

Distance voting (e-voting): the ways of its applicability in Moldova

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Abstract

The purpose of this paper is to analyse the e-voting systems implementation experience in Europe (and the world) and the necessity and possibility to implement the effective Out of Country Voting (OCV) for Moldova.

This paper is aimed also to start a discussion on different aspects of information system "Elections" to be built in Moldova.

Key Words: Out of country Voting, Distance voting, e-voting, information system, migrants rights to vote

1 Introduction

According to official statistics a total of 334,000 Moldovans are living and working abroad, while some economists believe the figure is at least twice as high as government estimates and is more than 600,000 (i.e. around 1/3 of economically active population of the country that consists of only about 1.6 million people) [1].

Migrants are also a major source of income for the national economy with remittances from Moldovan workers abroad covering approximately 27% of Moldova's Gross Domestic Product (GDP) [2] and roused by 40.3% in the first quarter of 2007 to USD 209.77 million, according to BASA PRESS.

Managing Moldova's migrants, many of whom are abroad illegally, is a major challenge for Moldovan government, for the countries where the migrants are established and the international community.

One of the important problems for the Moldovan migrants is the impossibility to express the rights to vote. Taking into consideration the high contribution of migrants to national economy from the perspective of political theory, a case could be made, according to which the inadequate participation of migrants in Moldovan elections – given their substantial proportion of the population at large – is nothing less than a distortion of the democratic process [3].

The electoral impact of the migration for Moldova is quite strong. In the 2001 parliamentary elections, one party of Moldova gained about one third of the total number of votes. The low level of participation of Moldovan citizens in the elections due to high level of migration turned the one-third into one-half. And, when many smaller parties did not pass the electoral threshold and their seats in the Parliament were proportionally distributed between those who did, the one-half of votes turned into two-thirds of all seats.

The same situation occurred in the elections in March 2005, when one-quarter of the total number of votes turned into two-fifths and, due to the proportional distribution of seats, this turned into more than one-half of parliamentary seats for one party [4].

Although foreign missions of Moldova were trying to organise polling stations abroad, the existing traditional OCV as is shown by researches [3] is not efficient for Moldovan migrants for several reasons:

- Illegal status of many of them in the country
- Lack of sufficient numbers of polling stations
- Lack of finance to travel to polling stations
- Impossibility to travel to the polling stations due to work time

As international practice shows, the solution of these problems could be access to distance voting technologies.

Further we will try to analyse the world and regional experience in distance voting/e-voting, the situation in Moldova and to propose the necessary steps for Moldova based on best practices with thoughtful consideration of the current country situation.

2 International practices

According to research [5] undertaken among 213 countries (as of May 2006), 91 countries and territories allow external voting: Africa (21), Americas (13), Asia (16), Europe (36), Pacific (6). There are positive trends recently observed in Mexico, Italy, Ghana and provisions for external voting exist in 4 additional countries – but not yet applied in practise (Angola, Bolivia, Greece, Nicaragua). 65 countries allow external voting for all, in 26 countries external voting is restricted – associated to the voter’s activity and/or length of stay abroad, in 15 countries – external voting is restricted – associated to the length of stay abroad. There are also other kinds of restrictions.

The abroad voters are allowed to vote in 51 countries in national elections only, national and local are allowed in 11 countries, national elections and referendums – in 19 countries, national and local referendums – in 9 countries, referendums – only 1 country. Depending on methods of external voting 41 countries allow voting in person, 24 countries – by mail, by e-voting – 3–4 (our estimation).

Electronic voting, or e-voting, is the option of using electronic means to vote in referendums and elections, including polling place e-voting and remote e-voting. Remote e-voting options include voting over the Internet, and the use of personal digital assistants (PDAs) or telephones or mobile phones to cast a vote electronically.

Australia, New Zealand and Singapore are among the countries that use electronic technologies to enhance external voting programmes by allowing voters to fax documents to obtain a postal ballot (Australia), allowing overseas voters to download their ballot papers and return then by fax or by post (New Zealand), or allowing potential electors to download a voter registration form to be returned by registered post (Singapore) [6].

The earliest attempts to automate balloting were made in the late 19th century. The first balloting machines were used in the USA around 100 years ago, and since then many countries have taken an interest in automatic balloting but only a few (the USA, Estonia, Belgium, France, Switzerland, Ireland, Brazil, Paraguay, India and the Philip-

pires) have actually implemented such systems. This means that there are currently very few governments that have adapted their legislation to electronic balloting procedures.

The EVE research program [*"Evaluating practices and Validating technologies in E-democracy"*], showed that Internet voting was taken into account by countries which had already modernised their voting system with measures such as the installation of voting machines in polling stations, the introduction of postal voting or the use of Internet in election campaigns, for example. [7]

2.1 Switzerland

According to [7] in Switzerland, the modernization was undertaken in the shape of postal voting. Its introduction entailed two changes which opened the way to online voting: voting at home and having several weeks to vote. Before postal voting, Swiss voters cast their ballot over a single weekend. Henceforth, they can vote over a period of two to three weeks, depending on the nature of the ballot. This changed the timing and the nature of the electoral campaigns and the way of reaching for the voters.

The Swiss Chancellery published information on new tests of e-voting led by the districts of Neuchâtel and Zurich as part of the popular voting of June 17th, 2007 that took place without problem. The system of Zurich electronic vote was used for the third time as part of federal elections. So, 17,292 voters had the possibility of voting via Internet or by mini-message (SMS) instead of going in a polling station or returning their vote by post. The turnout rate came to 31.6%. In total, 17.0% of voices were electronically expressed, that is 904 (97%) via Internet and 28 (3%) by SMS.

The district of Neuchâtel also led a test of its e-voting system, the fifth as part of a federal popular voting. So, 6,000 voters in the district had the possibility of voting via Internet instead of going in a polling station or returning their vote by post, on the condition of registering prior to the "unique counter" set up by local authorities. The turnout rate came to 47.09%. In total, 1,494 votes, that is 3%,

Table 1. Pilot trials in Switzerland [8]

Date	Canton/Communes	Extent of trial	Nr. of electronic votes (share of all votes as %)
26.09.04	Genf: Anières, Carouge, Coligny, Meyrin	22'137 eligible voters	2'723 (21.8%)
28.11.04	Genf: Anières, Carouge, Collonge-Bellerive, Meyrin, Onex, Vandoeuvres, Versoix	41'431 eligible voters	3'755 (22.4%)
25.09.05	Neuenburg	1'732 eligible voters*	1'178 (68.0%)
27.11.05	Zürich: Bertschikon, Bülach, Schlieren	16'726 eligible voters	1'154 (of which 243 by text message) (22.1%)
27.11.05	Neuenburg	2'469 eligible voters*	1'345 (55.1%)

Source: Swiss E-Voting Pilot Projects | Evaluation, Situation Analysis and how to Proceed Nadja Braun, Bundeskanzlei BK

were electronically expressed [9].

The Swiss parliament acknowledged and praised the cautious and risk-aware approach of the Swiss chancellery towards e-voting and passed the further steps to be taken. March 19th 2007 the Swiss second chamber, the Ständerat, acknowledged the report of May 31st 2006 as well and passed the law, which foresees further e-voting test runs - limited in time, issue and place. Further the law includes the harmonisation of the register on cantonal level of Swiss people living abroad. This is a central precondition to further pursue E-Voting for Swiss citizens abroad. Currently the facultative referendum time is running till 12th of July 2007 and then become law. Switzerland is going forward on e-voting in a thoughtful manner to collect experience. By the assessment of the Swiss chancellery it will take further 30 years until it is implemented fully on national level and all instruments are implemented like signing initiatives. One thing is sure - Switzerland is moving slowly but steadily on adopting information and communication technologies in their electoral process. [<http://www.e-voting.cc/>]

2.2 Estonia

E-voting was legalised in all election acts in Estonia in 2002. There was political debate on making amendments to e-voting provisions in 2005. The amended act entered into force in September 2005. E-voting in local government council's elections started on 10 October on the web page www.valimised.ee.

In Estonia e-voting practice all major principles of paper-voting are observed. Internet voting is allowed during the period before Election Day. The voters use ID cards for the authentication, the system authenticates them, and the voters confirm their choice with a digital signature. To guarantee the freedom of voting, e-votes could be changed with an e-vote or by ballot. Changing of e-votes was allowed only on sixth to fourth day before Election Day so that no advantage would be given to e-voters in comparison to other advance poll voters outside the polling division of their residence. The vote given last was taken into account when counting repeated votes. When the vote

was also cast as a ballot, this was taken into account in verifying the election results and the e-vote was cancelled [10].

The general technical pattern of e-voting has been derived from voting outside the polling division of residence in Estonia. In these two voting methods, both the ways of checking that the vote has been cast only once and guaranteeing the anonymity of the vote are similar. E-voting, like voting outside the polling division of residence, is possible only during advance polls. This is necessary in order to guarantee that in the end only one vote is counted for each voter.

Voters in the Elections of Local Government Councils held in Estonia in October 2005 could cast early ballots over the Internet with an electronic identity card. As far as is known, this marked the first time anywhere in the world that Internet voting was possible in national elections [10,11,12]

Attitudes towards e-voting have mostly been favourable since the beginning of the e-voting project. In the local government councils elections of 2005, about 2% of the voters, i.e. 9,317 persons took advantage of the possibility of Internet voting. The general conclusion is that the implementation of e-voting in the local government councils elections of 2005 was successful. The auditors confirmed that the e-voting system worked correctly. No failures or problems that could have shattered people's trust in the honesty of e-voting and the reliability of the system were observed.

Last year, Estonia was the first country to elect its parliament via the Internet. About 3.5 percent of all those who voted in the elections in March 2006 expressed their will online, enhancing the nation's reputation as 'E-stonia' [12].

Now Estonia is preparing an amendment to allow voting by mobile phone. The idea behind this project is simple: A mobile phone ID application would enable voters to identify themselves and give a digital signature. This is a big advantage because a cell phone performs the functions of an ID card and card reader at one and the same time. [<http://www.baltictimes.com/news/articles/18925/>]

2.3 United Kingdom

In 2007 the two pilots had a high rate of voter uptake of the new services and positive feedback from their electorate concerning the new systems of E-voting trialled - at South Bucks District Council and Rushmoor Borough Council.

Voters from the authorities of Rushmoor and South Bucks cast binding votes remotely over the Internet during the local elections that concluded on May 3, 2007. Telephone voting and electronic counting of traditional paper ballots were also trialled in South Bucks.

5,021 people registered to e-vote, equivalent to 11.5% of the electorate. By close of voting on Election Day, 1,902 people cast their votes online and 586 by telephone. E-votes made up 16.34% of the overall vote, suggesting that e-voter turnout compares well against turnout of those who chose to vote by traditional methods. Turnout increased in all but one of the Council's 14 District wards that were contested, and in all but one of the 14 Parish/Parish ward elections.

The voters found the option of internet voting very convenient. With a large base of our residents commuting into London and elsewhere to work, it is not always straightforward for them to make it to the polling station in time. The simplicity of the internet voting system gave the electorate a good alternative way to cast their votes, and many embraced it with enthusiasm. In Rushmoor 6,686 people registered to vote over the Internet, with over 57% going on to cast their votes on the web - comprising 18% of the overall vote. Interestingly, 59% of voters who used the Internet voting system to register or cast their vote were over 40 years old, the remainder being 18-39, suggesting that Internet voting is not solely the province of youth - 17.5% were over 60. Source: [<http://www.publictechnology.net/modules.php?op=modload&name=News&file=article&sid=9830>] However, remote forms of voting whether postal, telephone, including SMS or Internet are the most high-risk, as the voting is done outside of a controlled location, such as the polling station. Because of the Internet's global nature and the low cost of access the potential for attacks from anywhere in the world are considerable. There is not a common unique vision in UK related to wide

implementation of e-voting. After a series of trials in local elections across the UK, the Electoral Commission, in a report, said that no further trials were necessary — for the moment. The specific lessons were learnt and the Electoral Commission suggested that the security of e-voting systems needed to be beefed up in any future implementations, and reiterated its support for a system of individual voter registration as a prerequisite to further trials. It is expected from the Ministry of Justice, which handles electoral issues, a "modernisation strategy" on e-voting was currently being drafted. The evaluation of trial results concluded that trials show the public want additional voting channels and had been an important part of developing public services that are efficient, effective, empowering and responsive to needs and demands of citizens. These evaluations point to instances where e-counting and e-voting have worked well, and where electors choose to vote remotely by internet or telephone they often had favourable responses to these innovations. The evaluations point to a high level of system security and user confidence in e-voting systems tested and that the security and integrity of the polls was not compromised. Besides the official information by the Ministry of Justice there has been a local observer group ORG (Open Rights Group) who observed the May 3rd pilots. The effort was coordinated by Jason Kitcat who also organized the "European Electronic Voting Activism Workshop" in February, 2007. While their judgement somewhat biased, it is an important effort to rationalize the debate on e-voting and the pro and cons of it. Source: [<http://news.zdnet.co.uk/security/0,1000000189,39288361,00.htm>]

2.4 The Netherlands

Like the [15] shows, e-voting is perceived as being technically feasible, albeit that security considerations still obstruct wide-spread introduction. Those countries that have yet conducted e-enabled elections (albeit as pilot projects) offer it as an additional and optional election means to the already existing conventional voting. In most cases it turned out to be necessary to adapt legislation or to create technical prerequisites (such as harmonization of electoral registers, establishing

a Public Key Infrastructure (PKI), etc.). The Netherlands, already a precursor in the use of electronic voting machines, also knows some efforts in developing suitable Internet voting systems. Worth mentioning is the use of the Rijnland Internet Election System (RIES), which was employed during formal elections to two water boards in the end of 2004, and the efforts of the Dutch government to employ e-voting for expatriates at elections to the European Parliament in 2004. The elections to the water boards were fully remotely (either per regular mail or by Internet) and from the altogether 2,2 million eligible voters, some 18% cast a vote from which about 30% by Internet [Piet Maclaine Pont, Simon Bouwman] <http://www.surfnet.nl/info/attachment.db?53799>, March 2nd, 2005.

An independent committee, who was installed as a reaction to the Nedap-Hack in October 2006, announced their findings: They argued that the current election machines do not offer the standards which would be necessary to guarantee the principles of democratic elections. Instead, plans are to have computers assist in casting the ballot and to print them. Later, these paper ballots shall be scanned and computer counted.

In the Netherlands the municipalities decide how to vote, electronically or by pencil and paper. 95% of the voters vote electronically. Only a few municipalities use pencil and paper.

There were two ways of voting electronically:

1. Voting machines – Nedap machines
2. Voting computers – SDU New Vote

The ministry of the Interior and Kingdom Relations was responsible for the certification of the voting machines and computers.

On 20 November 2006 there were national elections in the Netherlands. The SDU voting machines were not allowed to be used, their certificate had been revoked. Therefore, 425 municipalities used the Nedap voting machines, 10 municipalities used replacing Nedap machines (who used to use the SDU machines) and 23 municipalities used pencil and paper. On 7 March 2007 the Dutch voters could vote for

the provincial elections and this time also the SDU machines were not allowed to be used.

In 2007 the Dutch State Secretary had installed a commission which had the task to look at the whole voting process, also taking into account the findings of the Organisatie voor Economische Samenwerking en Ontwikkeling (OESO) report of their elections in November 2006 and the recommendation on e-voting of the Council of Europe. The Commission published their report on 27 September 2007. In short their conclusions are:

1. Votes should be cast in a polling station.
2. Do not use the current voting machines anymore because they are a black box.
3. Voting by pencil and paper is preferred.
4. Although voting by pencil and paper is preferred, the counting takes long and is not always accurate.
5. Therefore the commission advises the following way of voting: The voter goes to the polling station, the voter selects its candidate on a voting printer (so on a machine), and the machine then prints the vote (the machine itself does not count the votes). The voter then checks if the vote is correct. The voter then puts the printed ballot paper in a ballot box. When the polls close, the ballot papers are counted by a machine.
6. They favor this option because it is transparent and you can control every step of the process.
7. There are two exceptions for voting in a polling station, one being the voters with physical limitations, the second one being voters living abroad. The voters with physical limitations should have the opportunity to vote by telephone and the voters abroad should have the option to vote over the internet.
8. Voting at a random polling station within your own municipality should be implemented.

This is the advice of the commission. Right now the State Secretary is considering her response to the recommendations by the Commission.

This cabinet response is expected by the end of November 2007. [<http://reniu.blogspot.com/>]

2.5 France

Although in 2001 people from Tiscali company in France attempted to organize an electronic vote, only in 2003, Internet voting had been used for the first time and it was then restricted to voters living in the USA.

The French living abroad are represented by the AFE (Assemblée des Français de l'Étranger), a consultative body which elects 12 senators (out of 331). Half of the AFE was replaced in June 2006. Votes could be cast either in embassies (in a traditional way), by regular mail, or Internet.

This time, all the 525 000 voters were concerned. The purpose was to allow afterwards these expatriates to use the Internet for the 2007 presidential election; a bill has been submitted.

28 138 voters had registered to use the Internet and as the typical turnout is low (less than 20%), this represented about a third of expected voters [26].

The real polling stations organized the traditional vote and counted the mail voting. In each country in Europe and Asia, there were from one to seven of them. They also received the results of the Internet voting, together with the list of the actual voters. In several countries, only one or two voters had opted to use Internet, so a breach of vote secrecy was thus inevitable which, curiously, had not been anticipated. [<http://www.edri.org/edriagram/number4.16/evotingfrance>]

The first round of the presidential elections in France, where e-voting systems have been used in 82 localities as a pilot test, showed many queues, some equipment shutdowns and dropouts of some towns (Amiens, St Malo, Le Perreux, Ifs). Some political parties have called the e-voting a "catastrophe", demanding the withdrawal of electronic voting machines for the second round of the presidential election.

[<http://www.edri.org/edriagram/number5.8/e-voting-france>]

Despite the heavy discussions during the French Presidential Election, the French Senate has ruled in favour of electronic voting in polling places for districts with more than 3,500 voters and to continue with remote Internet voting for voters abroad in parliamentary elections. In article 72 from February 2005, France highlights the advantages of e-voting. One big advantage is that elections machines make voting for disabled persons easier. In respect to the fact that every person should have the same rights and chances to vote, this is probably the most important advantage. Still, there are many doubts concerning the reliability of electronic voting, especially for distance voting supported by electronic tools. [<http://www.senat.fr/lc/lc176/lc1760.html#toc0>]

2.6 Spain

The first trial of electronic voting in Spain took place on Sunday 16/03/2003 in El Hoyo de Pinares, a 2,044-inhabitants town in the Province of Avila. Voters there were not taking part in a political vote but in a local referendum to decide on which day a town celebration would take place. For the first time in Spain, they were only able to vote through the Internet, either from their homes or using 20 virtual ballot boxes located in the Town Hall.

With 1,036 people taking part in the vote (58% of the electorate), the experience has been a success. Even though a significant proportion of the local electorate is made of elderly people not familiar with computer use, the completion of the voting operations did not take more than an average of five minutes per voter. In order to vote, citizens needed to have previously requested an electronic identification card from the *Fábrica Nacional de Moneda y Timbre* (FNMT), the national certification authority. 1,800 inhabitants had requested the card between December 2002 and February 2003, and those wanting to vote from home had also been granted a free card reader. The cardholders will now be able to use the card, containing a digital signature and a certificate, for other electronic services such as online tax filing.

This first experience is a pilot for a possible wider use of e-

Voting in Spain, within the framework of a programme developed by the Ministry of the Interior, the Ministry of Science and Technology and the FNMT. No technical problem having been reported, larger-scale experiences are expected to be made in the near future. [<http://www.epractice.eu/document/2072>]

Falling participation rates in elections and referenda and the perception that many citizens are losing interest in politics are concerns common to many Councils of Europe member states.

The Committee of Ministers of the Council of Europe entrusted the Multidisciplinary Ad Hoc Group of Specialists on legal, operational and technical standards for e-enabled voting (IP1-S-EE) with the task of developing a set of standards which could be used as a reference by member states considering the introduction of e-voting programmes.

These standards are set out in Recommendation Rec(2004)11 of the Committee of Ministers to member states on legal, operational and technical standards for e-voting, which was adopted by the Committee of Ministers on 30 September 2004 at the 898th meeting of the Ministers' Deputies. Rec (2004)11 should be revisited by the Committee of Ministers two years after adoption to see which impact the recommendation has had in member states, and whether any updating or revision was required. [[http://www.coe.int/T/e/integrated_projects/democracy\[/02_Activities/02_e-voting/\]](http://www.coe.int/T/e/integrated_projects/democracy[/02_Activities/02_e-voting/)]

The Recommendation Rec(2004)11 on e-voting establishes some general principles on e-voting, such as:

- E-voting must be as reliable and secure as democratic elections and referendums which do not involve the use of electronic means;
- E-voting should be an additional and optional voting channel.

Precondition for a successful and large-scale and sustainable introduction of e-voting:

- A broad and open dialogue with all stakeholders (voters, politicians and public authorities), aiming at building trust and a broad acceptance of e-voting;

- create a sound legal base for e-voting in political and non-political elections;
- continue piloting of e-voting systems on an increasing scale;
- promote the use of e-voting outside public elections, so as to familiarise people with e-voting;
- continue research and systems development with a view to: addressing security risks by assessing new threats, to maximise the security of e-voting systems; reducing opportunities for “family voting” and vote buying in remote voting procedures, e.g. by introducing a “reversible e-vote” mechanism;
- encourage the introduction of complementary e-tools to e-voting;
- promote the development of certification and accreditation schemes for e-voting systems;
- develop and agree on clear and ethical guidelines for online-campaigning;
- develop rules for the observation of e-enabled elections;
- develop the full potential of e-voting in facilitating the electoral participation of voters with disabilities;
- promote widespread Internet access and support the acquisition of computing knowledge and internet literacy amongst the electorate, thereby reducing the digital divide.

Some member states as is shown above are already experimenting with e-voting, or electronically enabled voting.

The algorithms of the software used should be accessible and accuracy tests should be performed before, during and after the elections. Moreover, the accuracy and correctness of the applied software is of crucial significance and it has to be proven that the software is not being changed or altered during trial phases and the actual running

of elections. Furthermore, the involved servers must be sealed and protected and several sub-systems as well as computers processing the data should be disconnected from one another. To test the performance of the individual elements and to detect possible weaknesses of the system, computer hackers should be invited to test and to attack the system with a view to improving it. Moreover, all processes of the e-voting system should be logged in order to monitor what happened and what voters did, without, however, violating the basic principle of the secrecy of the vote.

To summarise, the practical experience with e-voting in Europe and in some countries in the world one could come to the following considerations:

In the past years many governments have started to adopt computer-supported applications for their administrative processes; applications range from the simple download of forms to Internet-based submission of applications. Amongst these the most controversial application is electronic voting, which stands for the use of electronic means in elections. Motives for implementing electronic voting procedures are manifold, amongst the most important are as noted in the 2004 Council of Europe recommendation for electronic voting [CoE04, Remm04], [13]:

1. enabling mobility of the voters
2. facilitating the participation in elections from abroad
3. raising voter turnout by offering additional channels
4. widening access for citizens with disabilities
5. reducing cost
6. delivering voting results reliably and more quickly.

The experience of countries that attempted to implement the electronic voting is very different. The success or unsuccessful results of electronic voting depends on many factors such as democratic traditions, culture, Internet penetration rate, economic situation of the country, politician's readiness, etc.

There were organized binding and non-binding e-voting pilots in: Switzerland, Estonia, United Kingdom, France, Italy, Netherlands, Belgium, Portugal, and Spain. The reports on the feasibility of e-voting

and submissions to Parliament were undertaken in: Ireland, Norway, and Lithuania. In Germany some work is undertaken on e-voting protection profiles for non-political elections.

The two countries obtained the most successful results: Estonia and Switzerland. No major problems were raised by voters or by participated parties.

In the United Kingdom, in Netherlands, Belgium and in France the situation is controversial. The main concerns of voters and pro-democracy non-government organisations are the voting machines reliability, trail possibilities of votes, transparency of voting and counting process.

Following the provisions of the CoE Recommendation the practice of distance voting and e-voting is being discussing at a range of international conferences, seminars, workshops [13, 14].

The participants-experts and practitioners in e-voting systems shared the experience and visions under different aspects of introducing of e-voting.

For countries considering the introduction of e-voting it is recommended [14]:

- Thorough legal analysis and preparations (constitutionality of e-voting as well as issues related to electoral law have to be carefully analysed) as e-voting has to stand on sound legal grounds
- Legal mechanisms of auditing have to be developed and it has to be determined how possible appeals against e-voting results could be handled on a solid legal basis
- Due to the inherent political nature of e-voting, it may be necessary to seek for broad political support (involvement of regional or community administrations, and action to engage the public opinion to generate support via the electorate
- Voters, the ultimate users of an e-voting solution, should be involved in premature stages of any project.

- Representative user groups may be selected to have say in the establishing of requirements, probably leading to higher success rates in the later application of the e-voting solution [15].
- A further crucial consideration is the technical reliability and general functioning of e-voting. In order to ensure a well-functioning system, the involvement of various experts and IT specialists is necessary.
- The pre-test and test-runs of the system would be needed. More generally, a three step approach to strengthen the legitimacy and reliability of e-voting seems to make sense. One may first pilot the additional voting channel on a limited scale or low level of representation before later considering the application in elections or referendums, accompanied by academic research. Academic monitoring and analysing of elections, including the use of e-voting, is a crucial instrument not only for academia, but can provide valuable insights and recommendations for policy makers and can have a direct practical impact on the implementation of concrete e-voting models.

The Out of country voting is a concern of a range of countries. The common denominator of cases analysed in [6] is the wish to make it easier for their citizens abroad to participate in national elections and referendums. In that respect, external voters, be they military, students, migrant workers, or other diasporas, are considered to be one of the most suitable target groups for remote e-voting. When it comes to enfranchising citizens abroad, e-voting has a number of advantages and drawbacks. A significant benefit of remote e-voting is that it can sometimes replace other more expensive and time-consuming forms of voting from abroad, such as voting at diplomatic missions or by post. E-voting therefore offers the potential both to reduce costs greatly and to increase voter participation in external voting programmes significantly, ultimately strengthening democratic legitimacy. In some cases security concerns combined with a lack of information and understanding of the technologies used can damage a public's confidence in an

e-voting system and thus in the broader electoral process. Where necessary infrastructure does not exist, the building of the systems needed can also be expensive. Before an e-voting system can be introduced to enfranchise electors abroad, security challenges and possible solutions must be thoroughly reviewed. In addition to e-voting, there are also other, less far-reaching ways in which electronic means can be used to facilitate the enfranchisement of citizens abroad. These include providing information to facilitate different steps of the voting process without going so far as to allow voters to actually cast their ballot electronically [6].

3 Moldova: What has been done? Where we are? What should be done?

At the time being, the Moldovan ballot system consists of a paper-and-stamp (the same as paper-and-pencil) method and electors are allowed to vote only in the section where they are registered. The vote is expressed by applying the stamp on the symbol of the party. There are no provisions on distance voting in the law.

The votes are counted manually at election polling stations and then are sealed and send to Central Election Committee (CEC). The data are processed electronically and are transmitted to CEC.

Moldova is using electronic system for processing of elections data results since Parliamentary Elections 1994. The first trial of the electronic system was doubled by teletype transmission. The data on voter participation are transmitted from election polling stations to rayon Election Committee every hour and then the information is transmitted to Central Election Committee. After the end of the voting process, the voters are counted and the results are documented in the signed by the local Electoral Committee members *process verbal*. The figures from this *process verbal* transmitted to the rayon Electoral Committee, where are being introduced in computers as soon as they are coming and then transmitted to Central Election Committee through the network using MySQL cryptographic security tools. The system

is managed by Molddata, state own enterprise under the Ministry of Information Development (www.molddata.md).

However, the Out of Country Voting or distance voting is being discussed by Central Election Committee (CEC) and among the political parties, taking into consideration a huge number of Moldovans working abroad and the Electoral Code provision: *“Citizens of the Republic of Moldova residing outside of the country shall enjoy full voting rights under this Code. Representatives of diplomatic and consular missions shall be obliged to help these citizens exercise their voting rights”* [24].

The National Strategy on Building Information Society in Moldova “e-Moldova” contains special provisions on election system, namely:

- to develop a legislative framework for implementation of e-Democracy;
- to ensure access for agencies entitled to make up the voters’ lists to the data confirming the right to vote in the respective constituency;
- to use on-line consulting facility in order to make some more efficient political decisions;
- to elaborate, test and implement electronic vote and to ensure exercise of this right for citizens who are abroad;
- to establish a strong partnership between the civil society and public authorities in order to build information society.
- online consulting;
- electronic vote and making up lists of voters based on the state register of population.
- to create an Information Centre within the Central Election Committee;

The Action Plan “e-Moldova”: contains a provision on “Improvement of the Election Code to enable gradual introduction of electronic

voting; compilation of voters' list on basis of the state register of population (2005-2010)".

Also, the same Action Plan contains the following provisions aimed to implement e-voting.

Table 2.

16.	To implement electronic voting	a) Elaboration and testing of electronic voting information system	2005-2010	Central Election Committee
		b) Compilation of voters' list on basis of the state register of population	2005-2010	Central Election Committee
		c) Implementation of voting system via Internet for citizens who are abroad	2008-2010	Central Election Committee

Source: Electronic Moldova National Strategy and Action Plan, Government of Moldova Decision No. 255 of 9.03.2005

Following the provisions of these strategic documents, The Central Election Committee of Moldova on October 4, 2006 approved the draft Concept of the Information System "Elections" (ISE).

The draft Concept provides:

ISE is aimed to automate the process of preparation, processing and counting the votes of elections or referendums. At the initial stages of implementation only manual voters counting will be considered legal.

ISE will:

- Ensure the transparency of the electoral process
- Offer the citizens possibility to vote electronically

- Permit to obtain fast figures on voters participation and, when system fully implemented,- the results of voting
- Increase the efficiency of all processes within elections and referendum periods (collection, processing, and transmission of information)
- Create conditions for better public control on reliability and integrity of information used in the election period
- Faster obtaining the results of elections or referendum and of the statistical processing of the results
- Reduce the organisations cost of election and referendum processes
- Integrate citizens of Moldova into international practice of ICT use.

The Concept contains the main necessary provisions and ideas to start the process of building the electronic system “Elections”. However, the legal and normative base has to be analysed very carefully as international experts recommend. As far as the legislation of Moldova has no provisions on e-voting, such provisions should be introduced in relevant documents as common vision after analyse, wide discussions with all interested parties and ONG representatives.

As international practice shows (see above) modern approach on distance voting includes in fact 3 modalities:

1. Vote by traditional mail (legal constrains for Moldovans)
2. Vote via Internet (legal, technological and organisational constrains)
3. Vote via SMS or PDA.

All three modalities now are not in line with the legal framework of Moldova.

Moldova stage of ICT development and e-readiness level according to last research [23]:

Fixed line telephony penetration - 29.7%
Mobile telephony penetration – 44.34% (ANRTI-August 2007)
Internet penetration -21.2%
Density of computers -15.3%
Internet Public Access Points (PIAPs, cafés)- 450
Percentage of schools connected to Internet- 100%.

The current level of e-Readiness and pace of development of the information society in Moldova are a real technical foundation for implementing of e-voting in Moldova.

However, a range of legal, organisational, technical, security issues have to be thoughtfully analysed, discussed and agreed by all stakeholders to be implemented. The new initiated project on Building e-Governance, supported by United Nations Development Program is aiming to help the Moldovan authorities to develop a framework for distance voting to create conditions for expressing the constitutional rights to vote for the Moldovan citizen working abroad.

4 Conclusions and Recommendations:

1. Although around at least 334,000 of Moldovan citizens could not express their constitutional rights to vote, Moldova did not create yet relevant conditions to ensure such rights.
2. The absence of the voters due to high level of migration conduct to a substantial distortion of the results of voting.
3. The international practice in out of country voting shows that 24 countries allow voting by mail and 3-4 countries – by e-voting.
4. There is no common vision of European countries under introducing of e-voting, albeit the majority is recognising e-voting as additional voting channels, empowering and responsive to needs and demands of citizens. At the moment only 2 countries had not experienced major problems with the e-voting. Countries with

more developed democracy show less interest in the problem of "distance voting".

5. Because electronic voting is not a technical, but a SOCIAL PROBLEM, the main concerns are the assurance of authentication of voter and secrecy of vote, reliability of used software and hardware, accountability, e-voting audit tools.
6. The most appropriate and easiest way to solve the problem of out of country voting for Moldova is implementation of alternative methods of vote: by mail, by e-voting (including SMS, PDA).
7. Moldova e-Readiness gives the confidence in reality of future implementation of e-voting
8. The draft Concept on Information System "Elections" should be widely discussed and agreed by all interested parties, including participation of migrants from Portugal, Italy, Romania, Russia, Spain, (through Internet).
9. Thorough legal analysis and preparations (constitutionality of e-voting as well as issues related to Electoral Code have to be carefully analysed) as e-voting has to stand on sound legal grounds.

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