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E-voting in Brazil - the risks to democracy

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E-Voting in Brazil - The Risks to Democracy

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Abstract: Literature has shown that countries with strong democratic traditions, such as the United States and Canada, are not yet using electronic voting systems intensively, due to the concern for and emphasis on security. It has revealed that there is no such thing as an error-free computer system, let alone an electronic voting system, and that existing technology does not offer the conditions necessary for a reliable, accurate and secure electronic voting system. In this context, then, what are the risks of e-voting to democracy? In what ways, if at all, can more fragile, less mature democracies be buttressed with e-voting systems? As a key component of e-democracy, it seems that e-voting technologies are to become more secure and increasingly reliable in the near future and will indeed be adopted in many countries. In what ways, if at all, will the introduction of such systems increase voter confidence in the political system, promote citizen engagement in political life, and nurture the evolution of democracy? If both e-voting and e-democracy are emerging based on popular demand - that is, as a demand-driven alternative to current processes, then there is no doubt that they are likely to enhance and improve the efficiency of traditional democracy. However, if e-voting technology is being introduced based on a supply-driven fashion - the technology exists therefore it should and must be implemented - then the implications for democracy should be considered. Brazil's introduction of e-voting offers a cautionary tale of supply-driven technological implication. The purpose of this paper is to demonstrate how the introduction of e-voting in Brazil is highly risky to democracy due to the lack of emphasis on security and the lack of a socially-informed and socially driven approach to technological innovation. The Brazilian example illustrates the democratic implications of a market-driven approach. The lack of a technology strategy designed to promote and extend democratic principles is not surprising given the closed door, market-based negotiations that led to the adoption of e-voting in Brazil. The promise, and indeed, the imperative of a democratic, voter-centered approach as an alternative for the development of an electronic voting system, is explored in the paper.

1 Introduction

Literature has shown that countries with strong democratic traditions are not yet using electronic voting systems intensively, given citizens' and policy makers' concerns about the security of such systems. To date, commercially available technology requires an infrastructure that poses complex technical challenges for reliability and security. Despite our technological process, e-voting technology does not yet provide a completely "secure e-transaction environment" [XM04]. Some authors claim that e-voting will never be error-free [Mo04] and that it is nice in theory [OB04], but that in practice, the risks are too large.

Given the lack of security of e-voting systems, what are the risks of e-voting to democracy when the systems are introduced? Can more fragile, less mature democracies such as those in Latin America, be reinforced and advanced with the adoption of e-voting systems? Indeed, what are the implications for emerging democracies when e-elections engage millions of poor people, many of whom live well-below the poverty line? What are the implications of this costly 'technological imperative' upon the policy priorities of their governments? The contradictions are apparent: most countries in the developed world have held off adopting e-voting systems given their concerns about security and their knowledge of the implications of insecure systems for democracy.

However, costly technological systems are being imposed on citizens in less developed countries, where questions about voting abnormalities can go far beyond the scandal of hanging or 'dimpled' chads discovered and heatedly contested in the 2000 Presidential Election in the United States. Which criteria or benefits justify a full-scale electronic election, when the costs - budgetary, democratic and other - are so high? What are the implications when a public network project is conceived and implemented in the interests of corporate actors without consideration for the needs and interests of millions of illiterate people unaccustomed to even traditional voting methods, let alone electronic systems? In what ways, if at all, might an e-voting strategy be conceived which serves the democratic vision of citizens in less developed countries? These and many other questions have not been posed, let alone addressed.

In Brazil, investments in information technology and other e-government initiatives, such as e-voting, have been evolving without a definition of an appropriate information and communication technologies (ICTs) strategy; there has been scant public policy analysis and little academic research work that assesses the heavy public sector investments in ICTs. Surprisingly, there has been no public sector or academic evaluation of e-voting in Brazil, even in places in which there are claims of tampering in the voting process. There is a need to initiate the discussion about e-voting in Brazil to determine whether the country should continue its e-voting initiative, given the significant resources that have been allocated to carry out electronic elections, and given that the initiative has been driven by market push rather than by the electoral needs and interests of the citizenry.

The Superior Electoral Court (Tribunal Superior Eleitoral – TSE), known as the Electoral Justice, is responsible for election administration in Brazil; it has unexpectedly and rapidly adopted a technological system that has not yet been sufficiently tested even in the developed world. The controversies over e-voting are under way and e-voting technological failures have been documented. More recently, scientists started to worry about computer voting systems and numerous reports have found them vulnerable to errors and tampering [OB04, Ko03, Ha03, Ko03, Ma03].

Previous research work, using data related to expenditures in information technology, compiled from the Electoral Justice, has recognized that investments in e-voting are higher than those allocated to basic social programs which serve the needs of the poor much more effectively, in policy fields ranging from education to health. Consequently, e-voting in Brazil seems to reinforce the digital divide and undermine democracy [RG06].

Democracy depends on healthy and educated citizenship; if technology can further policy objectives around education, health and well-being, then indeed, the investment in innovation can be defended in a less developed country. However, when a market-driven approach dominates, the adoption of technology for technology's sake, without due consideration and strategic efforts to mitigate the foreseen and unintended side effects of technological adoption, then there is an obligation to question the motivation for such an initiative, to assess the implications of the adoption of technology, and to push for public dialogue about the relevance and appropriateness of the current course of action.

If a socially-driven technology strategy were in place, the infusion of technology into the public sector might well serve the needs of citizens, particularly those living at the political, economic and cultural margins of society. This strategy should be one that harnesses the power of technology to enhance the design and delivery of health care through tele-health services such as those being introduced to meet the needs of Canada's northern indigenous peoples, or to support innovation in education through the development of culturally appropriate e-learning initiatives that would meet the needs of rural and remote communities as has been the case with the evolution of the Alaskan Native Knowledge Network in the past decade. Such examples of technological investments might encourage democratic dividends, and serve as important enablers that allow at-risk individuals and communities to participate effectively as citizens and as productive contributors to the local and national economy.

The purpose of this paper is to demonstrate how the introduction of e-voting in Brazil is highly risky to democracy due to the lack of emphasis on security and the lack of a socially-informed and socially driven approach to technological innovation. Brazil was the first country in the world to conduct the biggest election on the planet using e-voting technologies. In 2002, more than 100 million voters cast their ballots on more than 406,000 touch-screen machines scattered all over the biggest country in South America.

The paper provides insight into the imperative of moving away from the user-centered to a citizen-centered approach for the design and development of an electronic voting system. In this empowering or enabling approach, people are viewed as subjects who seek to deepen democracy and not as objects, users or customers. Within a top-down decision-making approach, the needs of the market dominate the user-centered approach and results in aggravating existing inequalities. In this sense, what we can see now in many discussions held by the information society is the user-centered model as an ideal to consider the needs of the people, when, in reality, this model means the use, and abuse, of the user of the system.

2 E-voting Insecurity in Brazil

Literature has shown that, to date, commercially available technology requires an infrastructure that poses complex technical challenges for reliability and security. In short, e-voting technology does not provide a completely "secure e-transaction environment" [XM04]. It is also claimed that e-voting will never be error-free [Mo04] and that it is nice in theory [OB04], but that in practice, the risks are too large. Consequently, what the literature has shown is that there seems to be an emergent consensus that existing technology does not sufficiently attend the principles of computer security. In this case, software can be modified in such a way that the results of an election can be modified, with it being very difficult to be detected [Fi03].

Despite the rather intense debate on the idea of e-voting, literature has shown that countries with a strong democratic tradition are not yet using electronic voting systems intensively, due to their emphasis on security. We understand that both democracy and voting are processes much more complex than its electronic version and a secure voting system in itself is a basic element of a true democracy. The question here is: Why has Brazil started using e-voting technology so early in the evolution of the technological systems, when the country does not possess the domain of this technology? The answer is quite simple. The e-voting project in Brazil is based on a rather technical and reductionist view that neglects both the social and political aspects of e-voting. The implementation of e-voting, under the state and corporate governance, is a project by the current dominant networks towards the commercialization and depoliticalization of ICT that can jeopardize democracy. A market-driven approach appears apolitical; technology is perceived as a value-neutral system that can readily deliver efficiency gains within the democratic market-place. The e-voting technology deployed in Brazil is a direct recording electronic (DRE) voting system; it has been judged by Brazilian experts as being more vulnerable to tampering than any another voting system. For some electronic voting experts, the Electoral Justice has opened the doors for new and sophisticated fraud, more serious than the traditional kind [Ma00, MJ02].

In the developed world, the concerns about direct record electronic (DRE) voting technology are not different. Many reports in the United States articulate the risks of this technology, corroborating with what Brazilian academics and scientists say [TCM04, Ko03]. In the U.S, the controversies over e-voting are not stifled; e-voting technological failures have been registered all over.

More recently, scientists started to worry about computer voting systems and numerous reports have found them vulnerable to errors and tampering [OB04, Ko03, Ha03, Ma03]. Given the stakes, any facet of e-democracy, from e-policy consultations to e-voting, needs to be well-researched. Premature investments in e-voting systems are financially, and democratically, irresponsible.

3 Market-Driven Approach to E-voting

Appropriate technological approaches lost favor in the 1980s under U.S. President Ronald Reagan's administration. The neo-liberal agenda privileges economic efficiency, an objective that the informatics sector has fed in the past twenty-five years. There has been a heavy predisposition in governments, in the developed and developing world, to ignore the socio-political and cultural implications of ICTs.

Technological determinism seems to have prevailed in the decisions to introduce electronic voting in Brazil. Because of this, the nightmares of the electronic dreams have already started to appear, even without a deep discussion within a social vision of the technology, which would be enough to put electronic voting in its right place. A recent study carried out by the Organization for Economic and Development Cooperation (OECD) confirms that, if governments do not learn how to manage the risks of information technology, the electronic dreams will become global nightmares [OEC01].

There is a need to expand the discussion about e-voting in Brazil in order to see whether the country needs an electronic voting system or not, considering that investments in e-voting are higher than that in basic social programs that could help the poor much more in the areas of education and health [RG06]. If people knew how high the cost of e-voting technology is in Brazil, many of them might consider it an expensive toy belonging to the rich and privileged. E-voting systems require a heavy investment in both infrastructure and services, posing serious opportunity-cost evaluation and prioritization. Brazil is confronted with many pressing domestic demands and competing priorities from healthcare, to water and sewage quality to housing and education needs.

Unfortunately, critical questions revolving around conceptions, implementation, maintenance, affordability, and evaluation of possible consequences of implementing e-voting on values, economy, context and politics were not discussed with the Brazilian academy and society as a whole. Will e-voting empower the ordinary people? Will e-voting enhance the opportunities of the poor and illiterate to vote without coercion? Will e-voting avoid vote selling? Or, if e-voting technology is not discussed with the society, will it strengthen the powers of the elites, the rich, the educated and the corporate actors at the expense of the ordinary people? It has already been mentioned that e-voting in Brazil has contributed to reinforce the digital divide [RG06].

Therefore, in the Brazilian context, e-voting investments are more in the ICT than in social development for the protection of the disadvantaged and underprivileged groups. The investments in e-voting are higher than investments in important social projects like the control and prevention of cancer, teaching hospitals to attend the poor and the program of income and employment generation [RG06]. There is no doubt that the technological capabilities for the adoption of e-voting will exist in the near future. It is known that many good initiatives of e-democracy and e-government are operational in many advanced rich countries. But these are countries that are not only rich and highly industrialized, they also have had a vast experience in democracy and good governance. .

When access to clean water and food are questionable, raising the idea of investing heavily in e-voting systems is laughable not laudable. Electronic voting should not be considered a priority for people lacking food, health care and clean water. Before thinking about e-voting and e-Brazil, the availability of all services in traditional, non-electronic format, should be guaranteed to everyone.

The discourse of e-democracy has to be reframed beyond the dominant and mainstream rhetoric, so that the political aspects of ICTs meet the real needs of the 'democratic deficit', disclosing the true promises of technology. The high costs of an electronic election can reinforce the digital divide in the sense that it does not reduce inequalities in access to technology, especially when access is created by market-driven forces or corporate actors and the vote is compulsory. On the other hand, in an environment in which corruption in the election process is not an abstract thing, e-voting can appear to jeopardize democracy. The praxis of e-voting must encompass the issues of e-equity, justice and social inclusion.

4 Voter-Centered Approach to E-voting

It is extremely difficult to develop advanced computer applications to support complex human tasks. In the rational design approach, which is still predominant, computer designers too often use models and concepts that focus on the artefact without paying attention to the context in which the artefact is used. However, during the last years, the importance of context is emphasized in the design of computer tools, applications and systems – the context of using and the context of designing computer artefacts. Consequently, in the close relationship between design and use, it was possible to bring together various computing-related research disciplines, such as information systems (IS), human-computer interaction (HCI), computer-supported cooperative work (CSCW), and software engineering, as well as those social science disciplines that are also concerned with the theory and practice of the design and use of computer artefacts [KM97].

In this work we point out the limitations of viewing computer systems as a tool, as in the case of some HCI-research, in which the user-tool-task model is used. Although user-centered design is advocated in the Human Computer Interaction (HCI) literature, it is not as widely practiced as its proponents believe is necessary [GK91]. It has been claimed that from its inception, HCI has been closely aligned with the modernist program, whereby technology has been objectified, reduced, and 'black-boxed'. The participatory tradition has emphasized that this perspective is more likely to favour executives' workplace perspectives over those of low-status workers [KM97, GK91, SN93, BEK87].

In order to be useful to software professionals, HCI workers are often called upon to simplify the users' world and world-view - to make the users' complex experiences conform to the language of requirements analysis and software engineering, constructing fixed requirements from the ambiguous, exploratory, diverse, and mutable world of the users. In some views of HCI and requirements analysis, there is a tradition of reducing complex concepts to simple relationships, as the users' world is represented in the software developers' domain [Mu04].

On the other hand, one should consider many factors related to the problem being addressed or solved by the system, because the conditions may be used to move the software professionals closer to the users or to move the users closer to the software professionals ("move whom to whom"), creating a reference language [Mu04]. In this way, the recent studies on usability with regard to e-voting systems should be considered as very relevant [BHN03, La04], considering that this new technology should not be used as it is proposed now. In the case of Brazil, there is a need for this kind of study in order to show how poor or elegant the voting machine is in the eyes of voters.

As the field of HCI moves towards a new paradigm of user-centered (rather than system- or programmer-centered) design, there will be expanded opportunities for social theorists to participate in the development of information systems. By drawing on this new HCI perspective, an attempt is made to use the user concept to the analogous concept of voter or citizen. This will be better elaborated and expanded as a base for the design of an electronic voting system, in which the voter or citizen can be seen as an emancipator or radical political agent.

The process of dialogue - the social construction of meaning – will be more complete and will be better informed if its process encourages all knowledgeable people to participate. People are more likely to participate and contribute if they feel that their interests are being represented, typically through a democratic process. They are more likely to criticize and correct the group's understanding through a democratic process that solicits and values the diverse voices of all interests. In this view, the processes of creation and negotiation require full participation [KM97].

If the voting process is an important component of democracy, the democratic system should call upon the voters to develop the most appropriate voting system. An election is always a fairly disorganized activity, and the voters have to discuss how to organize it better. In addition, it seems that in the near future, the democratic process can be enhanced by reliable and trustworthy electronic voting systems, created and negotiated by the voters. If there is hope for a voter-driven voting system development, any technology-driven or market-driven voting system should be seen with suspicion in a true democracy. This is the case in the traditional ones.

It has been mentioned that one major cause of system failures is the exclusion, from the design process, of people who will be using the system. When users are not involved in the development of systems like e-voting, democracy will be put in jeopardy [OB04]. Therefore, with regard to the development of an electronic voting system we should take a political stance explicitly and not just keep focusing on methods and techniques to allow more participation, as it often the case in the literature.

In this and future work, an attempt is being made to raise political issues with regard to the development of an electronic voting system, trying to develop an understanding of the manifestations of power relations in and through ICT and software, when the citizen is nearly forgotten. The history of e-voting in Brazil and all its power relations embedded in it has not yet been told. Attempts are being made to focus on the humanization of the electronic voting system in Brazil that needs to be developed under a more elaborated socio-political approach.

5 Conclusion

The democratic potential of information and communication technologies has been widely discussed in the literature since the 1970s, and dominated the discourse of policy makers in developed countries in the Eighties and Nineties, particularly with the explosion of the Internet Revolution in the mid-Nineties. The initial public discourse around the Information Highway in Canada and the United States began with national discussions about how to define access, and even, whether to see access to the Internet as a public good or public utility. It did not take long for the market to persuade governments that all that was needed were narrow-based definitions of 'access', focused on mere technological access rather than considerations of literacy and other factors. Even in developed countries such as Canada, the digital divide persists, keeping vulnerable communities such as Indigenous Peoples and African Nova Scotians at the margins of the Knowledge Society, and maintaining the historic economic marginalization of communities in remote or periphery regions such as Atlantic Canada or Nunavut.

Technology tends to take the path of least resistance. In developed countries, resistance to e-voting has been consistent. Without a market for e-voting systems in the developed world, corporate actors have turned to developing countries. Just as pharmaceutical companies whose drugs do not pass the Federal Drug Administration's criteria push their products in the developing world, so too have ICT corporations cast their market nets in the Southern hemisphere.

While Diebold, the electronic voting machine maker, is so questioned in the United States, in Brazil it has the largest contract in its history by selling e-voting machines to the Brazilian government. In a press release in January 2000, Procomp Amazonia Indústria Eletrônica, a subsidiary of Diebold, announced: "For Diebold, this is the largest single order in the company's 141-year history" [Di00]. Negotiating behind closed doors, without the need for public dialogue, it is not surprising that a voter-centered approach was not developed as an alternative for the development of an electronic voting system.

If both e-voting and e-democracy are conceived and adopted based on popular demand (demand-driven option), then the efficiency of traditional democratic electoral processes may be enhanced. However, if e-voting technology is introduced as a supply-driven operation, it is imperative to identify and assess the risks to democracy.

It seems that the introduction of e-voting in Brazil has been risky business. Democracy is at stake. Health and social welfare are on the line, subject to cutbacks despite growing needs. Technology has dominated and driven the policy agenda. Technological hubris and market imperatives have driven the evolution of the Digital Society, with important democratic implications. Appropriate technological processes can reverse this trend in a way that ensures that we are not travelling along the path of least resistance.

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