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THE THEORY AND PRACTICE OF ONLINE VOTING. THE CASE OF ESTONIA (selected issues)

ABSTRACT

Electronic voting has attracted much interest recently. One of the European, and perhaps even global leaders in the application of electronic voting procedures into elections is Estonia. The citizens of that small European country have had the possibility of voting online since 2005. The goal of this study is to provide a theoretically focused and empirically grounded analysis of the use of electronic voting (that is one of the instruments of e-democracy) in Estonia. This paper does not intend to cover all the details of the country's experience with e-voting. Its coverage is limited to providing data on the influence of electronic voting on the final turnout in certain elections in Estonia. This study investigates the consequences of Internet voting in local, national and European parliamentary elections in Estonia. In particular, the analysis aims to determine whether this new form of voting could increase turnout.

Keywords: e-democracy, e-voting, i-voting, turnout, Estonian elections

IN MODERN HISTORY, philosophy and politics, *democracy* holds significant position in the hierarchy of challenges and problems, and is regarded as one of the most important issues of contemporary culture and civilization. Michael Novak claims that from among all types of political systems, which lie at the root of human history, none so significantly revolutionized the usual human hopes as *democracy*.¹

¹ M. Novak, *Duch demokratycznego kapitalizmu*, Poznań 2001, p. 25.

We are familiar with various definitions and concepts behind *democracy* that sometimes differ diametrically. These are produced by all sorts of understandings concerning the notion of *people* or the manner of appointing authorities. The most common definition of *democracy* is the words of Abraham Lincoln, according to whom “democracy is the government of the people, by the people, for the people”. Modern literal and etymological understanding of the term *democracy* as *the government of people* remains to be the most popular and frequently applied.

Now we have no doubts that today’s *democracy* undergoes visible transformations, which may influence this form of exercising authority. It is expressed in Maria Nowina Konopka’s statement: “on account of the decrease of confidence in governments and parliaments, which has been observed in European countries since the beginning of 1980s and in Poland since the first half of 1990s, and along with the development of modern information and communication technologies, we may notice more and more frequent demands for a return to the direct form of governing².”

One of the important changes that concerns contemporary democratic countries is the increasingly wide application of new technologies in the broadly defined political life. Firstly, ICT – information and communication technologies – are used in various fields of politics as a tool for informing the electorate about activities of politicians, political parties or national institutions. Secondly, ICT serve as a tool for communicating with the electorate (via email, chat, internet forums, blogs etc.). Besides, modern technologies are applied in election procedures and thus in some countries, electronic voting is possible – it is done through the so-called voting booths placed in polling stations, with the use of a computer connected to the Internet or through mobile communications.

The consequences of the application of electronic techniques in exercising democratic authority may seem revolutionary (primarily from the viewpoint of the pace in which particular processes in politics occur – informing, communicating or voting).. We may suspect that it will take many years for the revolution to spread, since governments and parliaments in the majority of countries remain sceptical and wary towards the application of new solutions e.g. in polling procedures, despite the fact politicians in many countries use ICT to inform and communicate with the electorate.

² M. Nowina Konopka, *Spółeczeństwo informacyjne a teorie demokracji*, [in:] *Spółeczeństwo informacyjne. Istota. Rozwój. Wyzwania*, M. Witkowska, K. Cholała-Sosnowska (ed.), Warszawa 2006, p. 82.

It is worth noting here that the supporters of the solutions that are deeply rooted in the Athenian democracy justify their choice of tools mainly by the crisis of the representative democracy, new technical possibilities to introduce a greater number of direct democracy institutions, and the need to engage voters more. This is confirmed by researchers, politicians or commentators who suggest engaging increasingly larger groups of eligible voters, who do not take part in polling processes, into decisive processes

One may thus state that democracy “supported” by modern technologies evolves and begins to function in a new reality, acquiring new dimension. It is right to notice that the role of ICT was acknowledged as so important that some theoreticians of democracy – e.g. Barry N. Hague or Brian Loader – go as far as to speak of the change in the way of understanding a democratic system³. Benjamin R. Barber refers to this attitude in his book *Strong Democracy. Participatory Politics for a New Age*, who introduces the notion of *strong (powerful) democracy*, and attributes to it a series of virtues – e.g. activeness, engagement, duty⁴. Strong democracy based on participation, citizenship or public interest assumes that a citizen’s view is not the only a value, but they are also capable of making autonomous and responsible choices. Participation in decisive processes results from the will and beliefs of citizens⁵. Democracy enriched with electronic tools (electronic democracy, e-democracy) – e.g. electronic voting, may reinforce democracy; increase the level of participation among eligible voters, and thus the legitimization of decisions taken.

The goal of this study is to provide a theoretically focused and empirically grounded analysis of the use of electronic voting (that is one of the instruments of e-democracy) in Estonia. This paper does not intend to cover all the details of the country’s experience with e voting. Its coverage is limited to providing data on influence of electronic voting on the final turnout in certain elections in Estonia. This study investigates the consequences of the Internet voting in local, national and European parliamentary elections in Estonia. In particular, my analysis aims to determine whether this new form of voting could increase turnout.

³ *Digital Democracy: Discourse and Decision-making in the Information Age*, B.N. Hague, B. Loader (eds.), New York 1999.

⁴ B.R. Barber, *Strong Democracy Participatory Politics for a New Age*, Berkeley–Los Angeles–London 2003, p. 133.

⁵ D. Pietrzyk-Reeves, *Idea społeczeństwa obywatelskiego. Współczesna debata i jej źródła*, Wrocław 2004, p. 237.

ELECTRONIC VOTING AS A TOOL OF ELECTRONIC DEMOCRACY

However, before any progress towards this goal can be made, some definitions of e-democracy and e-voting should be presented.

Without any doubt, the new technologies have become a considerable tool for politics in present-day democracies. The role of ICT has become so important that some theoreticians and researchers of democracy see the necessity of changing paradigms of understanding a democratic system and introducing a notion of *electronic democracy (e-democracy)*⁶. One should bear in mind that in social studies there is no agreement on how to understand the term electronic democracy, hence there are plenty of definitions of this notion. It is worth quoting some of the explanations, which seem to be the most accurate method of properly understanding this term.

According to the definition by Alexander Trechsel, Raphael Kies, Fernando Mendez and Philippe C. Schmitter, “e-democracy consists of all electronic means of communication that enable/empower citizens in their efforts to hold rulers/politicians accountable for their actions in the public realm. Depending on the aspect of democracy being promoted, e-democracy can employ different techniques: (1) for increasing the transparency of the political process; (2) for enhancing the direct involvement and participation of citizens; and, (3) improving the quality of opinion formation by opening new spaces of information and deliberation”⁷. Thus, the interpretation of this definition leads to the conclusion that e-democracy makes it possible for citizens to hold politicians responsible for their actions and facilitates communication between politicians and citizens.

In the document titled *Inquiry into Electronic Democracy. A Final Report* by the Australian Parliament of Victoria *electronic democracy* is defined as “The use of information communications technologies by individuals to extend their choices

⁶ B.N. Hague, B. Loader, *Digital Democracy: Discourse and Decision-making in the Information Age*, New York 1999.

⁷ A. Trechsel, R. Kies, F. Mendez, P. C. Schmitter, *Evaluation of the use of new technologies in order to facilitate democracy in Europe. E-democratizing the parliaments and parties of Europe*, 2004, p. 10, http://www.erepresentative.org/docs/6_Main_Report_eDemocracy-inEurope-2004.pdf, accessed 25.01.2011.

for thinking and acting as citizens, unrestricted by time and place, and culminating in a greater collective freedoms under the rule of law”⁸.

One often cited definition is from e-democracy researchers Hacker and Dijk, who state that *e-democracy* represents the use of information and communication technologies (ICTs) and computer mediated communication (CMC) in all kinds of media (e.g. the Internet, interactive broadcasting and digital telephony) for purposes of enhancing political democracy or the participation of citizens in democratic communication⁹. And according to another definition, “e-democracy is the use of the Internet by government, political parties and advocacy groups to provide information, communicate, deliver services or boost participation to generate a more robust debate among citizens”¹⁰.

However, there are some common features of the abovementioned definitions of *e-democracy*. They include: the emphasis on the use of modern technologies, the participation of citizens in the political decision-making process and citizens’ involvement in the public sphere. This may result in the multiple use of e-government, such as: e-forums, e-consultations, e-town halls, e-referenda and e-elections.

An important element of the discussions on e-democracy focuses on the provision of alternative ways of voting. A very significant tool in this context is *electronic voting* (also known as *e-voting*) used both in indirect democracy (elections) and in direct democracy (referenda).

This relatively young form of voting is of interest to public and private institutions in many countries around the world (e.g. in Switzerland, the United Kingdom, Holland, Sweden, Estonia, the USA). Supporters of making e-voting part of democratic procedures claim that it may increase citizens’ awareness and thus their knowledge about political systems and political phenomena. Greater awareness of voters would result in higher sagacity in polling decisions – both at ballot boxes and at electronic equipment: voting machines or computers connected to the Internet. B.R. Barber suggests that an electronic forum should be created, as it would increase citizens’ level of education and at the same time guarantee them

⁸ *Inquiry into Electronic Democracy. Final Report*, Parliament of Victoria, Australia, Scrutiny of Acts and Regulations Committee, 2003, p. xlviv; http://www.parliament.vic.gov.au/SARC/E-Democracy/Final_Report/Final_Report.pdf, accessed 25.11.2009.

⁹ *Digital Democracy: Issues of Theory and Practice*, K.L. Hacker., J. Dijk, (eds.) London 2000, p. 1.

¹⁰ *E-DEMOCRACY AROUND THE WORLD. A Survey for the Bertelsmann Foundation by Phil Noble & Associates*, Summer 2001, p. 1, http://www.bertelsmann-stiftung.de/bst/de/media/xcms_bst_dms_18425_18426_2.pdf, accessed 1.03.2011.

equal access to information¹¹. Despite many difficulties that arise from the application of modern technologies, electronic voting can be an efficient tool, which would enable greater participation in decisive processes. Making use of information and communication tools in the field of politics is one of the ways to adjust democracy to the needs of contemporary countries and to reinforce democratic societies.

As in the case of e-democracy, in the literature there are many definitions of *e-voting*. Before defining *electronic voting*, it should be noted that e-voting is commonly confused with *online voting*, while *electronic voting* the first one (with the prefix “e-”) is a notion of a broader meaning than *online voting*.

According to a universal definition given by the Committee of Ministers of the Council of Europe in Recommendation Rec(2004)11 *e-voting* is “an e-election or e-referendum that involves the use of electronic means in at least the casting of the vote”¹². There is also a very similar and popular definition, according to which *electronic voting* is a term encompassing several different types of voting, embracing both electronic means of casting a vote and electronic means of counting votes¹³.

The phrase *electronic voting* is a term used to describe various voting methods based on electronic technology. There are three key categories of the discussed form of voting: machine counting, computer voting and on-line or Internet voting. Machine counting needs voters to punch a hole in their ballot card, which is then scanned and counted by the main computer. Voting via computer or direct-recording electronic voting machines “involve the use of either a keyboard, touch screen or some kind of pen or pointer and computer terminal and are immediately factored into the tally of votes”¹⁴. According to R. Michael Alvarez and Thad E. Hall, there are four kinds of Internet voting: kiosk Internet voting (voting is done at a specific location by using a computer; casting a ballot over the Internet is controlled by election officials), polling place Internet voting (is conducted at any polling station through the use of a computer that is controlled by election representatives),

¹¹ B.R. Barber, *Strong Democracy...*, pp. 272–273.

¹² *Legal, operational and technical standards for e-voting. Recommendation Rec(2004)11 adopted by the Committee of Ministers of the Council of Europe on 30 September 2004 and explanatory memorandum*, Strasbourg 2005, p. 8.

¹³ *What is e-voting?*, ACE project, <http://aceproject.org/ace-en/focus/e-voting/what-is-e-voting>, accessed 15.03.2011.

¹⁴ N. Goodman, J.H. Pammett, J. DeBardeleben, J. Freeland. *A Comparative Assessment of Electronic Voting*, Canada-Europe Transatlantic Dialogue, February 2010, p. 13, <http://www.canada-europe-dialogue.ca/events/2010-01-26-InternetVotingMaterials/AComparativeAssessmentofInternetVotingFINALFeb19-a.pdf>, accessed 12.03.2011.

precinct Internet voting (it is analogous to polling place voting except that it must occur at the voter's designated precinct polling place) and remote Internet voting (voting via Internet from a voter's home or potentially any other location with Internet access)¹⁵.

A very interesting definition by Thomas M. Buchsbaum should also be noted. He states that "the term e-voting is being used from casting the vote by electronic means to asking the internet community for an opinion on a political issue, as well as from tabulating the votes by electronic means to integrated electronic systems from voters' and candidates' registration to the publication of election results"¹⁶. He adds that other notions with the prefix "e-" or "i-", like e-elections, e-referendum or i-voting have been introduced in order to clarify the specific contents of e-voting. He distinguishes two main types of e-voting: e-voting supervised by the physical presence of representatives of governmental or independent electoral authorities and e-voting not physically supervised by representatives of governmental authorities (voting from one's own computer via the internet (i-voting), by touch-tone telephones, by mobile phones, or via Digital TV)¹⁷.

Also, Polish scientists and researchers (Leszek Porębski¹⁸, Maria Nowina Konopka¹⁹, Maria Marczevska-Rytko²⁰, Andrzej Kaczmarczyk²¹, Przemysław Maj²², Daniel Mider²³) are dealing with the subject of electronically assisted voting. According to Maria Nowina Konopka *electronic voting* virtually refers to technologies that are used within voting processes such as: digital broadcasting, telephony, the Internet²⁴, and according to Andrzej Kaczmarczyk i Roman Cza-

¹⁵ R.M. Alvarez, T.E. Hall, *Point, Click, and Vote. The Future of Internet Voting*, Washington 2004, p. 4.

¹⁶ Th. M. Buchsbaum, *E-Voting: International Developments and Lessons Learnt*, [in:] *Electronic Voting in Europe. Technology, Law, Politics and Society*, A. Prosser, R. Krimmer (eds.), Bregenz 2004, p. 32.

¹⁷ Ibidem.

¹⁸ L. Porębski, *Elektroniczne oblicze polityki. Demokracja, państwo, instytucje polityczne w okresie rewolucji informacyjnej*, Kraków 2004.

¹⁹ M. Nowina Konopka, *Rola Internetu w rozwoju demokracji w Polsce*, Kraków–Nowy Sącz 2008.

²⁰ M. Marczevska-Rytko, *Demokracja bezpośrednia w teorii i praktyce politycznej*, Lublin 2002.

²¹ A. Kaczmarczyk, *Cyberdemocracy. Change of Democratic Paradigm In the 21st Century*, Toronto 2010.

²² P. Maj, *Internet i demokracja. Ewolucja systemu politycznego*, Rzeszów 2009.

²³ D. Mider, *Partycypacja polityczna w Internecie. Studium politologiczne*, Warszawa 2008.

²⁴ M. Nowina-Konopka, *Rola internetu w...*, p. 189; M. Nowina Konopka, *Elektroniczna urna*, <http://www.rpo.gov.pl/pliki/12066058070.pdf>, accessed 27.06.2010.

jkowski – *e-voting* should be generally understood as “voting with the use of electronic means”²⁵.

It should also be emphasized that information and communication technologies used in electronic voting can be applied to gather, handle and visualize results received from electoral commissions, in which votes are cast in a traditional manner – with ballot papers, during the process of receiving and counting votes, and in remote voting made online.

I-voting – one of the forms of electronic voting. On account of the place where the votes are cast *i-voting* can be divided into: *Internet Voting at the Polling Place* (IV@PP) where votes are cast at polling stations and then transferred online to respective authorities, and *Remote Internet Voting* (RIV) where votes are cast at any place through an Internet connection, and then transferred online to respective authorities²⁶. With regard to forms of democracy (direct or representative), we list two types of electronic voting: *electronic elections* (*e-elections*) and *electronic referendum* (*e-referendum*).

In the contemporary conditions concerning the progress of civilization, the popularity of electronic voting is increasing – mainly because it is new and seemingly – attractive and convenient phenomenon for hundreds of millions of people around the world. Many voters prefer e-voting (especially online voting) to traditional methods²⁷. This is due to the fact that voting with a computer connected to the Internet is far more convenient (particularly for those who cannot make their way to a polling station because of poor health condition or for those who are away from home during election) and faster, and it does not require a voter e.g. to leave his or her home.

The following section discusses the Estonian experiences associated with electronic voting in general, primarily concentrating on the turnout changes in certain elections. The main goal of this study is to answer the question whether e-voting has boosted turnout in the elections in Estonia, and if so, among which groups of

²⁵ R. Czajkowski, A. Kaczmarczyk, *E-głosowanie – niezbędny element elektronicznej platformy do obsługi procedur demokracji w społeczeństwie informacyjnym*, [in:] *Tworzenie mechanizmów i struktur rozwoju elektronicznej gospodarki w Polsce*. Warszawa, 12 czerwca 2001 r. Materiały pokonferencyjne, Poznań 2001, p. 48.

²⁶ R.K. Gibson, *Internet Voting and the European Parliament elections: problems and prospects*, [in:] *The European Union and E-Voting. Addressing the European Parliament's Internet Voting Challenge*, A.H. Trechsel, F. Mendes (eds.), Routledge 2005, pp. 34.

²⁷ *The I's Have It*, http://www.everyonecounts.com/index.php/why_everyone_counts/why_i-voting, accessed 14.02.2010.

the electorate the e-voting attracted the most attention? The data presented are from the Estonian National Electoral Committee.

ONLINE ELECTION IN ESTONIA

One of the European, and perhaps even global, leaders in the application of electronic voting procedures into elections is Estonia. The citizens of that small European country have had the possibility of voting online since 2005 and what is important – the Estonian government considers the effects of implementation of the new voting system as a success.

The debate over the implementation of electronic voting in Estonia started in 2001, and a year after Estonian parliament – *Riigikogu* – passed an appropriate bill – *Digital Signature Act 2002* – which enabled citizens to use electronic signatures in order to confirm their identity at online transactions as well as during elections. The act formed a legal base to carry out online voting²⁸. The Electoral Commission began to implement the project of an e-voting system in the second half of 2003²⁹.

The key element in the new manner of voting is ID-Cards – special identity cards for a new generation introduced by the *Identity Documents Act* in January 2000. Such identity cards have two kinds of functions: they are identification documents and confirm electronic identity.

The Estonian electronic voting system is based on *Remote Internet Voting*³⁰. An Estonian voter who wants to vote in such a way needs: an identity card of the new generation, i.e. (*eID-card*) with valid certificates (renewed on a webpage), PIN numbers (issued together with eID cards) and a computer with eID card reader,

²⁸ N. Goodman, J.H. Pammett, J. DeBardleben, J. Freeland, *A Comparative Assessment of Electronic Voting*, Canada-Europe Transatlantic Dialogue, February 2010, pp. 33, <http://www.carleton.ca/europecluster/events/2010-01-26-InternetVotingMaterials/AComparativeAssessmentofInternetVotingFINALFeb19-a.pdf>, accessed 15.10.2010.

²⁹ E. Maaten. *Towards remote e-voting: Estonian case*, Elections Department. Chancellery of the Riigikogu (Parliament), Tallinn 2004, Conference materials from The International Workshop on Electronic Voting in Europe, Bregenz/Austria, 7–9.07.2004, pp. 83, <http://www.e-voting.at/index.php?id=4&artikelID=62>, accessed 15.10.2010.

³⁰ Despite the fact that the Estonian National Electoral Committee uses the general name *e-voting* (not *i-vote* – *Internet* or *Online voting*) to describe the Estonian electronic voting system – in this part of the paper both phrases: *e-voting* and *i-voting* – are used synonymously while considering e-voting in Estonia.

an Internet connection and one of the following operating systems installed: Windows, MacOS, Linux³¹.

It was reserved at the implementation of e-voting system in Estonia that electronic voting must be as similar to the traditional voting as possible. What is more, the conformity of voting to law and rules of elections, and making e-voting as secure as traditional voting were necessary³². According to the Estonian electoral law,³³ e-voting is held from the 10th do the 4th day before the day traditional election starts. From the standpoint of technical issues, it is necessary to make an electronic voting system as simple as possible, and transparent enough to enable experts check its proper functioning.

Already in 2001, the project of e-voting was recognized as an important element of the government's strategy based on the application of technology in order to make the public sector more efficient, effective and client-friendly. The most important reasons for introducing additional ways of voting in Estonia are the following: to make an additional and convenient voting channel available and, consequently, to update voting procedures, and enable more efficient use of infrastructure (digital platforms and electronic IDs).

ESTONIAN E-VOTING IN PRACTICE

As far as the application of the Internet and other ICT tools are concerned, Estonia is one of the most intensively developing European countries. It is the only country in Europe where Internet access is legislated by the social law. Already in 2000, the Riigikogu passed a proposal to guarantee every Estonian person access to the Internet in the same way as other constitutional laws³⁴.

³¹ Estonian National Electoral Committee, <http://www.vvk.ee/index.php?id=11178&tpl=1062>, accessed 10.10.2010.

³² *E-Voting System. General Overview*, Estonian National Electoral Committee, Tallinn 2005–2010, pp. 7.

³³ *Riigikogu Election Act, Local Government Council Election Act, Referendum Act and European Parliament Election Act* – all of the acts include similar conditions for e-voting.

³⁴ "Citizens can now access the Internet from one of 729 Public Internet Access Points (PIAP), 51 PIAPs per 100 000 people. The PIAP has a special traffic sign, with the @ symbol, showing its location. Most PIAPs are located in libraries and other municipal buildings across the country. No fee is charged for using the Internet services at PIAPs. As it was mentioned above, eGovernment Internet access is free to all citizens should they choose to use the public access facilities provided. There are more than 600 areas (city squares, gasoline stations, hotels, pubs, airports etc.) which currently

Being one of the leading global investors in the field of ICT, the Estonian government managed to build an extremely powerful technological infrastructure: already in 2009, as many as 63% of households in that small European country had access to the Internet. The number of households connected to the Internet almost doubled from the moment of introducing online voting for the first time in 2005. Now, over 70% of Estonians at the age between 16 and 74 use the Internet³⁵.

Table 1. Internet access and Internet users in Estonia

	2005	2007	2009
Households with access to the Internet	38,5%	52,9%	63%
Internet users (at the age between: 16–74 years old)	59,2%	63,6%	71,2%

Source: Statistics Estonia, <http://www.stat.ee/>, 12.10.2010; *Case Study 2: E-Stonia*, The Judith and John Bedrosian Center on Governance and the Public Enterprise, University of Southern California, http://www.usc.edu/schools/sppd/bedrosian/private/docs/Case_Study__Estonia.pdf, accessed 10.10.2010.

There were five internet votes of binding character in Estonia between 2005 and March 2011. The first time citizens had the possibility to vote online was in 2005, when the local elections were held. Another internet vote took place two years later at the parliament elections. In 2009 Estonians could vote online twice – firstly in June during the second elections for European Parliament in Estonia and in October during local elections. In March 2011, Estonians elected their next national Parliament – they also voted online on this occasion.

The first local elections, in which e-voting was possible, took place in October 2005. Online voting was conducted between October 10th and October 12th, and 9317 of voters cast their votes online – the total number of votes cast was 9681. When calculating the results 9287 i-votes were taken into consideration because a single voter cast 364 votes, and additionally 30 people who voted online eventu-

provide high-speed wireless Internet access. All Estonian schools are connected to the Internet, as a result of the state-run “Tiger Leap” programme, implemented from 1997–1999. Even the three-student schoolhouse on the geographically isolated Ruhnu Island, with about 40 inhabitants, has an Internet connection. A short-term goal is to have at least 1 computer per 20 pupils in every school”; *Case Study 2: E-Stonia*, The Judith and John Bedrosian Center on Governance and the Public Enterprise, University of Southern California, http://www.usc.edu/schools/sppd/bedrosian/private/docs/Case_Study__Estonia.pdf, accessed 10.10.2010.

³⁵ *Two thirds of households of Estonia have access to the Internet at home*, 18.09.2009, Statistics Estonia, <http://www.stat.ee/index.php?id=31246&highlight=internet,connection>, accessed 15.10.2010.

ally voted again at a polling station. In the first instance (when someone votes online more than once) – according to the law – the last vote is valid, and while someone votes at a polling station – on a voting paper – after previously voting online, the last vote that was cast is valid, and the i-vote is cancelled. In 2005, almost 2% among those who cast a vote during local elections did it through the Internet.

The next local elections in Estonia took place four years later and enabled voting through the Internet again. I-voting was conducted from October 8th to October 14th in 2009. From about 1,100,000 eligible voters, approximately 663,000 participated, and about 104,000 of them decided to vote online. In total, (together with 2383 repeated i-votes) 104,413 eligible voters cast 106,786 electronic votes. What is interesting, 100 voters eventually voted traditionally at a polling station after casting their vote online.

As we compare both elections, the number of online votes cast in 2009 was eight times greater in relation to all votes cast in 2005. To put it straight, in 2005 i-votes constituted 1.85% out of all votes all votes that were cast, whereas four years later – during the fourth elections that enabled i-voting – participation of i-votes in relation to all of the votes cast was 15.74%. Basing on just one of those ratios, large progress in the development of e-voting in Estonia is visible, which is proved by an increasing number of people who decide to participate in electoral processes through the Internet³⁶.

Parliamentary elections in 2007 were another nationwide voting in which Estonians could vote through the Internet. Electronic voting was conducted from February 26th to February 28th. Elections at ballot boxes took place on March 4th, 2007. The application of online voting in the Estonian national parliamentary elections was indeed symbolic and the first of that kind on the world scale. Over 30,000 out of almost 900,000 eligible voters voted electronically. Estonian i-elections from 2007 were second in a row in that country (after local elections in 2005) where voters could decide to vote through the Internet³⁷. With comparison to the year 2005 and despite a relatively low percentage of i-voters, the level of interest in a new method of participation in polling procedures increased to 5.44% in 2007.

³⁶ Ü. Madise, P. Vinkel, E. Maaten, *Internet Voting at the Elections of Local Government Councils on October 2005. Report*, p. 28., Estonian National Electoral Committee, <http://www.vvk.ee/public/dok/report2006.pdf>, accessed 12.12.2010.

³⁷ A.H. Trechsel, *Internet voting in the March 2007 Parliamentary Elections in Estonia. Report for the Council of Europe*, European Union Democracy Observatory (EUDO), Robert Schuman Centre for Advanced Studies, European University Institute Florence, 31 July 2007, p. 11.

In June 2009, Estonia – just like twenty six other states of the European Union – held the elections to the European Parliament elections. The second Estonian election to the European Parliament (the first one was held on June 13, 2004, and voter turnout amounted to 26.89%³⁸) was in fact the third election in which the electorate could vote through the Internet. It aroused larger interest among voters more than in 2004 which is proved by a higher voter turnout – 43.88%.

From February 24th to March 2nd, 2011, Estonian citizens were asked to decide on the composition of their next national Parliament. Advanced voting (paper-based voting in advance to the election at specific polling stations) was possible February 28th to March 2nd, 2011. Voting via the Internet was available prior to the election from February 24th to March 2nd. On March 6th, voters could vote on paper in their constituency. There were 913 346 eligible voters, 580 264 took part in the election, and the total 140 846 of Estonians casted their vote over the Internet. The final participation rate at the Riigikogu Elections was 63.5%³⁹ and there were 15.4% internet voters.

E-VOTING IN ESTONIA BETWEEN 2005 AND 2011 – CONCLUDING REMARKS

According to the proponents of e-voting, an increase in the turnout level is one of the key arguments to use electronic voting, which is often regarded as a remedy for the democratic crisis due to the decline in citizen participation.

Research into the application and efficiency of *i-voting* in Estonia shows that the attitude among Estonians towards this new electronic form of voting at the beginning of *e-voting* implementation process has been positive, and the new method for voting is attracting increasingly high percentage of eligible voters, which is demonstrated by the data in Table 2.

Analysis of data from Estonian elections leads to several conclusions.

In terms of the numbers of voters, the electronic form of voting gained great interest among Estonian citizens. Each time elections were held the percentage of those who chose a new channel of voting has increased. Comparing percentages

³⁸ *European Parliament Elections 2004: results*, 29.06.2004, EurActiv.com, <http://www.euractiv.com/en/elections/european-parliament-elections-2004-results/article-117482>, accessed 13.11.2010.

³⁹ *Riigikogu (parliamentary) Elections. March 6th 2011*, Estonian National Electoral Committee, <http://www.vvk.ee/?lang=en>, accessed 15.03.2011.

of i-turnout in 2005 and 2009 local elections, and of national parliamentary elections of 2007 and 2011 we can see that the numbers increased visibly: in local elections the growth was by the factor 10.67%, and in the Riigikogu elections by 4.46 %,

Table 2. I-voting in Estonia – comparison of selected information

ELECTIONS	10.2005	03.2007	06.2009	10.2009	03.2011
Turnout (%)	47.43	61.91	43.88	60.6	63.5
I-voters	9 317	30 275	58 669	104 413	140 846
I-turnout (%)	0.91	3.46	6.54	9.74	15.4
Percentage of i-votes in relation to all of the votes cast (%)	1.85	5.44	14.68	15.74	24.3

I-voters – those eligible, who voted via internet; i-turnout – internet turnout (percentage of those eligible who voted via internet)

Source: My own studies based on information from Estonian National Electoral Committee.

Comparing the final turnout of these elections one may notice that the participation in national parliamentary election increased only by 2%, and it cannot be treated as proof that e-voting affects the level of citizens' involvement. It is probably the indication that those who usually voted in a traditional way changed their channel of casting their vote into i-voting. It is confirmed by Daniel Bochsler, who states that: "Instead of attracting new voters, it seems, Internet voting mostly substituted for existing votes at the polls. Furthermore, instead of attracting social groups that usually abstain from elections, Internet voting has for the most part attracted the same politically well-established groups"⁴⁰.

However, the opinion of Bochsler cannot be applied in the case of local elections. The most significant change in the level of total electorate participation concerns Estonian local elections. From 2005 to 2009, the general turnout increased by 13% – from ca. 47% to about 60%. Simultaneously, the number of those who voted online grew 11 times. Thus, we may state that e-voting positively influences the turnout in elections at the local stage.

⁴⁰ D. Bochsler, *Can Internet voting increase political participation?, Remote electronic voting and turnout in the Estonian 2007 parliamentary elections*, Prepared for presentation at the conference 'Internet and Voting', Fiesole, 3–4 June 2010, p. 1, <http://www.eui.eu/Projects/EUDO-PublicOpinion/Documents/bochsler-voteeui2010.pdf>, accessed 14.03.2011.

The greatest expectations related to e-voting have been associated with the youngest voters. However, data of the Estonian Electoral Committee show that the biggest change concerns the oldest voters – at the age of more than 55 years⁴¹. The number of young voters is constantly at 10%, while the level of participation of the oldest electorate increased from 18% in 2009 to 21% in 2011⁴². This leads to the conclusion, that a significant number of the elder voters prefer the online voting solution to cast their vote.

When results from both types of 2009 elections (to the European and the national parliament) are compared, we will notice that the increase of the i-turnout is relatively low – by ca. 3%, although the general turnout increased by 16%. Such a difference between these two turnout levels confirms the persisting second-order nature of EP elections⁴³. In this context, it is worthwhile adding that the distinction between *first-order national elections* and *second-order national elections* was made by Karlheinz Reif and Hermann Schmitt⁴⁴. They claim that in the second-order elections the participation rate is lower than in national parliamentary elections and the citizens are eager to vote on smaller and new parties⁴⁵. Furthermore, electorate “uses” the second-order elections as a tool of punishment or rewarding the governing parties.

The analysis of the data in table 2 leads to the conclusion that the constant boost in Internet votes since 2005 to 2011 is the evidence for the demand of citizens to have more comfortable and easier way to participate in elections.

⁴¹ *Statistics about Internet Voting in Estonia*, Estonian National Electoral Committee, <http://www.vvk.ee/voting-methods-in-estonia/engindex/statistics>, accessed 15.03.2011.

⁴² There are several reasons for it: since 1994 Estonia faced a negative population growth rate, thus the number of people below 24 is the smallest part of the population; the citizens below 24 have been 7 years or younger when Estonia became independent in 1994 – so, they can perceive democracy as something normal; *Internet voting in Estonia – Internet voting is necessary to maintain the turnout and integrate voters*, <http://www.e-voting.cc/>, accessed 15.03.2011.

⁴³ It needs to be emphasized that the elections to the European Parliament are usually considered as a second-order elections in most of EU Member States.

⁴⁴ In 1980, they studied the first 1979 European election and constructed their theoretical model.

⁴⁵ K. Reif, H. Schmitt, *Nine second-order National elections: a conceptual Framework for the analyses of European Election Results*, “European Journal of Political Research” 1980, vol. 8, no. 1, pp. 3–4; K. Reif, *European Elections as member state second – order elections revisited*, “European Journal of Political Research” 199, no. 31, pp. 115–24; H. Schmitt, R. Mannheimer, *About Voting and Non-voting in the European Parliament Elections of June 1989*, “European Journal of Political Research” 1991, no. 19, pp. 31–54; M. Marsch, *Testing the Second-Order Election Model after Four European Elections*, “British Journal of Political Science” 1998, no. 28, pp. 591–607.

To sum up, it should be stated that the Estonian model of online voting is a success in many respects – especially if we consider citizens’ usage of *i-voting* and their participation in local elections. The Estonian authorities claim that the so-called *Remote Internet Voting* is a socially anticipated feature of the electoral process in the country, and the feature is highly important from the standpoint of electorate participation levels⁴⁶. Although it is not hard evidence, we may consider data provided by the Estonian Electoral Commission: the turnout in parliamentary elections slightly increased from 58.2% in 2003 to 61.9% in 2009, and during European Parliament elections from 26.8% in 2004 to 43.9% in 2009⁴⁷. Moreover, increasingly high percentage of *i-votes* in the structure of all votes cast may confirm that the Estonian society displays a high level of confidence in new electoral methods.

It should also be mentioned that a lot of research and rankings concerning *e-government* and the information society, place Estonia as one of the most successful countries in Europe and worldwide in this field. Although it used to belong to the former communist bloc, Estonia is now often included in the group of the richest countries in Europe and worldwide – mainly because of the considerable development in the area of ICT. A report prepared by the United Nations entitled *Top 35 Countries in the 2008 e-Government Readiness Index*, places Estonia on the 13th place just behind the Nordic countries, the United States, Japan or Switzerland. Such result is undoubtedly proof of the position and success of Estonia among countries that have succeeded in the field of new technologies and their application in the public sphere.

⁴⁶ N. Goodman, J.H. Pammett, J. DeBardeleben, J. Freeland, *A Comparative Assessment...*, pp. 35.

⁴⁷ *Voter turnout data for Estonia*, International Institute for Democracy and Electoral Assistance (International IDEA), http://www.idea.int/vt/country_view.cfm?country=EE, 1.12.2010; Estonian National Electoral Committee, <http://www.vvk.ee/>, accessed 1.12.2010.