

E-VOTING IN ESTONIA

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Abstract. Estonia is widely credited to be a pioneer in e-governance and especially e-democracy. It has frequently been expected, too, that Estonia will be the leading country for e-voting, introducing it already for the national elections of 2003. However, in the very last changes of the respective laws, the Estonian Parliament has voted for e-voting, not for the immediate future, but only with a delay of implementation until the year 2005. Still, to our knowledge, the current article is the first and so far the only investigation into the first European case of a country that has actually passed overall e-voting laws, and a step-by-step analysis of the relevant law-making process in this case.

The Republic of Estonia has been, and is being, widely credited to be a pioneer in e-governance and especially e-democracy, with headlines such as “Estonia: 10 Years from Communism to Advanced e-Democracy!”² It has frequently been expected, too, that Estonia will be the leading country for e-voting, introducing it already for the national elections of 2003.³ However, in the very last changes of

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Statements, state of legislation, and web-links of this article are valid as of 15 August 2002.

² In the article at <http://www.e-smartransaction.com/asp/application.asp?cle=80&cat=Government>.

³ See, e.g., http://www.time.com/time/interactive/stories/society/e_politics.html;
<http://www.newsbytes.com/news/01/160092.html>;

the respective laws, the Estonian Parliament has voted for e-voting, not for the immediate future, but only with a delay of implementation until the year 2005. Still, to our knowledge, what follows is the first and so far the only investigation into the first European case of a country that has actually passed overall e-voting laws.

1. Background

For those not readily familiar with Estonia, it may be helpful to remind or inform them that, an independent republic between 1919 and 1940 and then a part of the Soviet Union, Estonia regained its independence in 1991 as a parliamentary democracy with a President, Prime Minister, and a 101-seat unicameral Parliament, the *Riigikogu*. The municipal level with around 250 units has a certain degree of autonomy and also enjoys democratic elections; there is no level, other than purely administrative ones, in-between the local one and the central government.⁴

The Republic of Estonia currently has about 1.4 million inhabitants, dispersed over 45.227 km.⁵ Of these, as of 1 January 2001, 869.627 are citizens entitled to vote. In 1999, the last election year, there were 666 polling stations;⁶ voting activity amounted to 57,4 % in parliamentary elections and 49,4 % in local ones.⁷ According to the most recent available poll (July 2002), there are 494.000 Internet users in Estonia, which amounts to 41% of inhabitants between 6 and 74 years of age.⁸

For the political background, it is important to briefly sketch out the Estonian party structure.⁹ The ones that matter in our context are

<http://www.imaginemediaco.uk/newsletter/apr2001.htm>: "You can't stop progress though and it looks as though Estonia will be the world's first nation to provide e-voting at its next General Election in 2003."

⁴ On local government in Estonia, see Drechsler 1999. On recent attempts by the Tallinn political party power cartel to forbid candidates outside of party lists to participate in local elections, see Annus 2002.

⁵ General information about the Republic of Estonia (in English) at www.riik.ee/en; www.gov.ee/en/eestiriik.html; www.undp.ee/nhdr00/en/general.html.

⁶ Information about the election committees for all levels of elections, including location and opening times of polling stations, at www.vvk.ee/r99/kom_start.stm.

⁷ See the turnout among eligible voters, 1989–1999, www.undp.ee/nhdr00/en/1.2.html.

⁸ According to a poll conducted by EMOR, the standard opinion and market research firm in Estonia, but whose results must be accepted with some caution. Press announcement of bns (baltic news service) of 4 July 2002.

⁹ One could argue that Estonia does not really have an established party system; most parties are functionally vague associations of friends that represent certain interests (and funding-sources) but hardly any ideological direction. – This statement, as well as the characterizations of parties given below, are intended to give readers wholly unfamiliar with Estonian politics a rough first orientation; it is certain that all of them can and must be taken with a grain of salt. Although a bit dated already, the best analysis and description of the Estonian party system and the matrix it sets

- *Keskerakond* (“Center Party”, www.keskerakond.ee/), the main ‘transition losers’ party, with a semi-charismatic leader, Edgar Savisaar, currently the Mayor of Tallinn, but without a genuine post-Socialist ideology;
- *Reformierakond* (“Reform Party”, eng.reform.ee), the neo-liberal (indeed, market-radical) ‘transition winners’ party;
- *Isamaaliit* (“Pro Patria”, www.isamaaliit.ee/isamaa2/index_eng.html), a generally nationalist but for the most part also market-radical party that formed the government right after the regaining of independence;
- *Eestimaa Rahvaliid* (“Estonian Peoples Union”, www.erl.ee), a party similar to *Keskerakond* but with a strong and explicit rural orientation;
- *Eestimaa Ühendatud Rahvapartei* (“Estonian United Peoples Party”, www.eurp.ee/eng/), the most clearly post-Socialist party with a special appeal for that part of the Russian-speaking population of Estonia that is actually allowed to vote; and the
- *Mõõdukad* (“Moderates”, www.moodukad.ee/), who by their self-definition are Social Democrats but by ‘Western’ standards quite to the right of that field.

At the beginning of our story, the governing coalition comprised *Isamaaliit* with the Prime Minister, Mart Laar, *Reformierakond*, and *Mõõdukad*. Since 28 January 2002, *Keskerakond*, together with *Reformierakond* – whose leader Siim Kallas is now the Prime Minister – forms the governing coalition; before that, *Keskerakond* was the main opposition party.¹⁰ The governing coalition does not command a majority in the *Riigikogu* – rather, only 47 of the 101 votes.

2. Launching and technical background

The plan to introduce e-voting in Estonia was first publicly announced by the then and current Minister of Justice, Märt Rask (*Reformierakond*),¹¹ at the beginning of 2001.¹² At that time, the Ministry of Justice was anyway drafting several new election laws, aimed at preparing technical changes of the classic electoral process. Given the general fashion of e-related matters, which is particularly

is still Pettai and Kreutzer 1999. The members of all parties are listed on the Ministry of Justice’s “Centre of Registers” website, https://info.eer.ee/ari/ariweb_package9.erakonnad?keel=1.

¹⁰ According to the descriptions given above, this means that the coalition consists of ‘transition winners’ and ‘transition losers’. However, as explained in FN 9 above, in Estonia this is not necessarily a contradiction, because *Reformierakond* indeed does promulgate an ideology appropriate for its clientele, but *Keskerakond* does not; rather, it is perhaps most fair to argue that it has hardly any ideology at all – it is, therefore, a classic populist party. They are therefore not unlikely coalition partners.

¹¹ See www.riik.ee/valitsus/kabinet/mart_rask.html.

¹² In January 2001, the editorial of the business daily *Äripäev* was devoted to the idea of the Minister of Justice to introduce e-voting in Estonia. (“Miks oodata aastani 2003” 2001) The editor asked why Estonia should wait until 2003; rather, Internet voting should be introduced already for the local elections of 2002. Concrete legal solutions were first presented at the press conference of the Ministry of Justice on 4 April 2001; see, e.g., *Eesti Päevaleht* Online, www.epl.ee/artikkel.php?ID=154564.

strong in Estonia, and swift developments in such fields as e-banking (see e.g., www.hanza.net), paperless government,¹³ broadcasting of parliamentary sessions (see www.riigikogu.ee/news.html), etc., this was a likely step to take.¹⁴ Developing Estonian leadership in e-related fields is also seen as a key part of ‘branding Estonia’ and overall of making Estonia better known globally.

The idea of e-voting was thus strongly promoted by the then Prime Minister Laar, who in the Question Time of 17 January 2001, proposed the idea to test e-voting in the year 2001 and to decide then whether to introduce it already for the 2002 local elections. Laar has continuously touted e-voting as a possibility to increase voter turnout and (partially therefore) develop democracy. (See www.riigikogu.ee/ems/index.html)

“E-voting” in Estonia has always meant public remote Internet voting. Already since 1999, there is an Internet- and web-based Election Information System, which enables automatic data-processing and makes the transfer of information of counted votes faster.¹⁵ Since the same year, Estonian citizens have also had no obligation to vote at a specific polling station on election day – it is possible to vote in a polling station outside of one’s home station during the days of advance polling.¹⁶ According to the *Riigikogu* Election Act and the Referendum Act (*Rahvahääletuse seadus* – RT I 2002, 30, 176), as well as to the drafts of the new *Riigikogu* Election Act and the new European Parliament Election Act, citizens (respectively Estonian and European) residing permanently or temporarily outside Estonia may send their vote by mail.

Another facilitation of e-voting in Estonia was the then proposed and meanwhile realized introduction of a mandatory ID Card (which had hitherto not existed; only passports were issued), which includes a digital signature possibility. The ID Card is since 1 January 2002 the primary domestic identification document and must be held by all Estonian citizens and permanent resident aliens over 15 years of age.¹⁷ One of the ID Card’s features is two security certificates to

¹³ Since August 2000, the Estonian government can work on the basis of web-based electronic documents without using paper versions for its sessions. See www.cnn.com/SPECIALS/2001/ukvote/stories/politics/estonia.html.

¹⁴ See overall, e.g., the Estonian Agenda 21, www.agenda21.ee/english/EA21/3_4.html.

¹⁵ Votes are counted by hand in local precincts, and the resulting local protocols have then to be transferred to the National Electoral Committee.

¹⁶ Advanced polling is possible between the sixth and fourth day before the actual election day. Every person entitled to vote can cast the ballot in the polling station of his or her permanent residence or any other polling station. *Riigikogu valimise seadus* (from §§ 34¹ on) – RT I 1994, 47, 784; 1998, 105, 1743; 107, 1765; 1999, 1, 1; 18, 298; 2001, 95, 588. – Estonian laws are published in, and always cited according to, the *Riigi Teataja* (RT), which also publishes international agreements, decisions of the Supreme Court, etc. English translations of Estonian Laws can be generally found on the website of Estonian Legal Translation Centre, www.legaltext.ee/. The *Riigikogu valimise seadus* can be found there as *Riigikogu Election Act*.

¹⁷ About the ID Card, see www.pass.ee/2.html.

supply digital signatures.¹⁸ The digital signature is regulated by the Digital Signature Act¹⁹ and can be used for administrative procedure.²⁰

To get an overview of the possible methods and risks of remote Internet voting, the Ministry of Justice on 1 March 2001 ordered an analysis from two scholars in the field, the cryptologist Helger Lipmaa (Helsinki) and his student Oleg Mürk, who specializes in the field from an informatics perspective. (Lipmaa and Mürk 2001)²¹ The report by the Internet Policy Institute published in the USA at the same time²² was also used as a basis of study. The commissioned analysis recommended to prepare some experiments or pilot-projects first and not to introduce e-voting before 2007, because an earlier date would be technically, and therefore also socially, too risky. (Lipmaa and Mürk 2001, 1, 28–30) In the fall of 2001, another analysis was ordered from the mathematician Tanel Tammet (Göteborg)²³ by the Estonian Ministry of Transport and Communication (www.tsm.ee/eng/), which was to focus especially on technical questions and costs. As a result, concrete recommendations concerning the voting process were given and a provisional budget of e-elections was drawn up. (IT Meedia 2001)²⁴

3. The Minister's Drafts

Taking into account the purpose to introduce public remote Internet voting and some of the recommendations given by the experts – but not the one by its own experts as regarded postponement until 2007 –, e-voting provisions were drafted by the Ministry of Justice and sent to the parliament. There, they were not discussed generally, but as part of four different new election laws: The Local Communities Election Act, the Referendum Act, the European Parliament Election Act, and the *Riigikogu* Election Act. The discussions in the *Riigikogu* as far as the e-voting feature was concerned were more or less seamless as well and not really closely connected with what Act it actually was, which is why the arguments will be presented here in a synthesized fashion. However, since local elections are scheduled for 2002, it was this Act that drew more attention than the other (followed by the Referendum Act because of its implications for European Union accession). When discussing specific features (which in the end were the same for

¹⁸ *Isikut tõendavate dokumentide seadus*. – RT I 1999, 25, 365; 2000, 25, 148; 26, 150; 40, 254; 86, 550; 2001, 16, 68; 31, 173; 56, 338.

¹⁹ *Digitaalallkirja seadus*. – RT I 2000, 26, 150; 92, 597; 2001, 56, 338. *Digital Signature Act* (in English): www.riik.ee/riso/digiallkiri/digsignact.rtf.

²⁰ There is e.g. the e-Tax Board: www.ma.ee/ema/; general provisions for digital administrative procedure can be found in *Haldusmenetluse seadus*. – RT I 2001, 58, 354; *Administrative Procedure Act* (in English): www.legaltext.ee/et/andmebaas/ava.asp?tyyp=SIITE_ALL&ptyyp=I&m=000&query=Administrative+Procedure+Act.

²¹ About Lipmaa, see www.tcs.hut.fi/~helger/; about Mürk, see www.math.ut.ee/~olegm/.

²² See www.riik.ee/evalimised/ylდანalysid/e_voting_report.pdf.

²³ About Tanel Tammet, see www.cs.chalmers.se/pub/users/tammet/home.html; see also, about OÜ IT Meedia, www.itmeedia.ee/eng/index.html.

²⁴ Some technical aspects of the e-voting are still unclear, including the encryption mode.

all four Acts), we will therefore refer below to the development of the provisions of the Local Communities Election Act.²⁵

According to § 60 of the Estonian Constitution,²⁶ “Members of the *Riigikogu* shall be elected in free elections on the principle of proportionality. Elections shall be general, uniform and direct. Voting shall be secret.” Since the original drafting of the Constitution of 1992, these principles have not been the subject of juridical discussion.²⁷ As to whether e-voting would influence these principles, the Minister and Ministry based themselves on two basic decisions:

- a) To use a *teleological* approach to Constitutional interpretation, i.e. to say that Constitutional problems should be understood through the problems the given principles were meant to solve.²⁸ As an example in the current case of e-voting, the principle of secrecy (raised most strongly in Parliament later on) was said to protect an individual from any pressure or influence against her or his free expression of the political preference – i.e., that it is a means, not an end. This includes the threat that the state or a public official can check who voted for whom. But it was said that, if privacy is guaranteed in the polling station and if all those who have voted via the Internet have the right (which was proposed) to go to the polling station on election day and replace their electronically recorded, transferred and counted vote by a new paper-ballot (see § 55 of the initial draft of the Local Communities Election law), then the aim of the principle of secrecy, the end, is actually achieved.
- b) To start from the assumption that the State must ‘trust the people’ and not interfere if at all possible in any of their decisions. The Minister of Justice is a member of *Reformierakond*, and this party’s ideology informs the current approach. As an example in our context, the problem that e-voting would facilitate some families, friends or colleagues voting together, i.e. practice collective voting, as well as the buying and selling of votes, was said to hinge on the question of whether the State would have to protect an individual only from other individuals or also from her- or himself. It was not seen that collective voting could be a problem for the state as well, and not only for the individual.

It should be noticed that pilot projects were perhaps occasionally considered, but they were never seriously put on the agenda. In some sense, the entire draft and then law would be its own pilot project.

²⁵ The initial draft of Local Communities Election Act can be found at www.riigikogu.ee/ems/index.html: *Täiskogul menetatud eelnõu nr 747. Menetlusetapid. Algtekst.*

²⁶ *Eesti Vabariigi põhiseadus* (RT 1992, 26, 349). *Rahvahääletusel vastu võetud 28.06.1992 seadus nr 1. Jõustumiskuupäev 03.07.1992*, lex.andmevara.ee/estlex/kehtivad/AktDisplay.jsp?id=7020&akt_id=7020; English translation www.gov.ee/en/eestiriik.html#const.

²⁷ See Annus 2001, 64–70, and *Põhiseaduse juriidilise ekspertisikomisjoni lõpparuanne 2001*.

²⁸ It is interesting to note that this is a fairly novel approach; Supreme Court decisions in Estonia, for instance, have hardly ever used teleological interpretations. See Drechsler and Annus 2001, 489–490; Annus 2001, 42.

4. In Parliament

Because of the above-mentioned change in government in January 2002, it had been expected by some that the strong impetus for all e-governance matters that had been a specialty of the old Prime Minister, Mart Laar, would now cease. To some extent, this has been the case, although *Reformierakond* is the senior partner in the coalition; yet in fact, creating a legal basis for the introduction of e-voting is one point in the Coalition Agreement. (www.riik.ee/et/valitsus/koalitsioon.htm)

Parliamentary debate on e-voting was nevertheless long and lively. The problems most discussed were the equality of citizens in political life, privacy and secrecy of voting, security of electronic voting systems, and how to avoid fraud. In the plenary session, e-voting was discussed within all readings of all four drafts.²⁹

As already in the very first stage of developing the e-voting idea, the old and new government coalition parties *Isamaaliit*, *Reformierakond*, *Mõõdukad*, and *Keskerakond* were principally in favor of e-voting, the *Rahvaliid* and *Ühendatud Rahvapartei* factions against. E-voting provisions were always supported in plenary session.³⁰

Members of Parliament opposed to e-voting have argued that it would be unconstitutional; they also cited technical problems and dangers – the collision of constitutional principles of secrecy, generality, and uniformity, and e-voting; negative or absent experiences in other countries; weakness of technical preparations; the problem of hackers. Of the anti-e-voting parties, mainly *Rahvaliid*, members rhetorically asked whether the State would provide laptop PC's to people living in rural territories; that going to the polling station would be a valuable action by itself; and that e-voting would just be another opportunity for the more successful people in society to have an impact and is therefore not fair.

It may generally be noticed that a large majority of Members shared the Ministry's attitude towards teleological interpretation of the Constitution, as well as the assumption that (a) e-voting increases voter turnout and that (b) this *automatically* has a positive effect on 'Democracy'.³¹ Possibly adverse effects of the e-voting provisions for joining the European Union, or dangers of a law suit on the basis of the European Human Rights Convention (which Estonia acceded to in 1996), have never been considered.

²⁹ See the minutes at www.riigikogu.ee/ems/index.html. The draft of the Local Communities Election was discussed on 14 June 2001, 23 January, 27 February, and 27 March 2002; the draft of the *Riigikogu* Election Act on 14 June 2001, 30 January 2002, 27 March, 15 and 22 May 2002; the draft of the Referendum Act on 19 September 2001, 30 January and 13. March 2002; the draft of the European Parliament Election Act on 23 January 2002.

³⁰ See the debate and voting results according to the minutes as cited above (FN 29). About the voting process, see the *Riigikogu* Internal Rules Act, www.riigikogu.ee/legislation.html.

³¹ See the minutes referred to above at FN 29. It is interesting to see how the results on e-voting provisions were changing: while in January 2002, the result was about 24:8 per vote, in March, it was about 51:13 ("about" meaning average vote of all amendments voted on).

5. The Law(s)

As a result of the parliamentary debate, the initial Ministerial e-voting provisions were adopted according to the principles and provisions of the draft as follows:

- a) According to § 52 of the draft law, voters who hold a certificate for giving digital signatures can vote on the website of the National Electoral Committee (www.vvk.ee/), but only on advance polling days (the sixth to fourth day before the actual election day). Every voter shall certify his or her identity by giving her or his digital signature via the ID Card. After the identification of a voter, the list of candidates shall be displayed on the website. The voter shall mark the candidate in favor of whom he or she votes on the website and confirm submitting the vote. The voter shall receive a message on the website, stating that his or her vote shall be calculated.
- b) According to § 55, the National Electoral Committee shall prepare lists of voters who voted using electronic means for polling divisions and forward such lists to county electoral committees no later than on the second day before election day. A county electoral committee shall forward lists of e-voters received from other county electoral committees and from the National Electoral Committee to the corresponding division committees no later than on the day before election day. After receipt of the envelopes with ballot papers and the lists of voters who voted using electronic means, the division committees shall check whether a voter is entered in the polling list of the polling division and whether he or she has not voted more than once. If a voter has voted more than once, including using electronic means, the division committee shall send a corresponding notice to the National Electoral Committee immediately. On the basis of such notice, the National Electoral Committee shall not calculate the voter's vote cast using electronic means. On the parliamentary elections and referenda electronic voting is pursuant to the same procedure and conditions allowed also for Estonian citizens permanently residing in foreign states.³²
- c) On the basis of the records of voting results of voters in the country, permanently residing in a foreign state, and who voted using electronic means received from all County Electoral Committees, the National Electoral Committee shall according to § 57 verify the number of voters entered in the polling lists, the number of voters who received a ballot paper, the number of voters who participated in voting, the number of invalid ballot papers and the number of votes cast in favor of political parties and independent candidates.

However, to all laws or drafts,³³ an explicit declaration was added – although this is the case already today in all Estonian elections – that the voter shall vote

³² § 46 *Rahvahääletuse seadus*. – RT I 2002, 30, 176.

³³ The Local Communities Election Act was adopted by Parliament on 27 March 2002 and entered into force on 6 May 2002. RT I 2002, 36, 220. The Referendum Act was adopted on 13 March 2002 and entered into force on 6 April 2002. RT I 2002, 30, 176. The *Riigikogu* Election Act was

himself or herself (e.g., § 50 (1) in the Local Communities Election Act). Most importantly, it was explicitly stated that e-voting should not be applied before the year 2005 (e.g., § 74 (5) in the Local Communities Election Act). This was apparently in deference to the *Rahvaliid* faction – as was mentioned, the government commands at best a minority of 47 out of 101 votes; the *Rahvaliid* votes are therefore important.

6. Conclusions

Whatever the long-term effects of e-voting on democratic decision-making and, indeed, Democracy might be – and this seems to be entirely unclear as of yet –, and although we have no good reason to think that e-voting will necessarily increase voter turnout, but we do that it will widen various gaps in society,³⁴ it can hardly be doubted that, technology-driven as our time is, this is the ‘train into the future’. Estonia is noticeable for its strong proclivities of anything e-related among its politico-economic elite, as well as for an extremely low level of resistance against, and indeed discourse about, any ‘progressive’ developments that might have unwanted side-effects (biotechnology is another example; see Weber 2001).

There was hardly any accompanying discussion of e-voting in media or society (with the exception of a few newspaper articles and simple and emotional anonymous comments to them in online-newspapers and info-portals);³⁵ likewise, neither were there any significant public comments by social scientists or lawyers – one of the reasons why the present paper has focused on the formal political process and on parliamentary and ministerial actors only. One can safely conclude that the e-voting initiative came from a political elite, and that it was and is largely detached from ‘the people’ whose participation it is supposed to increase. One could certainly diagnose for Estonia an attitude towards the right to vote, and democratic decision-making in general, that one might describe variously as pragmatic, relaxed, detached, or cynical. Anecdotally, as regards e.g. possibilities of fraud, one could often hear people saying that, if they trusted the net with their banking, why should they not in a so much less important field as political elections?

adopted on 12 June 2002 and entered into force on 18 July 2002. RT I 2002, 57, 355. The draft of the European Parliament Election Act is still pending in Parliament; see the *Riigikogu* proceedings no. 906 at www.riigikogu.ee/ems/index.html.

³⁴ See Kersting and Baldersheim forthcoming; cf. Tolbert and McNeal 2001 for the influence of Internet access (without e-voting) on voter turnout.

³⁵ See, e.g., www.postimees.ee; www.delfi.ee. As all comments are anonymous, their level is indeed exceedingly low, and they often do not connect with the subject at hand. Certainly here, the Dreyfus/Kierkegaard criticism of anonymous and ignorant discourse in the public sphere strongly applies; see Dreyfus 2001, 73–89; Drechsler 2002. – In early January 2001, there had been some political discussion in an online debate of *Äripäev* (see FN 12 above for the reference to the respective editorial). See *Äripäev* Online, 5 January 2001, www.aripaev.ee/1836/arv_kysitlus_183601.html.

Still, while Estonia could have easily been the world leader in e-voting by introducing this as a regular feature already for the local elections of 2002, probably genuine worries that technical problems would not be solved by the Fall of that year, as well as the scepticism of individual members of parties generally in favor of e-voting, all of them reasonable and appropriate, were among the reasons that prevented such an outcome. But in the end, it was mainly the resistance of the rural opposition party, which – likewise reasonably and appropriately – feared that such a feature would increase the vote of its competitor parties, and which therefore would have very rightly and properly fought against it in Parliament, that led to the postponement of actual e-voting in Estonia until 2005. In that sense, the postponement can be seen as an attestation that democracy in Estonia in fact works.

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