

Transition to Machine Voting Cannot Happen Overnight



An interview with [Dr. Staffan Darnolf](#), Senior Global Advisor, Electoral Operations and Administration, and [Dr. Fernanda Buriel](#), Senior Research Officer, Center for Applied Research and Learning, International Foundation for Electoral Systems (IFES).

BILI is the partner of IFES for Bulgaria under the project “Effective Combat Against Corruption”, financed by the U.S. Department of State. There are two main focuses of the project: 1) transparency of political financing and 2) judicial integrity. BILI contacted the experts of IFES, who have international overview and expertise, with current issues in Bulgaria about machine voting.

- 1. IFES has a broad overview on how elections have been organized during the COVID-19 pandemic. What can you outline as good practices so both political rights and safety of voters are safeguarded? Are there some health risks regarding machine voting?**

As soon as we at IFES realized COVID-19 was turning into a global public health crisis, we started working to analyze its potential negative effects on electoral processes and democratic rights and identify ways to mitigate them. Our first major publication on this issue, [Safeguarding Health and Elections](#), intends to describe a series of measures that can be taken to minimize risks of disease transmission during the most different electoral activities (from electoral campaign to voter registration, poll worker trainings, and voting procedures). The document is now available in 15 languages and has been used to inform public health guidelines for elections in several countries. In the paper, we discuss different ways of reducing risks of transmission, from introducing or expanding alternative remote methods for voting to setting up polling stations in a way that allows for safe distancing and minimal contamination risks. Since then, IFES also had the opportunity to engage directly with election commissions across the world to support their planning and implementation of COVID-19 preventive measures, and we got additional insights into the effectiveness of certain measures.

We could highlight as best practices, for instance, the provision by the election commissions (also in coordination with other public institutions) of appropriate personal protective equipment to poll workers, voters, and observers. Appropriate training for poll workers and comprehensive voter education and sensitization efforts have also proven essential to ensuring compliance with preventive measures in place. Assigning workers to be responsible for enforcing social distancing and maintaining strong ventilation in facilities is also a good practice. Although we are seeing many election commissions struggle to find ways of integrating voters who are infected with COVID-19 or who are suspected of being infected to the process, some good solutions are also emerging. In some countries, special polling stations have been set up for those who are in self-isolation or quarantine; in others, specific time slots

have been set aside for those voters to attend polling stations. We are also seeing an expansion of mobile teams being deployed to collect ballots from voters in their own homes. In sum, good practices in this area, to us, are those that minimize the risks of transmission while maintaining the integrity of the process and ensuring inclusive participation.

Regarding electronic voting machines (and any other equipment shared by multiple people), the risks are that infected individuals can contaminate them (by expelling respiratory droplets on them or touching them with infected hands) and then healthy individuals who touch them and then touch their mouth, nose, or eyes with infected hands could get infected. According to the most recent scientific evidence on COVID-19, contaminated objects are not believed to be the main method of transmission of the virus – but even if the risks are lower, citizens should take appropriate measures to protect themselves. They should, for example, disinfect their hands often (especially before and after using the equipment), and avoid touching their faces. Election commissions can also conduct frequent sanitization of the machines, but they must make sure to contact manufacturers first to get specific guidance on how to clean the equipment and which products to use to avoid damaging it.

- 2. According to the current Electoral Code, Bulgaria should move to machine voting. However, at this very moment legislative amendments are introduced to the Electoral Code in order to established a mixed way of voting – machine voting and paper ballot voting. What are the advantages and disadvantages of machine voting? Is machine voting more difficult for the electoral administration?**

Over time, introducing machine voting solutions such as [Direct Recording Electronic \(DRE\) voting machines](#) could facilitate organizing elections for election administrators. The Central Election Commission of Bulgaria (CEC) would no longer be required to design, produce and distribute ballot papers. Furthermore, the counting and tabulation processes would also be significantly faster than hand-counting ballots and aggregation results using largely manual procedures. However, it is important to note that these benefits could only materialize once Bulgaria has fully transitioned to an electronic solution. In fact, as long as it offers voters a hybrid-system (manual paper ballot solution and DRE) the CEC must manage two very distinct systems that need to be fully integrated to ensure integrity of voting and the results management system. Managing and maintaining two parallel systems is expensive, as it requires two distinct systems as well as additional training of poll workers and results personnel. The Commission must, furthermore, produce voter education and information material explaining both systems to voters, observers, party agents, and media. In addition, irrespective of the actual number of DRE machines deployed on election day, the CEC must obtain the necessary information and communication technology (ICT) capacity to properly maintain the DREs and an integrated results system, reconfigure DREs for each specific ballot design, properly test the machines prior to use, and develop a mobile help-desk capacity for faulty DREs on election day. CEC must also ensure safe and secure storage facilities for the DREs, as well as ensure its cyber-security capabilities are effective enough to counter potential interferences from external and internal threats.

3. One of the reasons for introducing machine voting in Bulgaria is to reduce the percent of invalid ballots, which has increased in recent years.¹ Can machine voting help for reducing invalid votes?

Yes, the DRE software can be designed in such a manner that the problem outlined here is avoided. However, introducing DREs to reduce this type of invalid ballots is an *extremely expensive and complex solution that will take several electoral cycles to overcome*. A much more effective and efficient solution would be a targeted voter information campaign directed at the electorate. In addition, clearer instructions to poll workers to inform voters how to properly mark the ballot paper at the time of issuing the ballots would also be a faster and cheaper solution. Alternatively, the same could be achieved via an amendment to the election regulations clarifying that a vote for a party's candidate will also count as vote for the party itself.

4. How high is the risk of manipulation in machine voting? Based on your expertise and observations what are the minimum /or general/ technical requirements for the machines so that they secure the secrecy of the vote?

Manipulation of software and hardware is a significant threat to computer-based voting, and it is often difficult to completely secure such systems. Ensuring security, maintenance, and update of devices also incurs costs that some countries cannot afford. As voting technology develops, so do hacking practices. As technology lags or becomes outdated because of lack of funds or slower bureaucracies, voting systems become increasingly exposed to malicious acts. In the current global context, there are increased efforts by malign actors to disrupt democratic processes, including by tampering with voting and counting processes. These actors have a vested interest in finding and taking advantage of technology vulnerabilities. In addition, internal threats should not be ignored - as disgruntled employees often represent the gravest risk to internal systems. A weak cybersecurity posture at a third-party vendor to the CEC could also be exploited to introduce malign software codes or open the door to a ransomware attack.

To ensure the integrity of an election, the electoral commission must conduct extensive testing of the new technology that is being introduced. With this, it is important for the electoral management body to be transparent with making documentation available for the plans and guidelines it follows. Testing also can preemptively identify vulnerabilities that the electoral commission can address ahead of electoral activities. One way to help ensure the security of the system is to submit it to audits or certifications. Because these are usually newer systems, management bodies will need to adjust current legal framework and laws to account for differences in the results of an audit and the assessment of internal information technology teams. Another fundamental challenge to the successful adoption of automated voting systems is the difficulty some of them present for post-election audits. Strong elections systems include checks and balances throughout the voting process, and following the

¹ The percent of invalid ballots increased after preferential voting was introduced. In the integral ballot you have to vote mandatory for a political party and then, if you want, can give a preferential to a certain candidate, who is indicated with just a number. However, if you vote just in the column for candidate and not a party, the vote is counted as invalid. So, many people by mistake just mark the number of the candidate and not the party. For the local elections in 2019 the average percentage of invalid votes was 15,1%, in some municipalities it was over 30% and in some small villages over 60%!

tabulation and dissemination of results. Post-election audits can help identify cases of fraud, tampering by malign actors, and human error – and they are critical to settling elections disputes. As such, audits are frequent requirements in electoral legal frameworks around the world, and they add another opportunity to build voters’ trust in election results. A critical technical requirement then, is that voting machines produce auditable paper trails.

Automated voting systems also require significant *ongoing* financial, technical, and human investments to remain functional and secure. When migrating to automated voting systems, electoral decision-makers should plan far in advance to ensure the sustainability of these changes.

5. There is tension between the Central Electoral Commission and the government in Bulgaria around the issue of machine voting. It resulted in the resignation of the Chairperson of CEC. Based on your expertise, who should be in charge of the buying and management of machine voting – the state or an independent institution? What underwater stones might be for the public procurement for the machines themselves? Is it better to buy the machines or to rent them?

Often the election management body (EMB) is in-charge of procuring sensitive election technologies, because depending too much on another state institution could be perceived as undermining the Commission’s independence. However, procuring electronic voting systems is highly complex and other state institution can often contribute with much needed technical expertise (particularly in the fields of ICT and cybersecurity). In some countries, international procurement and / or contracts over a certain value must be organized via a state procurement board. Should the EMB be organizing a joint tender board for an electronic voting system it is essential the Commission does not jeopardize its independence – either during the development of the actual tender document, or when determining who the implementing partner should be.

In general, the procurement process should be transparent – applying clear criteria for determining what the system is to achieve, deliverables under the contract, and clear and extensive justification for the scoring of each tender application.

Purchasing or renting the machine could potentially be part of the tender process. The vendor could submit two solutions, of which one is based on leasing the equipment and the other buying the same. Each situation is largely unique as it depends on the number of machines to be purchased, the complexity of system to be developed, maintenance and training requirements, etc. Another critical factor is who will have the ownership of the source code for the systems designed, and who will own the data entered and stored on the machines. These are just some of the many issues that must be clarified in the tender document.

6. Is there a clear correlation between machine voting and trust in the electoral process?

The short answer is *no*. The incorporation of technology into elections – as opposed to almost all other spheres of life – has been far from linear. Since punch-card voting machines were first used widely in the United States in the 1960s, the world has changed drastically. Yet, nearly 60 years later, many countries still prefer to hold their elections the way elections have been held for generations: entirely manually. This choice is not for lack of more modern devices.

We have come a long way in developing new technology for elections. After the punch-card voting machines, we saw the incorporation of optical scanners for reading paper ballots and the development of voting machines that included comprehensive systems to receive voter inputs, record them, encrypt the data, and transmit and tabulate results. The introduction of such technology in many cases sped ballot counting and reduced the costs of additional staff for the count and the risks of human error (which could help bolster trust in the process). Certain machines can also make the process easier for persons with disabilities and even prevent certain forms of election fraud such as ballot-box stuffing and ballot theft. Despite all these benefits, voting technology also brought several challenges to many countries. For instance, many individuals felt that the process of voting became less tangible and transparent when there was a transition to machine voting, as they could not see what happened to their votes (and tracking votes would violate vote secrecy). This loss of transparency affected stakeholder trust in elections, leading some countries to abandon voting machines altogether.

Elections require, more than anything, transparency and trust. No new or innovative technology will make for stronger electoral processes unless the public has confidence in its integrity. Migrating to automated voting systems is not an overnight process – it requires extensive planning, lengthy procurements, thorough piloting, careful evaluation, effective training, and in many cases, years of legal and regulatory reform. Only if these processes are steady, transparent, successful, and conducted with the buy-in of stakeholders are they more likely to result in an increased trust in the process.

7. Should there be some specialized training for the electoral administration in regard to machine voting? What might be the focal points of such training?

Absolutely, and not only for electoral administrators. New technology is often difficult to explain, understand, and observe, especially if it is the first time technology is being incorporated into different parts of the electoral processes. It is usually easier for voters and electoral observers to understand manual mechanisms than it is for them to understand electronic voting and how to identify errors and malpractice in those systems. These processes involve “black box” components that are almost impossible to be observed. In these cases, there are many additional measures that need be taken to ensure the same level of transparency in the process.

One step that should be taken well in advance of electoral activities is an increased push in voter education efforts to inform citizens about the incorporation of technology in electoral systems. Voter education materials must be widely disseminated and inclusive, and they must reach and cater to all demographics of an electorate. Additionally, information should be presented in a way that makes technical components of elections and voting machines as simple as possible for every voter to fully understand. They should be able to fully comprehend the changes, differences, or additions to the processes in which they will participate.

Another key step to ensure the integrity of the vote is comprehensive training for polling staff. These trainings should be adapted to highlight whatever new modality is being added to the electoral process along with the standard materials provided in the sessions. Additionally, trainings should be open to participation and observation by party agents and electoral observers. This would allow these stakeholders to better understand the process, know what to look for on election day, and produce well-informed reports.

Lastly, one of the best ways to safeguard the integrity of an election is observation by party agents and electoral observers. As previously mentioned, adding technology to an electoral process also adds a layer of complication in observation. Thus, the electoral commission must work to ensure that what can be monitored is accessible to observers both in law and in practice.

