Estonian Internet voting

The i-voting system allows any citizen to vote at their convenience, no matter how far they are from a polling station. As an added benefit, making the process easy and accessible increased the number of voters.

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Summary

The i-voting system allows any citizen to vote at their convenience, no matter how far they are from a polling station. As an added benefit, making the process easy and accessible increases voter turnout. The idea of having Internet voting in Estonia gained popularity in 2001. Estonia became the first nation to hold legally binding general elections over the Internet for the municipal elections in 2005. The Estonian parliamentary election in 2007 also used internet voting, another world first.

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<tbody>
<tr>
<td>Focus</td>
<td>Citizens</td>
</tr>
<tr>
<td>Start date</td>
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<td>Domain</td>
<td>Public matter</td>
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<tr>
<td>Scope</td>
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<tr>
<td>Country</td>
<td>Estonia</td>
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<tr>
<td>Nature and status of project</td>
<td>Rolled Out</td>
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<tr>
<td>Is the OOP case/enabler mandatory?</td>
<td>Opt-in</td>
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Enabling assets or components

Relevant Enablers

- Estonian data exchange layer for information systems (X-Road)
- Estonian Public Key Infrastructure
- Estonian Catalogue of Public Sector Information (RIHA)
- Estonian three-level IT baseline security system ISKE

Political commitment


Legal interoperability


Socio-cultural influence factors

Population register uses by use personal code for citizens.

PKI or the public key infrastructure (https://www.ria.ee/en/public-key-infrastructure.html) enables secure digital authentication and signing. The infrastructure also allows forwarding data by using an encrypting key pair: a public encryption key and a private decryption key. In Estonia, this technology is used in relation with electronic identity (ID card, mobile ID, digital ID). All members of X-Road are using Digital seal certificates for signing messages. Citizens and officials are using electronic identity tokens.

Preconditions

Estonia has a population with high e-readiness, a modern infrastructure, effective governmental IT programs, and well-functioning cooperation between the public and private sectors that together are the crucial factors for having successful e-services for a citizen-oriented state. In 2002, the Estonian Parliament created the legislative basis for conducting internet voting. The widespread use of national ID cards was vital for introducing the new voting channel. The ID card, established by the Estonian Government in 2002, is the new generation’s primary identification document, with dual purpose: besides being a physical document, it also functions as an electronic identity.

Benefits

Convenience for voters, particularly those who are traveling outside the country or in areas away from their local polling stations.

- Potential to increase voter turnout
- Cost savings from fewer paper ballots having to be entered
- Median length of the e-voting session was 1:29, 1:21 and 1:36 minutes in 2013, 2014 and 2015. Saving time for citizens 30 min
- Owners of activated e-mail address @eesti.ee will receive electronic voter card by e-mail: decrease of postal expencies
- In the case of i-voting, the cumulative time savings in the Estonian parliamentary elections of 2011 were 11,000 working days, which would amount to around 504,000 euros in average wages.
- In the 2015 Parliamentary Elections, Internet voting accounted for 30.5 percent of the votes cast. Estonians worldwide cast their votes from 116 different countries.

Data handling / data exchange

Type of data sharing

Actual data
I-voting is possible only during the 7 days of advance polls – from the 10th day until the 4th day prior to Election Day. This is necessary in order to ensure that there would be time to eliminate double votes by the end of the Election Day.

Central System.
The Central System is also dependent of two other parties:
• Compiler of voter lists (Data generated from The Population Register),
• Compiler of candidate lists (NEC itself).

The components of the Central System:

Vote Forwarding Server (VFS) – authenticates the voter with the means of ID-card, displays the candidates of voter’s constituency to the voter and receives the encrypted and digitally signed e-vote. The e-vote is immediately sent to the Vote Storage Server and the confirmation received from there is then forwarded to the voter. It ends its work after the close of advance polls. Vote Storage Server (VSS) – receives e-votes from the VFS and stores them. After the close of advance polls removes double votes, cancels the votes by ineligible voters and receives and processes e-vote cancellations. Finally it separates inner envelopes from outer envelopes and reads them for the Vote Counting Application.

Vote Counting Application (VCA) – offline component to which encrypted votes are transmitted with the digital signatures removed. The Vote Counting Server uses the private key of the system, tabulates the votes and outputs the results of e-voting.

Linking registers:
Resident will log in by using eID and submit Personal Identification Number. Other data will be collected from registers.

Electronic voter card:
To order an electronic voter card, your @eesti.ee e-mail address must be directed to the e-mail address that you use on a daily basis. Ordering an electronic voter card from eesti.ee portal only takes a few seconds.

The electronic voter card is an alternative to the ordinary voter card that is sent on paper by mail. The electronic voter card is sent to the e-mail address of the voter and it contains information as to where, how and when they can vote.

The electronic voter card merely provides you with the information necessary to participate in voting. It does not need to be shown when voting and it is not a prerequisite for electronic voting.

A voter card is submitted 20 days before elections to all persons with the right to vote and whose data concerning their place of residence has been entered in the Estonian Population Register. Check your data.

No voter card on paper shall be sent if you have ordered the electronic voter card.

The electronic voter card order shall remain valid for all subsequent elections.

If voting in the election also takes place in a foreign state, a voter card shall be sent to a voter residing in a foreign state 60 days before Election Day at the latest if the card has been ordered at the State Portal.
Lessons learned

Enablers

Enabler 1. Legal and organizational interoperability: legislation approved by stakeholders; government solutions pass interoperability assessment process.
Enabler 2. eID and PKI infrastructure needed. Citizen can use for login IDcard, mobileID or digiID
Enabler 3. The use of open source software solution increases trust to the i-voting system
Enabler 4. Secure data exchange layer for confidential and legally binding data needed. In case of Estonia the X-Road is used.
Enabler 5. Data in Population Register are relevant and up to date
Enabler 6. Master data in population registers must described in catalogue RIHA properly.

Barriers

Barrier 1. Some people (parties) do not trust i-voting
Barrier 2. Trusting Internet transactions by citizens
Barrier 3. Level of computer skills may be higher
Barrier 4. First solution in the world requires sophisticated software and methods for protecting privacy and for achieving high level security

Source: https://scoop4c.eu/cases/estonian-internet-voting

Disclaimer: Please note that this article is a result of the SCOOP4C Pilot Project, not an application of a CEF Building Block.

Find out more

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Save the Date: Once Only Principle Project Web Conference 23 September 2020

Save the Date: Once Only Principle Project Web Conference 23 September 2020 On 23 September 2020, The Once Only Principle (TOOP) team will present the project achievements in piloting the once-only principle and lessons learned. This conference will also ...
On Wednesday 12 February 2020 in Brussels, Belgium, the Single Digital Gateway Coordination Group dedicated to the Once-Only Principle (OOP) presented its work to its Steering Group. The meeting focused on progress made towards the implementation of the OOP, with updates on the OOP Blueprint and discussions on the next steps. The group acknowledged the importance of the OOP in streamlining processes across multiple sectors.