide a **core set of criteria for evaluation**. These are:

- Is voter turnout increased?
- Is accessibility (by persons with disabilities, elderly, youth, minority groups, etc.) improved?
- Is external voting made more accessible?
- Are security concerns addressed?
- Is vote secrecy ensured?
- Do voters feel more empowered?
- Are e-government services extended? (if this is an applicable goal)
- Is technological development stimulated? (if this is an applicable goal)

In addition, we recommend that **internationally recognized standards** of legality and fairness be applied as criteria for evaluation. These criteria will help ensure an accessible and fair process and are important for maintaining the integrity of the electoral process, particularly in light of the introduction of new technology.

Standards by which Internet voting is assessed are considered an addition to the evaluation criteria usually applied by an international organization like the OSCE-ODIHR for the entire election, which involve consistency with the legal framework in the country, respect for the right to vote, the rights for candidates to stand for election, the application of party and campaign financing laws, and the transparent and honest counting of the votes. Some basic criteria, such as the operation of the voter registration process, have particular applicability to the Internet voting option, when PIN numbers or codes are involved in authenticating voters. Finally, the security considerations are much more prominent criteria for the Internet voting operations than for polling place voting.

Coincident with more systematic evaluation frameworks is the second recommendation, for **more thorough record keeping**. In Canada, many communities share computer files, collect notes that are kept in a file folder or simply rely on officials attempting to remember evaluation details themselves. In Europe, the situation varies. Geneva keeps elaborate statistical details on the use of Internet voting in all the referendums and elections, but Neuchâtel provides a paucity of information. Estonia provides overall statistics on the use of Internet voting, but not further breakdowns. It is not clear, for example, how many people with disabilities were able to vote by Internet in any European or Canadian jurisdiction, despite the fact that ease of access of persons with disabilities to the polls is a frequent goal. To learn from evaluation, be able to share specific details, compare with other jurisdictions or compare with other elections over time, rigorous record keeping is essential.

Third, to be able to facilitate systematic evaluation **we recommend that goals of Internet voting operations be specified in advance**, in order to provide criteria for evaluations. In some cases it was noted that evaluation was difficult since desired outcomes had not been established at the outset. In other cases goals may have been set, but no criteria for their systematic observation were determined. At times, specific goals were avoided because doubts existed about the ability of the system to accomplish them, such as the case of increasing turnout. For election officials, thinking through goals is important not only to ensure systematic evaluation, but also to make sure that the type of Internet voting chosen (i.e. remote Internet, kiosk, Internet and telephone) and the way it is made available (i.e. advance polls or the entire election) are designed to complement those goals. In the first recommendation above, we have provided a set of criteria for evaluation, but not all of these may be specific

goals established by any one jurisdiction. That is to be expected, but the key is to consider and specify the goals in advance.

Fourth, we recommend the systematic collection of **post-election feedback**. While most jurisdictions collect some feedback, key groups are often left out. For example, in some instances only paper ballot election staff are interviewed or surveyed, while broader information from citizens or other stakeholders is not gathered. Furthermore, some standardization of feedback collection will be helpful for comparisons over time and across jurisdictions. The additional information and insight will also improve the calibre of evaluation and model development. As with pre-election consultations, the use of both quantitative and qualitative methods is recommended. Ideally findings would be shared with other jurisdictions, levels of government, perhaps the public, and other relevant organizations or groups.

Fifth, **we recommend that independent organizations be commissioned to provide evaluations, and independent audits of security, of Internet voting operations**. Independent evaluations are useful for ensuring impartial evaluation, especially of security aspects. They are also helpful in fostering trust in the alternative voting approach. The evaluation report by the Institute for Social Research in Norway is an example of this. All Canadian cases explored here had an independent auditor assess the system and provide comments. In some cases this was an internal person to keep costs down. Ideally an independent person or group would be chosen to carry out this function.

Finally, as with consultations, **partnerships** at the evaluation stage are a key recommendation. Specifically, jurisdictions should consider establishing a co-operative network with local universities or research institutes to participate in evaluation of Internet voting trials; other actors such as industry or other groups could also be engaged. The case of the City of Edmonton and the Centre for Public Involvement is cited in this report as an example of a relationship where public consultation has been organized in such a way as to provide an objective approach. The evaluation conducted by scholars at the University of Tartu of the Estonian Internet voting system is another example. With respect to collaboration with industry, the post-election surveys and reports Markham has obtained are invaluable for evaluation and research. Partnerships of this nature can help ease research burdens or other costs associated with evaluation and can also help bring together experts for advice and analysis. Working with other jurisdictions and actors to streamline or standardize evaluation procedures could also be a long-term benefit.

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## RECOMMENDATIONS FOR ELECTIONS CANADA

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Whether or not Elections Canada proceeds with a trial of Internet voting, the mission and the goals contained in the agency's Strategic Plan are consistent with a set of future activities related to Internet voting. It is recommended that Elections Canada expand its capacity as a **knowledge centre** in the evaluation of Internet voting and other voting modes and channels, with a focus on the utilization of such knowledge by all levels of government in Canada. In particular, guidelines for successful methods of public consultation could be offered to all interested jurisdictions. An overall evaluation template, incorporating many of the criteria used in this report, could be published and recommended.

Such evaluations should be framed within a **logical hierarchy of results**, moving from short-term output-level results, through medium-term outcome-level results, and finally to long-term impact-level results. The evaluations should be guided by standards set by Treasury Board and the Organization for Security and Co-operation in Europe Office for Democratic Institutions and Human Rights (OSCE-ODIHR). The latter has already been mentioned in this report Treasury Board's Directive on the Evaluation Function emphasizes that evaluations should address five key issues: under "relevance," (1) continued need for the program, (2) alignment

with government priorities, and (3) alignment with federal roles and responsibilities; and under “performance,” (4) achievement of expected outcomes and (5) demonstration of efficiency and economy (Treasury Board 2009).

Informed by international and Canadian experiences, evaluation knowledge and tools should be developed with a focus on **methods appropriate to assessing performance** in six key outcome-level results that relate to turnout, accessibility, external voting, security, secrecy and empowerment. Other key areas to consider would be e-government, technological development, and trust. These methods would include basic usage statistics from jurisdictions employing Internet voting, financial information on costs and savings, surveys of public opinion, focus groups, case studies and other qualitative methods, together with the use of social media and perhaps other digital and mobile technologies to gather data and analyze findings.

Finally, Elections Canada should be **proactive in both hosting and participating in educational and research events** on the evaluation of Internet voting (and other comparative modes and channels) to examine in more detail the lessons and methods of the widest range of evaluation studies from across Canada and internationally. The amount of Internet voting occurring in Canada makes Elections Canada well placed to become an international and national knowledge centre on I-voting evaluation and consultation. We suggest that this be built into the next Strategic Plan (presumably covering the period 2014 to 2019). The preparation of tools (guides, protocols, templates, tutorials, and webinars) and the organizing of workshops and conferences could be rolled out over the subsequent three to five years.

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## CONCLUSION

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This report has examined the consultation practices and evaluation procedures used in a number of European and Canadian jurisdictions where Internet voting has been implemented, or is being considered. In general, our recommendations indicate that we find considerable room for expansion in both of these areas. Consultations have rarely included the general public at large, and even when specialized groups have been involved, the number and depth of these discussions have often been limited. Evaluations have at times been systematic, but at other times informal and impressionistic. We believe that a variety of quantitative and qualitative research techniques should be applied to generate knowledge and examine public opinion when Internet voting is being considered, and should certainly be conducted when such trials are undertaken. It is only with an extended knowledge base that future governments can make informed decisions about Internet-based electoral reform.

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## Appendix 1: Interview Questions for Experts Interviewed for This Paper

### CONSULTATION

Were there consultations with either stakeholder groups or the general public?

If so:

1. At what stage(s) of the process did consultations take place? Various stages may include: idea stage; development stage; implementation stage; evaluation stage.
2. What form did the consultations take? These forms might include solicited and unsolicited submissions, in-person and virtual meetings, calls for genuine input, or attempts to sell or refine a policy already decided.
3. Are alternative electronic methods of voting considered, or is one focused on? This will be related to the stage of the process mentioned above.
4. How are the consultations publicized and reported?
5. Are specific stakeholder groups explicitly included; for example, those representing people with disabilities?
6. Are current officeholders and prospective candidates included, to consult about the potential effects on their campaigns?
7. How is the subject of security concerns dealt with? Is it the major subject? Are IT groups with expertise invited? How technical are these discussions?
8. How is the subject of costs dealt with?
9. Is the question of open source or proprietary software, and contracting out or “in-house” operation, part of the discussion? Are service-provider firms part of the consultation process?
10. Are there written reports of consultations, compilations of briefs? If not, why not?
11. Are there ongoing consultations with the same groups or persons, to provide continuity?

### EVALUATION

Were formal evaluations performed, and if so, are there written reports available?

In more detail:

1. What were the criteria of evaluation, and were they established at the outset for goals to be achieved in the areas of increased accessibility, turnout increase, public approval, extent of utilization and other possible criteria?
2. What methods were used in evaluation? What are the indicators?
3. To what extent are simple “sign off” judgments by officials or approvals by legislatures used as evaluations?
4. Were public opinion surveys done to determine reaction, and if so, what were the results?
5. How are questions of cost factored in to evaluations?
6. Have adjustments to voting methodology been made as a result of evaluations?
7. Have stakeholder groups been approached for input during evaluation?

## Appendix 2: Information Regarding the Centre for Public Involvement (CPI) Online Survey of Edmonton Citizens on Internet Voting

Prepared by Kalina Kamenova, CPI Postdoctoral Fellow and Research Director

### Centre for Public Involvement Online Survey on Internet Voting

#### Background Information

The online survey consisted of 35 questions, including a final open-ended question for comments and feedback. Multiple-choice and ranking scale types of questions were utilized to determine general attitudes toward Internet voting; voting behaviour; participation in municipal, provincial, and federal elections; interest in politics; trust in government and political efficacy; computer and Internet usage; and knowledge of the City of Edmonton's public involvement process. A set of demographic questions (questions 19 to 24) was included to cross-tabulate demographic characteristics (age, gender, education, income, marital status, and geographical location) with attitudinal data.

Links to the survey were posted on the City of Edmonton and CPI website. The online survey was open from September 1 to December 9, 2012. Participants were asked to provide consent to participate in a post-survey measuring learning and opinion change in the wake of the Jellybean Election and CPI public involvement campaign on Internet voting. A link to the online follow-up questionnaire would be e-mailed to all respondents who consented to participate on December 10, 2012, and responses would be collected until December 17, 2012.

#### Summary of Results

The online survey was completed by 400 citizens. The results reported below are preliminary and limited to a small number of attitudinal questions that could be of particular interest to policy-makers. Survey data were to be analyzed in January 2013, and the final results will be presented in a peer-reviewed academic publication.

#### *Public Acceptance of Internet Voting*

The survey data show strong public support for the introduction of an Internet voting option in the 2013 Edmonton election. The opening survey question was, "Do you agree that Internet voting should be introduced as an option for eligible electors\* in the 2013 Edmonton election? (\*Electors will be allowed to use the Internet to cast their vote if they are unable to vote on Election day due to physical incapacity, absence from the local jurisdiction, being a candidate, official agent or scrutineer, or working for the election)." In response to this question, 54.0 percent of the respondents strongly agreed, 22.5 percent agreed, 5.0 percent were undecided, 5.3 percent disagreed, and 13.3 percent strongly disagreed (based on 400 responses).

A subsequent question, "Do you agree that Internet voting should be available to all citizens who are eligible to vote in Edmonton municipal elections?," asked about extending the availability of an Internet voting option to all electors. The following responses were provided: 56.5 percent of respondents strongly agreed, 19.8 percent agreed, 5.8 percent were undecided, 3.5 percent disagreed, and 14.3 percent strongly disagreed (based on 398 responses).

### *Likelihood of Using Internet Voting in Future Municipal Election*

Over two thirds of respondents indicated they would use the Internet to vote in municipal elections, if this option were available. The following question was asked: “If available to everyone, how likely is it that you would use the Internet to vote in future municipal elections?” Respondents were asked to use a rating scale of 1 to 7, where 1 was very unlikely and 7 was very likely. Some 66.2 percent of the respondents stated it was very likely (54.4 percent) or likely (11.8 percent) they would vote online, while 20.0 percent indicated it was unlikely (5.5 percent) or very unlikely (14.5 percent) that they would use this voting option (based on 399 responses).

Similar ratings were provided on the questions asking about the likelihood of using Internet voting in provincial and federal elections, should such an option became available.

Moreover, 66.5 percent or 266 out of the 400 respondents indicated that they would be more inclined to vote in the 2013 municipal elections if Internet voting were available to everyone.

### *Reasons for Using Paper Ballots*

Respondents who opposed Internet voting (there were 84 of them) were asked to indicate the reasons why they would consider voting in person. The survey found that security concerns are paramount, with 94 percent of the respondents selecting this reason. Out of these 84 respondents, 42.9 percent also pointed to familiarity with traditional paper ballots, 61.9 percent refused to share their voting preference and personal information online, 22.6 percent indicated that they like going to the polls or being with other people when voting, 2.4 percent did not have Internet, 2.4 percent did not have access to a computer, and 1.2 percent did not use a computer. Some respondents cited other reasons (e.g. showing commitment or respect to the democratic process, ballot secrecy, inequality in access to technology, and avoiding coercion).

### *Reasons for Using Internet Voting*

This question was answered by 355 respondents. Convenience is the major reason why people would consider voting online, with 83.9 percent selecting this option. Some 64.5 percent said that Internet voting is more accessible, 51.0 percent liked using online technology, 21.4 percent wanted to try something new, 17.2 percent will be out of the city at election time and 14.4 percent indicated they do not like in-person voting. Some 12.4 percent of participants listed other reasons (e.g. inability to vote in person due to health reasons, faster election results, higher voter turnout, ability to enable more layers of security and redundancy and eliminate electoral fraud).

### *Open-Ended Responses*

Some 128 participants provided additional comments, including a range of specific concerns regarding the security of Internet voting systems, feedback on the Jellybean Election and information resources on the city website, support for the introduction of online voting, and evaluation of the survey questions.