> *I worked out a new voting system that, combining the good points of paper voting with those of computing, guarantees quick, honest and verifiable results. Please read details at www.ClearVoting.com*

- THE PROBLEM	IN A NUTSHELL	DETAILS	GLOSSARY	FAQ	LINKS
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The Problem

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electronic voting and Democracy
The Problem

WARNING ! Dictatorships are usually set up and preserved by means of violence, but the power can also be taken and preserved using electoral fraud. If such fraud were to go undetected, electoral results would no longer rely on our votes and we, the people, would not even notice we had lost Democracy because we would continue voting.

what is democracy? - what are elections?

It's not the voting that's democracy; it's the counting. Tom Stoppard
Those who cast the votes decide nothing, those who count the votes decide everything.   Stalin (attributed)

In more than two centuries no western democracy had any serious trouble arising from using ballot papers (by the way, what's wrong with them?) and to date most democracies of the world use ballot papers to elect their Parliaments and Governments.

However, hardware and software vendors are pressing for the use of electronic voting and Governments often endorse it.

Most people see electronic voting as a mere technical evolution of ballot paper voting and therefore they are confidently waiting for hardware and software that will make electronic elections as secure as remote banking, for example. They probably think voting is a simple transaction by which we add 1 to the electoral "balance" of our candidate, just the way we add money to someone's bank balance when we use our credit card. Unfortunately voting is not like banking because votes and financial data differ in the level of the secrecy they require and such intrinsic difference is the very reason why

**electronic voting is unfit for political elections in democracy
and no technology can change this.**

To see why electronic voting is not compatible with Democracy we need to go through a few basic concepts:

> a. In Democracy the governmental power is transferred by counting secret votes during elections. To accept such transfer people and parties must be 100% sure that electoral results are fair and

square: doubts about the legitimacy of the winner can damage the political life of the country and even bring riots and revolutions.

b. Votes must be forever secret from everybody because otherwise voters could undergo illicit pressure to vote according to somebody else's will. Criminals (and/or governments and/or politicians) have enough power to compel people to vote in a certain way.

c. Electoral procedures are obvioulsy setup and managed by large organizations which span all over the country and give contracts to private and public companies.

d. Many people and/or organizations are interested in falsifying electoral results to maintain or to get the governmental power. They can be highly motivated, well financed, sophisticated, and could be outsiders as well as insiders with full knowledge of the election system. These attackers could be political operatives, voters, vendor personnel, polling place workers, election administrators, foreign countries, international terrorist organizations, or just pranksters.

e. Sitting governments are in charge of guaranteeing the accuracy of electoral results and the secrecy of votes, but the social groups & the economical powers which are the base of any government have the obvious interest in falsifying electoral results and violating the secrecy of votes to preserve the power. They could also succeed thanks to the complete control they have over the electoral process.

It may sound strange but electronic voting is unfit for political elections in democracy due to the above points.
Infact, in consequence of them we have that:

1. Absolute vote secrecy (point b) can be accomplished only if votes are collected and stored in such a way that nobody can ever be able to link each vote to its voter.

2. If votes are really anonymous then nobody can verify that any of them is the one its (unknown!) voter actually cast.

3. Verification of electoral results can not be based only upon anonymous votes since they could have been altered by fraud or errors and nobody could ever know it.

4. The only way to guarantee fairness of elections is that electoral

procedures guarantee that each vote really represents its (unknown) elector's will.

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5. From above point d and point e we know we can't blindly trust any organization when dealing with elections, thus we, the people, need to verify all to ourselves that electoral procedures really work as they should!

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6. **Fairness of elections can be guaranteed only by electoral procedure open to the active check of the people, the so called democratic control.**

Now let's compare paper voting with electronic voting:

7. **Ballot paper elections can undergo proper democratic control** because humans can check the handling of ballot papers, which are visible and tangible objects. It's not by chance that all democracies always used ballot papers! With them a few votes may get lost, but no foreign country, terrorist group, economical or political power will ever be able to alter the final result of our elections! That's why

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ballot paper elections are suitable for democracy

8. **Electronic elections can't undergo proper democratic control** because computer procedures are not verifiable by humans as we are not equipped for verifying operations occurring within an electronic machine. Thus, for people who did not program them, computers act just like black boxes and their operations can truly be verified only by knowing the input and comparing the expected output with the actual output (see Reflections on Trusting Trust, by Ken Thompson).
Unfortunately, due to the secrecy of vote, elections have no known input nor any expected output with which to compare electoral results, thus electronic electoral procedures cannot be verified by humans! This applies to electronic elections independently of any technical solution that could ever be implemented.

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9. Results of any electronic vote are, due to their nature, unverifiable and no technical solution can overcome this fact!

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10. To accept electronic electoral result ordinary people need to have an absolute faith in the accuracy, honesty and security of the

whole electoral apparatus (people, software, hardware and networks). This is not possible (see point d and point e), thus

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electronic voting is not compatible with Democracy.

11. It is worthy of attention that the above statement is true whichever technical implementation it's used for voting. In other words

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e-vote is unfit to democracy whichever hardware and software it's used!.

12. In fact let's imagine to have a perfect electronic voting system with all the security, auditing, accountability, meaningful public standards and public evaluations we like. Even in such a very optimistic case in the end all the votes would be stored in anonymous records and this unverifiable data, processed by unverifiable electronic procedures, would decide the (unverifiable) winner of the election.

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Electronic voting is not a technical, but a SOCIAL PROBLEM !

13. Governments can't demonstrate that electronic voting results are correct, but Oppositions have no way to support any claim that fraud or mistakes have occurred!

From another point of view we can say that:

14. When ballot paper elections are held under proper democratic control, the people tally up real votes (ballot papers are hand written by electors and readable by anyone). When ballot papers are publicly counted in the same place as they were voted and when scrutineers are randomly selected citizens (as done in Italy, for example), then who actually counts votes and declares the result of each ballot station is the public, and the central electoral service has the mere role of tallying such results. **Thousands of ordinary people across the whole nation guarantee and certify the electoral result.**

15. In e-voting computers tally up info about the way electors voted (which button they pressed or which part of the screen they touched). Such info is collected and stored in the form of anonymous intangible human-unreadable string of bytes. Votes are "counted" and results declared solely by the "electoral service" which is under the control of the Government whose term of office is about to expire. **No democratic control is possible over electronic elections**