

A theoretical model for an e-democracy system: features and elements for consideration

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Abstract: In the present paper we propose a decentralized e-democracy and e-governance web platform model. The parameters of e-voting, e-governance and e-ballots are reviewed through the systemic functions. Elements that are considered important in an online e-democratic system such as referendums, wiki-constitution, discussion events, video databases and forums, ease of access, open government and official employee evaluation are included. Moreover aspects that can ensure a relative high security such as authentication systems, tokens and both active and offline analysis are discussed in depth. We conclude that an online e-democracy platform can increase and enhance user participation, governmental clarity and democracy.

Keywords: e-democracy, e-governance, e-voting

1. Definition

The notions of e-democracy and e-voting has been in both in the scientific and popular literature for the past decade with the rise of internet usage. There are some papers which suggested inherent problems in an e-democratic system [1]. Moreover the lack of tools and the need for viable alternatives has been reported by the literature [2–4]. The present model suggested is a direct democracy model of e-democracy as has been previously described in the literature [5].

An online democratic option allows for participation which is specialized for individuals. Their participation can be tailored for them, in the sense that it will be flexible, easily accessed, and available to all, regardless of area or access to internet. The proposed system will aid the social construction of inclusiveness, and optimize participation and sensitivity to individual preferences, life-cycles and efficiency of cooperation in a decentralized manner.

There are various concepts that have used the name “e-democracy” but for the present paper the definition of e-democracy that will be used is: “E-Democracy is computer network, through which a user connected, has the opportunity to collaborate, participate and interact online with a direct democratic society.”

2. Features

2.1 A continuous referendum

The legislature of the country, through continuous voting would be in a perpetual reform and improvement. The citizens would be, on a regular basis, being called online to decide on matters about their country or their community, divided into different voting zones as will be explained further bellow.

2.2 A wiki Constitution

The constitution, democracy's foundation, would be posted as a wiki website, to be available, editable and discussable. Organized by chapters, sections and subsections, the user would have a word in forming the manuscript that defines his society. Wiki platforms are the richest and most adaptable tool today for detailed distribution of the written word. Voting and discussion available on each section of the constitution would empower this wiki tool to be constantly updated, materializing a possible new and improved version that would be put into operation on the beginning of each New Year.

2.3 Forums

Forums would be a domain for discussion, reflection and collective thinking. Citizens would join to announce and report news, discuss and analyze new ideas and solutions, and get informed about issues and upcoming referendums. Being available anytime offline, those discussion zones would also serve as a pool of knowledge providing answers for questions that have been already solved.

2.4 Video Database

A video database would exist exclusively for uploading videos with ideas and opinions on current issues. Experts on subjects would publish videos analyzing or simplifying subjects to give the unfamiliar public the proper experience before making a decision, resembling orators in antiquity. Videos of a higher quality, as judged by the public, would be up voted and thus easier to find by the citizens when browsing for opinions, providing them a plethora of information to decide on the issue.

2.5 Discussion events

A peer video call function would be another feature of great importance for the cultivation of the citizens. Through this platform, the users would create events, in which each citizen, connecting online with his microphone and webcam, would be able to discuss as in a video conference. This will allow people with same interests and ideas to develop, share and improve their thoughts.

Moreover public debates that feature experts or public figures would be held, and the users would connect to stream and watch those discussions. Discussions could range from simple educational subjects, to pre-referendum debates. Everything would be available to the user from the comfort of his house.

Users would be notified to upcoming live events that are important or after they have subscribed. Additionally they could watch the events later offline, if they are unavailable at the event's duration.

The number of tools today for an active willed person to keep up-to-date is virtually endless. Through newsletters, RSS feeds, mobile messaging, micro-blogging services and blogs, information can be shared instantly among citizens to keep them updated. Any idea, opinion, request, report, complaint or generally every human thought can be now flowing into an endless stream of rapid transmission. Users would be able to form connections and join groups as in social media, cultivating collectively their philosophy and path of thought.

2.6 Leaks

An anonymous official system would exist, similar to WikiLeaks, which ensures efforts done to bring the truth to the public do not endanger innocent lives in the process. Anonymity is internet's great asset, providing protection to those in need. Leaked documents and proof of possible plans against the system or the state would be posted safely online through this platform.

2.7 Open government

The actions of the government should be transparent. The open government doctrine supports the public availability of governmental documents and proceedings so as to enhance public oversight. This step towards less governmental secrecy could be taken now, while still under a representative democracy. Additionally, a financial database is

needed, that includes a description of the budgeting process, appropriation information, annual and monthly spending by agency, and types of expenses – including employee salaries.

Likewise, the citizens must partly decide how the national wealth should be distributed. Without the economical knowledge a citizen is likely to misjudge on the distribution of wealth. Thus, experts of economics would present a number of plans for the public, explaining in detail in which sections each policy contributes (e.g. improve of the quality of education) and citizens would then decide which plan they consider most suitable for their lives.

2.8 Official Employees

The unity of the society could not exist without the governmental services, such as a tax payment or insurance service. The proposed system suggests that the parliament and the members elected could be fully replaced by this system. All other services would not be replaced. However they would still be adjusted and modified by the will of the citizens to match the society's needs.

A public database with the profile of each official employee such as policemen, teachers, doctors etc. would exist. This database would act as an evaluation form that would host comments and feedback from citizens. The employees would be hired on a yearly basis with the use of contracts, employing only the best functional ones and replacing those who receive multiple negative feedbacks. Having the most determined and effective employees working for the state would ensure the gears of the society functioning at maximum capacity.

Each of the aforementioned features should be hosted on different web domains and servers for protection against total system failure.

3. Usage

The forums and voting section of the system would be divided into zones such as:

1. Municipal Level
2. Prefecture Level
3. National Level

Each citizen will have the opportunity to participate in the solution of issues only in the zones he belongs, so as to not flood the system with petitions. In addition, citizens whose lives are directly influenced by each issue should decide on the subject, and not citizens outside of its influence.

Citizens that post petitions or discuss issues will be presented with their full name, in order to prevent anonymous threats, spam and abuse of the system. Each citizen will have the right of freedom to express himself according to his will, given than he does not threat or insult another. However voting will be anonymous and untraceable.

3.1 Administrators

Administrators will ultimately serve as official employees and would be elected and work voluntarily for the wellbeing of the system. They would sort out topics of discussion in categories, index subjects, create referendums on popular requests, assist citizens, and defend the system from illegal actions. They would be the internal personnel to ensure a smooth operation and an ordered environment for greater efficiency.

3.2 Ease of Access

Ease of access features would include narrators, on-screen keyboards and magnifiers for people with special needs. The somewhat restricting facilities of today's voting locations will no longer constitute a barrier in one's right to

participate in the democracy. In such a system, even people with conditions that restrict them from leaving their house will make their participation possible.

Moreover the on-screen keyboard could function as an additional security measure when the user will use a point of insecure access as it can prevent login information theft from keylogger software.

3.3 Gamification

A gamification system would serve as extrinsic motivation for the youth population to increase the attendance of that particular population group until participation in the system alone would serve as intrinsic motivation. Game elements such as points for different activities and badges have been proven appealing to the young and motivating [6].

4. Security

The biggest issue of such a system would be its security. There is no doubt that computer hackers will try to gain access to this system and alter voting results, silence some citizens, or try to bring down the whole network. However as it has been previously stated that a secure internet voting system is theoretically possible [7], although with great effort and programming expertise. Here are some points that will make the infringement of the system, if not impossible, extremely hard, and easily traceable, reversible and fixable. Here are some points that can be initially taken.

4.1 Authentication System

Banks have used systems to ensure the safety of online transactions. Millions of users use e-banking systems to process their wealth daily. With highly encrypted connections and exceptionally trained software developers, banks have formed durable systems that can defend against and reverse potential hacking damage. An authentication system, similar to the one banks use, will ensure an exceptional level of security.

Additionally, live network analysis by security experts would not only reinforce the fortification of the system but it would effectively contribute in tracking down attackers.

4.2 Tokens

A citizen would pass through layers of security. A Token is a physical item that displays a code when requested, that must be inputted in a short time span from the initial request. The algorithm is unique in each token, producing a different code for each citizen, and unique codes every time it is used. This function ensures the physical presence of the token when used by the system. Upon losing it, the citizen can declare it and freeze entrance to his account just by making a phone call or sending a text message to the security service, reversing all unauthorized actions done while lost.

4.3 Fingerprint Authentication

Similar to tokens, a fingerprint authentication system could ensure the physical presence of the holder of the account. The physical presence may not always mean exclusive use, but in such a case, it will be only one vote misused, and not a wide account hacking attempt. Fingerprint identification technology begun to emerge in the last years and will continue to increase as new smartphone models implement this feature.

4.4 Statistical Analysis

Another measure that can reveal illegal access and manipulation of the system will also include statistical analysis and live viewing of the procedures. Such analysis would increase the attention if there are large deviations from the

previous referendum characteristics, such as a large foreign IP logging from the users, unusually massive votes in a short periods, or sudden big swings in the voting results. In such a case, there will be extensive review of the logs and security measures to determine the possible reason for such a discrepancy.

4.5 Feedback system

An electronic voting system, is much more reliable than thousands of people manually counting the votes. There is always a percentage of error in the results of elections and voting caused by the human factor.

For ensuring that voting results have not been manipulated by hackers, a second or third feedback system can be used. This system will be used on different servers and security protocols for the citizen to revote and compare the results. If there is a statistically significant difference between the two systems, a team will review the server and inspect the possibility of a security breach. The feedback voting system would take place in broad referendums where security is of paramount importance.

Another feedback engine will be the report of users. A side service that will deal with citizen support will deal with system malfunctions or citizen feedback. In that manner, if a user's video gets shut down by a potential hacking attempt, that user will immediately report this incident into the service which in turn would investigate what went wrong.

4.6 Financial Support

The capital that was used in paying thousands of massive wages monthly from parliament members, parliament staff and advisors, and costs saved from elections and other parliamentary activities, if used on updating the systems security, would ensure the creation and maintain of a topnotch security defense against attackers. Teams of developers, experts and analysts would participate daily in improving the system and tracking system logs, to trace possible violations.

4.7 Hacktivism

Hacktivism is hacking activities which produce results similar to those of conventional acts of protest, activism, and civil disobedience. It is used to promote political ends, uncensored free speech, human rights, and information ethics. The emergence of hacking groups such as the "Anonymous" is an active display of discontent. Our society operating on a platform such as this would mean that most of the Hacktivist groups would promote the defense and the wellbeing of the system against damaging hacking attempts. In other words, ethical hackers would help instead of protest and sabotage.

5. Conclusion

In conclusion a high security system can exist that will render direct democracy in countries or locations with relatively high populations possible. Constituents can benefit from a tailored participation that will enrich their experience with functions previously not available in a participatory democracy. A shift to an online system can mean in parallel more democracy, higher participation and less manipulation.

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