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# Technical relevance and social opposition to e-voting

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## Technical relevance and social opposition to e-voting\*

Fernando Barrientos del Monte\*\*

### Introduction

E-voting could be considered as a simple technical procedure; however, its implementation process merges different dimensions: political –related to the role of elections in democracy–; technical –related to the management of electoral processes–; and social –has to do with citizens as voters, that is, the most important subjects in the electoral process because they choose who to elect–. These is why these aspects have to be taken into account in the e-voting systems implementation process. E-voting is a reality that has gained strength in several countries, especially in Latin America: Mexico, Brazil, Venezuela, most recently in Peru and to a lesser extent in Argentina. It is important to note that it is not a linear process: at first, it is not socially and politically accepted, it is also not a process that must be necessarily implemented and enforced in every democracy.

It is important to analyze a characteristic that may seem paradoxical –as explained below–: places where democracy has been consolidated and has been enforced and accepted for the longest time, are those where e-voting has been rejected. On the contrary, places where democracy is still being consolidated, or where there have been democratic involution processes, e-voting implementation has been relatively accepted.

So the following question arises: why has e-voting implementation been successful in some countries and not in others? There are different social and political aspects that decision makers in electoral management should consider. Some countries focused on legal and technical aspects of electoral management, forgetting public opinion, “experts”, academics and

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ignoring the so-called virtues of a “new” voting system. E-voting systems, in any of its forms, are not magical solutions because they do not solve the elections’ biggest problems. They solve some of them, but not all electoral management complications. They are merely new voting mechanisms that improve the efficiency and speed of the counting of the votes. Technically, e-voting can be (or is) complex; however, there is no complication the current state of science and technology cannot solve. Voting is not a technical issue, it is a political phenomenon with highly relevant implications for the life of society and a democratic regime. Neglecting political and social aspects that embody electoral processes for technical and legal matters in the implementation of e-voting systems can mean wasting hours of work, research and investment of large sums of money.

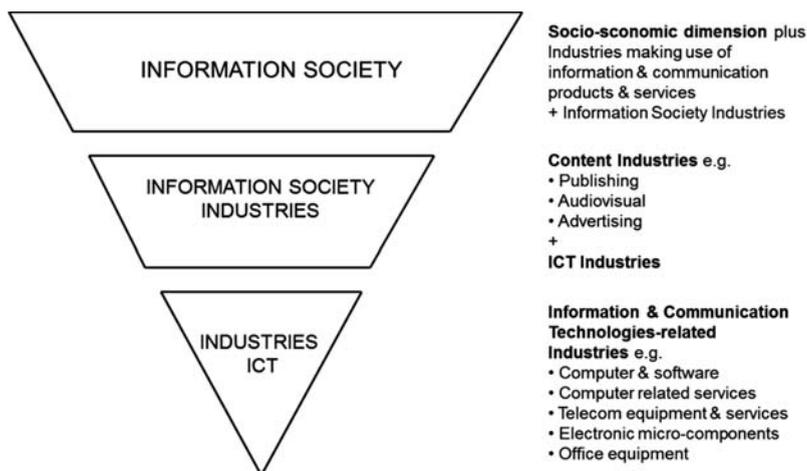
Why have some countries presented opposition movements and have even reverted e-voting implementation processes? Why have some countries been successful and others failed? Who opposes e-voting and why? This paper presents a brief reflection regarding the relationship between politics, democracy and new technologies; reasons to implement e-voting systems are explained. Subsequently, some successful cases like the Brazilian and Venezuelan ones will be analyzed, as well as the Irish, English and Dutch cases which have failed. Lastly, some reflections regarding political conditions that strongly influence success and failure cases will be presented.

## **1. New technologies; “old” politics**

New information and communications technologies that were developed in the last quarter of the 20<sup>th</sup> century and that are still being developed in the first stage of the 21<sup>st</sup> century have marked a before and after in the history of mankind. The invention and massification of computers and mainly information processors, as well as the development of the Internet and all of its communication and commerce apps are certainly comparable phenomena to the invention of J. Guttenberg’s printing press in the 15<sup>th</sup> century and the appearance of the steam engine in the 18<sup>th</sup> century. These are events that announce the beginning of a new era, they historically mark a before and after. These processes did not alone impact the development of politics; however, they partially explain some fundamental changes in these area: the printing press made book printing easier and helped to massively spread the political ideas of the Renaissance and of the Enlightenment. The invention of the steam engine gave way to the Industrial Revolution in the 18<sup>th</sup> century, influencing the work market and generating workers’ movements that marked the emergence of mass parties.

The same is happening with information and communications technologies (ICT) at the beginning of the 21<sup>st</sup> century, their appearance and development are the foundation of the Informatics and Digital Revolution that clearly marks like the aforementioned events a before and after in the history of

mankind. At the center of this Revolution we find technologies such as: cell phones, internet and high speed communication systems. Dynamics generated by ICTs define the Information Society; thus, industries related to it grow rapidly.



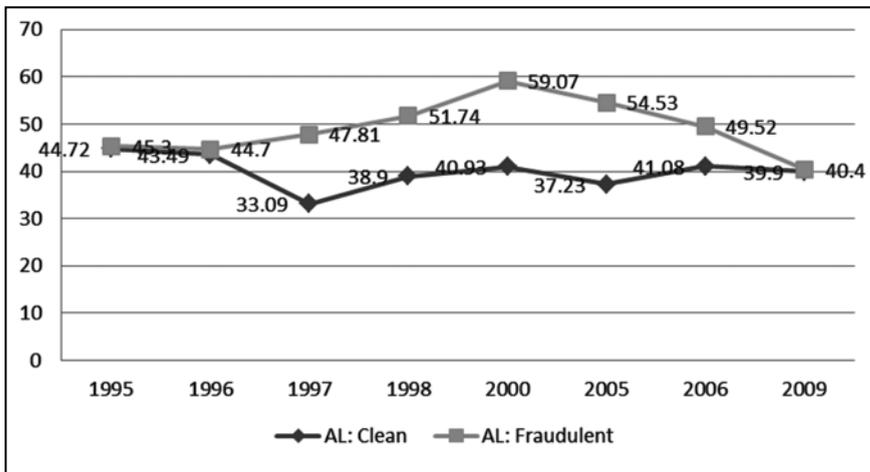
ICT-related industries have beat other ones such as the automotive industry which ruled for most of the 20<sup>th</sup> century; in the most advanced countries these industries have become almost essential components of the Gross Domestic Product and these industries also generate more and more jobs each year. Internet use and access has increased in all social sectors and commerce related to it grows exponentially in virtually every country (*cfr.* European Commission, 1998).

Despite the rapid development and advance of ICTs, their impact has not been determined. We know where they have generated greater changes –the economy–, and their growing relevance in private life has generated positive and negative utopias (Cotarelo, 2002; Rodotà, 2000). New technologies have gradually inserted themselves in the dynamics of the government-governed relationship; some processes such as tax payment, tenders and document and information requests are based on the use of ICTs and are helping the development of the so-called *e-government*. This technological progress has encouraged a growing number of scholars, academics and intellectuals, as well as large sectors of political and electoral management decision making actors, to develop and implement a series of ideas and projects to “fix” the shortcomings of representative democracy. As of this date, practical mechanisms or those being developed are: transmission of debates and parliament and Supreme Court discussions, non-binding opinion surveys and above all e-voting systems. For decades we have had direct information systems: radio, television and lately, internet. In the early 21<sup>st</sup> century there exist

instantaneous intercommunication systems –social networks and cell phones–. Direct communications have an impact on social relationships, what matters is an immediate and instantaneous response (Cotarelo, 2002).

Despite the everyday life we live with new technologies, we do not know if it is time to explain how they will or are impacting politics. ICTs are transforming public space and politics has always depended on its relationship with it. If one is transformed the other one is too: political practices, social representations, interactions between individuals, power relationships, among others, represent flows that shape specific structures and conceptions (Cairo, 2002:19). Some argue that this gives way to digital democracy; however, it can be argued that social processes are not linear, we may find ourselves in a future that includes digital anarchy and even digital authoritarianism; access is free, but control is not. We do not know if changes in politics will be positive or negative, what we do know is that politics are changing and society is optimistic about the potential of new technologies and its implementations. History has taught us that sometimes the introduction of new technologies does not have followers, this happened with Luddism in early 19<sup>th</sup> century in England: a workers' movement that was characterized by a hatred towards machines, they argued these replaced workers. Today, there are numerous groups formed by Informatics technicians and engineers that oppose the use of new technologies in politics and especially in elections. Politics have not always been trustworthy and much less the place of good conscience. According to the 1995-2000 data of the Latinbarómetro –Latin-barometer– (Graph 1) most people in the region think elections are fraudulent and virtually all countries are wary of political parties.

**Perception of cleanliness of the elections in Latin America**  
Latinobarometer



Citizens are not the only ones that think this, even Latin-American politicians which were interviewed during several periods (1995-2008) by the Parliamentary Elites in Latin America (PELA) of the University of Salamanca, state they do not trust their the cleanliness of their country's elections that gave them a place in the legislative power. The introduction and use of new technologies in decisive political processes, taken to the extreme, can disrupt the foundations of representative democracy which has proved to be efficient in mass societies. They have proved their efficiency and effectiveness in many process in human life, improving communications and economic processes; nonetheless, politics has certain elements that cannot be forgotten. Election are not mere procedures; their results legitimize governments and authorities that exercise power in large populations. Election days are not only a simple citizen exercise: they are the citizens' exercise of power par excellence, anthropologically they can be considered as a secular and civic "ritual". This is why the introduction of new technologies in electoral processes has been seen with suspicion by many groups because of the risks it poses and also because of the possible trivialization of a an important political event.

## 2. Reasons to implement e-voting

The control of certain aspects of electoral processes such as electoral roll formation and maintenance, broadcasting of voting results (both of them have been implemented in democracies for over 20 years) and lately implementation of e-voting systems are clear examples of the optimism surrounding new technologies. Reasons to implement e-voting systems can be divided into two types: technical and sociopolitical. The first ones refer to the dynamic of incorporating ICTs in daily life; the replacement of administrative procedure in electoral management is part of the ongoing modernization process which all areas of electoral management are subject to. These can be summarized as follows:

- a) *Increase efficiency in the reception of votes.* This is perhaps the most important reason, it tries to avoid all of the mistakes that appear when casting a vote with traditional ballots. An even though it is no guarantee, if mistakes such as double voting are significantly reduced, it clarifies the voter's choice and even allows to correct it.
- b) *Improve counting precision.* E-voting systems, by their very nature and design, count the votes accurately and reduce (or even eliminate) mistakes in their counting; the role of the citizens that are part of the counting process is only related to verifying that the information is transmitted in an incorruptible and clear fashion.
- c) *Reduce the time it takes to know voting results.* Related to the speed of counting, e-voting systems accelerate the total counting of votes of each and every one of the tables or polling booths, as well as the total sum. Even in a country as big as Brazil, which uses electronic

ballot boxes since 2000, e-voting has not prevented the final results from being known a few hours after the voting tables have closed; previously, the results were known in two or three days.

- d) *Improve audit of the voting process.* Under certain conditions it is possible to audit the voting process to ensure the observance of democratic requirements when casting a vote, an uncorrupted process, and the assurance that the vote cast by the voter is actually what the system registered.

On the other hand, sociopolitical reasons have a strong symbolic and evaluative components regarding the role of new technologies in society, these can be summarized as follows:

- e) *Prove the capacities of new technologies.* In the end, many initiatives that propose implementation of e-voting systems do not offer another justification beyond the need to “modernize” or “be up to speed” with new technologies, their use means a sign of modernity and avant-garde even though there is no need to use them. On the other hand, this impulse is given by the companies in charge of developing said technologies. To what extent e-voting is really necessary does not seem to be related to this justification, the fact is that in some countries the implementation is the result of the convergence of other factors; it also includes a naïve perception that its use is in itself a symbol of modernity.
- f) *Increase confidence in electoral processes.* New technologies that have been correctly implemented and used could increase confidence in the elections’ development and voting exercise; although it does not necessarily happen this way. On the contrary, little mistakes or even mild political suspicions can lead to the dismantling of the e-voting system (this has happened in other countries) and its replacement by the “traditional” system.
- g) *Provide better information to political parties and citizens.* Consequently, if the margin of error is reduced in the counting of the votes, better information regarding the voters and parties’ behavior can be obtained.
- h) *Increase voting simplicity.* Depending of the type of implemented system, e-voting, for example via Internet increases remote vote emission. Some projects such as the *E-Poll* which has been implemented in some European countries, is based on the installation of special kiosks to vote from any European country. Other versions of the electronic ballot box are adapted for people with visual disabilities to increase voting.

Both reasons –technical and sociopolitical– promote development and implementation of e-voting projects. While sociopolitical reasons have been derived from discussions on e-voting feasibility and desirability –is

voting really socially and politically justified?—; technical reasons have spurred other questions —is e-voting really safer?— which in other contexts have shattered already implemented systems.

### 3. Stories of success and failure

Emblematic cases of successful e-voting implementation are Brazil and Venezuela in Latin America. Since 1996 Brazil started to use direct electronic registry ballot box systems (RED), achieving total implementation in 2002. The number of voters is very big (136 million in 2011) and given the extent of the territory, the ballot box has sped up the information flow; in the case of national elections the total results can be known by midnight. In previous years, this could take up to three days because of the country's topography. Despite this, there are several Brazilian groups that have criticized the e-voting system: in the 2002 and 2006 elections fake ballot boxes were discovered and above all informatics engineers have pointed out that the system is vulnerable.

In Venezuela an Optical Scan Voting System (LOV) has been used since the year 2000, in 2004 its use was spread to all of the country during the mayoral elections and the referendum concerning the continuance of president Chávez. Like in Brazil, in Venezuela the main e-voting critics have been electronics and computer specialists. In technical terms, the system combines the traditional system with new technologies; allowing a double verification in case of doubts concerning the results of electoral tables. Although the electoral body has not authorized these reviews, which has increased doubts about the results that have allowed the current government to stay in power.

In Europe, the only country that has regularly used electronic ballot boxes for more than 20 years is the Netherlands. The rest of the countries' curiosity for vote automation was born due to the promotion of projects developed in the European Union, like *E-Poll*, *CyberVote*, y *TruE-Vote*, and because of the growing computerization process of all aspects of life. I will focus on three emblematic cases (following Caporusso, 2010: 25-53), Ireland, England and the Netherlands (Estonia and Germany will not be mentioned because of the lack of space) where policies that intended to strengthen participative democracy were implemented, we could even talk about *e-democracy*: innovative e-ballot box systems were approved, developed and introduced; however, they were later suspended or revoked.

Ireland is the perfect example of how the pressure of civil society can revoke government decisions developed in the highest political circles. In 2002, this country's government carried out projects and pilot tests. In 2003, a formal request to substitute ballots for a DRE (Direct Recording Electronic) system was presented; this system was developed by the Dutch

company *Nedap/Power Vote* to be used in the local and European June 11<sup>th</sup> 2004 elections. Voting in Ireland is cast through a series of open lists and in order of preference. Each button of the proposed electronic ballot box is related to a candidate and the keyboard; it helps the voter avoid distraction mistakes in the sequence of ordering preferences. E-voting is a very efficient solution to count votes and release the results. However, the system does not provide verification in the selected sequence on the screen and it does not print a receipt or proof.

Very soon, some informatics experts created the pressure group called "*Irish citizens for trustworthy e-voting*", they defined themselves as "a group of common citizens that believe no e-voting system is trustworthy unless it includes a paper verification system for the voter". Doubts had not only to do with lack of paper verification, but also with the choice of a private manufacturer that uses its own software and does not release its source code. Following this group's protests, the government created in March 2004 an Independent Commission to examine the *Nedap/Power Vote* system. On April 2004 a report was issued, they recommended not to use the already purchased machines because their correct functioning cannot be ensured. The commission did not have enough time to carry out the necessary tests and to inspect each and every one of the machine's components. The inability to access the *final software*, not having the source code and other technical issues influenced the commission's decision, it recommended the amendment of the electoral law in the system of distributing the remaining votes, an imperfection in the electronic counting system.

In 2006 the same commission published a more extensive report that included the manufacturer's position. This experience ended with the authorities' acceptance of having spent a colossal sum of money in a project not desired by the public. The fifty million euros spent were not justified in the context of the recent economic crisis and became the scapegoat of electoral campaigns. In April 2009 the government announced that Ireland would definitely not automate the voting system.

England promoted the use of new technologies in elections in order to encourage citizens to achieve greater electoral participation. This concern began to grow in 1997, when it reached a level of 71.3%, the worst voting level since 1935; all of this was confirmed in 2001 when a little over 60% of the voters went to the polling booths. In 2002 the *Independent Commission on Alternative Voting Methods* is created, in its report it stated:

"Whatever the arguments for and against making it easier for people to vote, we are convinced that culture is more important than convenience and that politics is a greater motive for voting than procedures. In short, people vote when they feel that there is

something worth voting about and that their votes count. It is up to the parties and candidates, in their campaigning, to provide such incentives; where they do, people will vote, even if it is not very convenient; where they fail to do this, people will not vote, even if the easiest voting technologies are available to them. Voting is a political act, not merely a procedural one.”

Despite these conclusions, the Labor Party led by Tony Blair continued to think that a way to reduce abstention was voting automation. To achieve this a *green paper* called “In the service of Democracy” was drafted; its goal was to offer e-voting possibilities to those who wanted it from 2008 or no later than 2011. However, criticism continued, some said the *green paper* appeared to have been written by well-intentioned people that knew little of the real world; one critic stated: “the fact that citizens want to use new technologies does not mean they want to use them to make political decisions”. However, criticism did not stop the tests. Five guidelines that often overlapped were proposed: *i)* the extension of postal voting; *ii)* *e-counting*; *iii)* *e-voting*, *iv)* *t-voting* (voting via telephone) and *v)* *i-voting*. There was a reasoning behind this energy, product of an electoral reform: postal voting, a form of remote voting, in force since 1918 for those who had reasons to justify its use. However, in the year 2000, the *Representation of the People Act* was signed; postal voting became accessible to anyone who requested it, without having to give explanations. The number of people that chose this voting option increased exponentially, in some electoral colleges the percentage ranged from 3% to 45%, the country’s average was 12%.

A system that reduces “costs” or requires less effort on the voters’ part was thought to increase participation. Furthermore, the US experience in the 2000 presidential elections –which included a series of scandals– it was thought that a quicker and more precise counting of the votes would increase or at least maintain the confidence in the electoral system. Between the years 2000 and 2001 ten voting automation experiments were carried out in ten towns by combining several guidelines in local elections and referendums.

Nonetheless, reports of the *Electoral Reform Society* –an independent group in charge of promoting democracy–; asserted that the machines used in e-counting experiences had several problems: they got jammed, they were slow, they had difficulties in assigning votes, if used nationwide, costs would increase without offering a reduction in counting times and much less an increase in the electorate.

This group recommended its use in contexts with a reduced electorate. Regarding t-voting and i-voting difficulties to audit the procedure were pointed out, as well as a low capacity to ensure secrecy that both systems

could offer. When the pilot tests ended in 2002, the commission created *ad hoc*, the *Independent Commission on Alternative Voting Methods*, issued an opinion contrary to expectations; several elements converged to distrust three-voting systems put to the test. Tests made by the *Electoral Reform Society* and the *Independent Commission* were not the only ones that did not favor the introduction of e-voting; some local government agencies like the *Local Government Association* evaluated their own experiments and found that new technologies did not attract younger people:

“The majority of non-voters, especially young people, have several reasons to feel disaffected. Particularly, they are much less sensitive to vote than older people. Younger Internet users are less inclined to e-voting”.

The results of their surveys indicated that a great portion of the population is in favor of e-voting introduction; however, the same commission states that “the support of the e-voting system does not mean the public demands it”. In 2003 a very extensive test was carried out with 160,000 voters (14% of the electorate) in 59 pilot tests which yielded similar conclusions: security concerns, counting shadiness and absence of paper verification; all of these concerns suggested e-voting to be implemented on a limited scale and not on a national scale (Wright, 2006).

In 2007 further pilot tests were carried out to examine *i-voting* and *t-voting* systems, all of them were monitored by independent observers, the Electoral Commission and the pressure group called *Open Rights Group* (ORG) financed by the *Rowntree Reform Trust*. ORG attracted hundreds of volunteers to “dedicate a day to democracy”, this was their motto. The members of this groups pointed out from the beginning a lack of seriousness in the tests’ organization and low quality certification procedures and low quality control of the used instruments. It especially observed that local electoral authority representatives were totally dependent and their actions were guided by the suppliers of voting machines, all of this reflected a total absence of technical training and competences to handle said systems. Moreover, the providers of e-counting systems did not have an adequate knowledge of the British electoral system; this meant two inefficiencies: at a technical level –electoral officials– and at an electoral management level –provider’s representatives–. As a result of these tests and subsequent analysis, in 2008 –the year the entire electoral process was supposed to be fully automated–, the project was dropped for local and European elections and there are no plans for the near future.

The Dutch case is the perfect example of a situation in which the movement of certain computing sectors questioned the legitimacy of a widely diffuse system that was put into operation years before.

In the Netherlands, DRE (Direct Recording Electronic) machines had been installed in the early 90's, these were replaced by electro mechanic machines. In 2006, all of the country –except Amsterdam which still used pencil and paper ballots– started to use voting machines manufactured by Nedap/Groenendaal and few of them by SDU.

That year, Amsterdam decided to join the e-voting experience; thus, Rop Gonggrijp an outstanding member of the *Chaos Computer Club* –which brings together hackers from different European countries- gathered a group of computer and sociology experts to analyze the risks in the voting system. This group acquired two voting machines that had been rendered useless by a municipality and fixed them. Later, they showed the machines' defects in social networking sites and posted online videos; these defects were classified as follows: mechanic –unsafe locking system–; electronic –memories can be interchanged– and electromagnetic –results other than the ones chosen by the voter could be registered–. Moreover, the software's manufacturer challenged the hackers to play chess on the machines, which happened within a few days. This group's operation was completely covered by the media and it made everyone question the system they had been using for over a decade. The government responded by running new tests on the e-voting system; on 2007 it issued a report in which they declared they were abandoning said system and returning to the traditional pencil and paper ballot one. In 2009, the Dutch returned to traditional voting ballots and accepted the cost of a slow count; nonetheless, a group stated: "in the Netherlands we know how to use paper and pencil. The sky did not fall down and we did not go back to the Stone Age".

#### 4. Electoral management; does it make a difference?

E-voting implementation processes that have been successful have an important central element: if the elections are handled by an independent electoral body, e-voting tends to be successful. On the contrary, if elections are handled by the government and supervised by the judicial power, e-voting cannot be implemented. Paradoxically, places where democracy has been consolidated and has been enforced and accepted for the longest time, are those where e-voting has been rejected. On the contrary, places where democracy is still being consolidated, like Brazil, or places where there have been democratic involution processes, like Venezuela, e-voting has been more successful.

Case	Type of Democracy	Electoral Management Model	Level of E-voting Implementation
Germany	Consolidated	Governmental, supervised by the judicial power	Not implemented

Brazil	in the process of consolidating democracy	Independent	High
Venezuela	Semi democracy	Independent	High
England	Consolidated	Governmental, decentralized	Not implemented
Ireland	Consolidated	Governmental, decentralized	Not implemented
Netherlands	Consolidated	Governmental, supervised by the judicial power	Revoked

In Germany, the e-voting implementation process was declared in 2009 as “unconstitutional”. In 2005 it had been used for a consultative process; however, the Supreme Court of this country declared that e-voting systems could not “ensure” the voter’s choice would be stored correctly and there were doubts about its manipulation. In Germany, like in the Netherlands where e-voting failed, elections are managed by government authorities and supervised by the judicial authorities. Meanwhile, in England and Ireland elections are handled by a highly decentralized government system (López-Pintor, 2000: 27).

Venezuela is a different story, ever since e-voting was implemented elections have been handled by an Independent Commission and in 1999 the Electoral Power took over. In Brazil, the main driving force for its implementation were the Superior Electoral Court officers, a judicial-like commission that is highly independent. Both bodies are of a permanent character and highly specialized in the organization of elections. Moreover, according to a report of the *United States Election Assistant Commission* (2011), most of the e-voting implementation pilot tests that have failed have been in Europe. The reasons for this are various; vague legislations, little or no interest from government authorities, serious problems in pilot tests –tests with bigger population samples are then cancelled– and public opposition. We can assert that e-voting tends to be successful in places where there is a professionalized, permanent and independent electoral management.

This trend is very clear in Mexico, pilot tests and formal processes within legal framework with acceptable results have been conducted in the states of Jalisco, the Federal District, Coahuila, Nuevo León and Querétaro. Peru’s situation is similar, the National Office of Electoral Processes (ONPE) has developed since 1995 a long-term e-voting implementation policy.

Successful implementation processes of e-voting systems depend on a permanent electoral body that feels they are necessary. Electoral bodies, especially in Latin America, not only manage electoral process, but also carry out civic education, professionalization of their members tasks and

even academic specialization activities. An implementation process of new technologies into electoral activities is also trial-and-error process that can only be handled by these bodies because of their technical and human capacities, and especially because of their experience.

## 5. Some conclusions

The speed technology renews itself forces us to reorganize our mental habits at an alarming rhythm. We have to change our computer and software each year, because these machines and their accessories have been designed this way: each year they become obsolete and this period is getting shorter and shorter (Eco and Carrière, 2010: 45). Can –or will– e-voting systems keep up this pace when elections take place every couple of years in a single day?

On the other hand, many new technologies create certain illusions. We sometimes think these technologies are here to stay, but we really do not know for sure. In 1937, the Hindenburg accident ended the zeppelins' future, which were thought to be the next transatlantic ships. Similarly, the Concorde's accident in 2000 ended its journey. Both stories involved cutting-edge technology; who would do not agree it was better to cross the ocean in three hours instead of nine? (Eco and Carrière, 2010:22). However, they accident made it clear it was too expensive and was cancelled, today we prefer safer and greater capacity aircrafts.

Recent example of obsolescence have to do with social networking sites: e-mail systems were not rapidly accepted; however, today it is practically impossible not to use them. At the same time, chat rooms appeared, in a few months *Messenger* made a great number of users leave these; subsequently, social networking sites like *Hi5* appeared and *Messenger's* number of users started to decrease. Other social networking sites turned up, none more attractive than *Facebook*, users abandoned *Messenger*, *Hi5* and forgot about chat rooms –which are now seen as internet specimens–. The amazing thing is all of this happened in less than a decade, innovations offered by new technologies tend to disappear rapidly; people who use these have an incredible capacity to adapt themselves to said changes.

The aforementioned European stories on e-voting fall into these conditions: not every new technology is here to stay, not all of them have long-term success and they tend to be constantly updated, renewed and substituted by others.

On the other hand, places that have revoked e-voting did not do it because they doubted its benefits or its capacity to offer a quick counting, but because of political costs that could put the electoral process in doubt. It is important to know that opposition to e-voting implementation has not been

put forward by big groups or crowds. On the contrary, these groups have been very little; however, their high level of education, vast knowledge of ICTs, their mobilization capacity is fully legal and their way of challenging government decisions is very effective.

So, what lessons can we learn?

Firstly, the simplicity and everyday use of new technologies by millions of citizens does not mean we have to trust them blindly. One thing is to use them to simplify several aspects of our daily life and another one is to use them for decisive political aspects. In 2009, during an Italian conference in Naples, the author of this paper questioned political scientist Giovanni Sartori on the benefits of these new technologies and their possible involvement in decisive political processes, his answer was: "Voting has a deeper meaning than chatting". Voting has a symbolic role that new technologies cannot forget.

Secondly, when a country's authority or other minor political unit have decided to implement it, all of the process must be sufficiently clear and transparent, vertically –among different government levels– and horizontally –among citizens– including different specialized sectors of the world of technology; the slightest degree of mistrust can destroy the whole process.

Thirdly, the traditional electoral paper ballot plays an important symbolic role, it is material proof that the vote has been cast; thus, in some contexts its elimination is not justified, especially in countries that have highly judicialized electoral process like Mexico, Peru or Colombia.

Fourthly, it is worth repeating that e-voting is not a magical solution, it does not prevent electoral fraud, it complicates it but does not inhibit it. Up until now no e-voting system has proved to be fraud-proof; in Brazil –where e-ballot boxes are commonly used in every electoral process– a couple of fake ballot boxes have been found, they are designed to favor a candidate.

Fifthly, logic used by politics and politicians is not the same as the one used by experts; this can lead to the implementation of e-voting systems based on simplistic arguments without taking into account the opinion of IT developers. This happened in England, where political forces undermined the experts' opinion. On the contrary, a lot of companies that develop new technologies can promote e-voting without thinking of the political and social context.

Lastly, every e-voting system involves the help of third parties (manufacturing companies and IT developers) that have nothing to do with electoral management; this can cause negative political implications if tender

processes are not protected and adequately supervised. Arbitrarily, we can assume that e-voting will be a reality sooner or later, its implementation is becoming widespread all over the world; however, there are movements that oppose their use. It is also true that this does not imply a substantial improvement of current democracy and its most pressing problems; nonetheless, a poor implementation could damage it considerably.

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