

## e-Democracy, a “Special” e-Government Information System – Proposals for Development and Implementation in Romania with European Funds

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**Abstract.** The concept of e-democracy focuses, first of all, on the development of an information system that could be accessed online by citizens and through which they may express their opinions on decisions taken not only at their community, but nationally or globally as well. But, although, Romania is, according to article 1, paragraph (3) of its Fundamental Law, a democratic state, democracy in the online environment, at least in an official web context, is very poorly developed. Therefore, in this paper we will present, on the one hand, a possible way of developing and implementing an e-democracy system, and, on the other hand, we will describe a way to expand the scope of this type of system: from the free expression of the citizens’ opinion to the possibility of making predictions, implementing within e-democracy systems the predictive markets mechanism. At the end of the paper we will also analyze the financial possibilities of Romania to develop e-government type of information systems, of which e-democracy systems are an integral part.

**Keywords:** information system, e-democracy, e-government, predictive markets, European funds.

### 1. Introduction

In a world where “the explosion of Information and Communications Technology (ICT) tools and services has [...] improved communication and interaction among people [...] and assisted opening up new possibilities for political participation”[1], the term e-democracy, at least at the level of governmental institutions in Romania, is, surprisingly, very little known, and, unfortunately, for the time being, the tendency is for it to remain only a theoretical concept, despite the many advantages the implementation of such a system could bring. The “e-democracy is the use of ICT and strategies by <<democratic sectors>> within the political processes of local communities, states/regions, nations and on the global stage. The <<democratic sectors>> include the following democratic actors: governments, elected officials, media (and other major online portals), civil society organisations, international governmental organizations and citizens/voters.”[2], said Steven Clift, one of world’s leading experts on e-democracy.

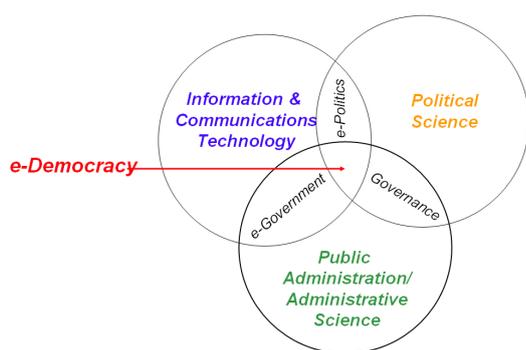


Fig. 1: e-Democracy: an Information Systems view, source:[3]

E-democracy is actually at the border of various areas: ICT, Political Science and Administrative Science (see Fig. 1).

As we were saying above, implementation of an e-democracy type of information system can bring many benefits to both citizens and state. If at present the citizens, whether due to lack of funds (the very high costs of organizing “sessions” at the polling stations, to consult citizens on taking various decisions) or due to bureaucracy, citizens, seen as a part of a community or merely as inhabitants of a city, cannot contribute actively to the important decision-making regarding their area/ place of residence; therefore, e-democracy

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system comes to allow access to any citizen to express his or her opinion or choose one option or another dealing with the “destiny” of the community/ the place he or she belongs to or resides in. Therefore, we could say that the advantages of implementing such a system are not only necessary, but are even of an overwhelming importance, for the following reasons:

- first of all, in a democracy such as Romania, a large-scale opportunity of citizens to make their voice heard and have their opinions respected in the voting process, comes to highlight the value as such of what is the thought to be the most important document of the state, its Fundamental Law;
- also, the fact that citizens would be able to actively contribute to decision making regarding their own community or place of residence, could largely contribute to fighting corruption;
- another advantage is that the city / place for which the citizens themselves are the decision makers will have the chance to develop and shape itself to fit their needs and expectations, while the degree of dissatisfaction with the local government will take a downward trend;
- citizens will feel more accountable than they feel now for their community / place of domicile.

Besides the advantages of the e-democracy system mentioned above, this system can be also viewed as a means for implementation of the aggregation mechanism of a *predictive markets* type.

## **2. Predictive Markets**

### **2.1. Predictive Markets as an Aggregation Mechanism of Collective Intelligence**

From the concept of e-democracy to predictive markets there is only one step: implementation of information systems (such as e-democracy), which the government institutions may use, firstly, as a tool *in local or national decision-making*, through which people could participate actively, and, secondly, as *prediction tools* for public surveys designed to find out what people think about future or possible situations, followed by centralization of respondent’s answers, with questions having, obviously, multiple choice answers.

It is known that a group as a unit can solve a complex problem better than each of its members can do it on their own. In order for a group to be qualitative in solving problems, it must be composed out of individuals with diversity of opinion, independence of thought, decentralization of knowledge and it must be based upon an aggregation mechanism. Such an aggregation mechanism is *predictive markets*. They are also known in specialized literature as decision markets, information markets, or future markets, and they represent one of the most efficient predictive tools. Classic mechanisms of information aggregation such as deliberation, surveys, polls, etc. as well as modern mechanisms have both advantages and disadvantages, both supporters and critics. The usage of predictive markets is motivated in cases where it is wanted that individuals express their opinions independently, revealing extra information that they hold without feeling the pressure of those around. In the case of decisions made through classic mechanisms, e.g. Deliberation among the group, individuals shape their decisions and opinions in order to reach a consensus. In this case we can state that it leads to a loss in information, the final result being determined by the persuasive capacities of its members and not by the whole of the information held by the group.

### **2.2. Aspects Related to the Creation and the Implementation of Predictive Markets**

The starting point in creating a predictive market is defining the uncertain variable which is meant to be predicted. An asset whose gain depends on the happening of a future event is transacted. The base contracts used in transactions can be: “the winner takes all” – the contract returns an amount of money if the event occurs and 0 otherwise; “index” – the contract returns an amount of money proportional to the value of the predicted variable; “spread” – the contract returns extra money if the variable registers values above a pre-established threshold. Based on the information and the expectations that the investors have, sell-buy orders for the asset are placed. A market price below the probability assigned to the event happening will lead to the placing of buy orders, the opposed situation will lead to the placing of sell orders. The transaction mechanisms can be call, continuous double auction, or pari-mutuel markets. The call auction takes place by collecting all the offers and processing them in large sized groups. The market's trading rules will determine the clearing price. Continuous double auction is the continuous version of the call auction. The pari-mutuel

market offers the agents the possibility to compete for a higher amount out of the total value bet by the players. Starting from these basic types, other transactional mechanisms developed like the dynamic pari-mutuel market introduced by David Pennock or the market scoring rule introduced by Robin Hanson. Selecting the transactional mechanism is done based on the objectives of the market creator.

One of the most interesting approaches in the field refers to the influence of predictive markets on the decisional process. Hanson was among the first who presented the opportunity of using predictive markets as a support in making decisions. Berg and Rietz continued the idea and studied the implementation of “conditional predictive markets”. On this type of markets there are transacted contracts that relate the happening of an event with other variables. On such a market it can be transacted, for example, a type  $A$  asset which returns a gain of  $x$  m.u. if event  $Y$  takes place, where  $x$  is the price of a certain good after the happening of event  $Y$ . By analyzing the prices of the transactional assets, the influence of a certain event taking place upon the other considered variables can be determined.

### **2.3. Some Considerations on the Accuracy of Predictive Markets**

The efficiency of a predictive market is tightly related to the number of investors in the market and to the information revelation incentives. Therefore, one of the big challenges of such a project is finding ways to enhance the participation degree and to encourage information revelation through the proposed gains. In most of the activity fields there are markets with real money as well as markets with virtual money. In the case of sport prediction markets and political elections markets, real money are highly used, but at the same time virtual money are used. There are certain segments that for ethical reasons rely on virtual money markets, not wanting for its participants to risk their money. In this situation there are: public administrations that launch markets in order to test the efficiency and consequences of certain policies and decisions, corporations that launch internal markets with the purpose of predicting the sales volume, finalizing certain projects, regional expansion etc. Research in the field has revealed that accuracy, more exactly the correct prediction of the results is not influenced by the nature of money, virtual money markets predicting with the same accuracy as the real money markets.

## **3. e-Democracy – Information System Proposal**

“Through e-democracy citizens make their societal decisions in various ways with the use of ICT.”[9] But how exactly should the e-democracy system look like? We ask ourselves this question because, unfortunately “in the Internet world”, concerning Romania, it has been almost impossible to find one such system, other than e-voting type of systems or web sites offering information on government institutions. However, at global level, although attempts seem quite “shy”, there have been projects carried out, covering development of e-democracy type of information systems. One such project is the TED (Towards Electronic Democracy) programme. This programme has established by The European Science Foundation. “The TED programme envisages a methodology that is based on a common WWW tool-set to provide decision support and a communications infrastructure to support stakeholder interactions. It recognizes that citizens not only wish to be informed about major issues, but wish also to articulate their opinions in a way that can affect the decision making process.”[10]

Coming back to Romania, we are proposing below an (affordable) e-democracy system, through which people could be consulted whenever decisions are taken (except for political decisions) dealing with their residential area or the community they belong to. The information system, we are going to describe below, has been conceived as a sub-system of an information system of e-government type, for a mayor hall of any town in Romania, but it may, of course, be adapted to other countries as well.

The e-democracy type of information system we have developed allows:

- access to e-democracy system only to citizens with voting rights, according to the laws in force in the country of implementation;
- a citizen can only vote once, regardless of the computer via which he or she will log into the e-democracy system;

## eDemocracy - All Polls Results

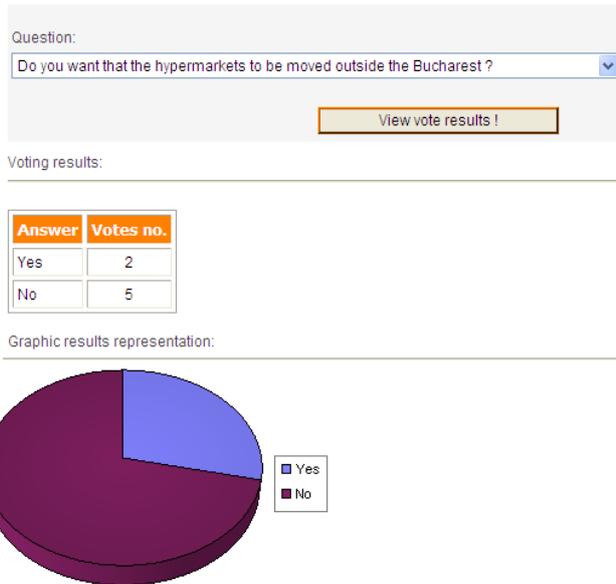


Fig. 2: Results of the citizens' votes on a public decision dealing with their community/ place of domicile

<http://www.egovernment-system.eu>.

Around the world e-democracy is mostly represented by e-voting, “the automation of the voting process”[11], but even this concept is scarcely implemented. The importance of e-voting systems is probably more than obvious, and the fact that these systems begin to conquer ground in the online environment is one thing that makes us believe that, once the population adapts itself to this type of voting, there would be only one step to make towards implementation of e-democracy in the web environment as a whole.

## 4. European Funds for e-Government Information Systems

When we talk about e-government, e-learning or e-voting we are actually talking about the informational society which is the foundation of the Knowledge-based Economy. Its development as a prerequisite both involve expansion of broadband networks and the development and efficiency of electronic public services.

A significant indicator for highlighting the situation of information society in Romania is the share of ICT spending in GDP (Gross Domestic Product). As shown in the table below, this indicator for Romania still has one of the lowest values at European level, mainly due to still low level of use of informational technology by the economic agents.

Indicators/Years	2006	2007	2008	2009
European Union (27 countries)	2,4	2,4	2,4	2,5
European Union (25 countries)	2,4	2,4	2,5	2,5
European Union (25 countries)	2,5	2,4	2,5	2,6
Romania	1,2	1,1	1,1	1,3

Table 1: Percentage of GDP; source: [12]

level.”[13] In Romania’s case the development of computerized systems for e-government is one of the directions for which both national funds and European grant funds are allocated that will lead to a sharp rises in GDP share of ICT spending. Making these investments also aims the improving of competitiveness of Romanian companies by increasing the number and quality of electronic public services such as electronic signature, payment fees and taxes, issuing permits, etc.. All these electronic services related to e-government are designed to help reduce costs and time taken to pay fees and taxes, simplify administrative procedures, reducing bureaucracy, etc..

Romanian authorities at a decision-making level want, through the National Strategic Reference Framework (NSRF) and Operational Programmes (funded by European unrepayable funds and by state

- identification, before the vote, of each and every citizen, primarily through confirmation of access in the system given from a database made available by the local Police, thus ensuring user’s authentication and avoiding fraudulent attempts;
- unlike the e-voting system, where voting can only take place within a maximum lapse of time of 24 hours, the vote through the e-democracy system can last several days or weeks, enabling as many citizen as possible to cast their vote;
- as soon as the voting process is over (our system is designed to close down the voting process by itself, according to the “stop date” set by the administrator upon voting start-up), citizens will be able to view “in real time” (both as a written report and in a graphic format, see Fig. 2) the final decision on the issue for which the voting process has been initiated.

This e-democracy information system proposal can be analyzed and consulted at the address:

budget funds) to achieve four objectives: development of basic infrastructure at European standards; increasing the competitiveness of Romanian economy; human capital; increase administrative efficiency.

In achieving these goals EU funds are directed both to increase access to broadband for enterprises and public institutions and to extend coverage of public electronic services (e-government, e-health, e-learning, etc.) and also increase their quality. Implementation of e-government involves the development of the single national information system that aims to redefine the relationships that exist between state institutions, citizens and companies. This system requires the development of the national electronic platform and the e-Romania portal, and also increased access to broadband infrastructure for all citizens and companies in Romania so that at the end of 2012 at least 55% of the population have access to services provided by the e-government platform.

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