

# Use of innovative technologies in the electoral process in Armenia

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**Abstract.** This paper<sup>1</sup> presents an overview of the use of ICT-backed solutions in the electoral processes in Armenia and their possible future development. It discusses questions that arise in relation to the current use of ICT and to the envisaged developments which may be of general interest.

**Keywords:** Armenia, Use of ICT in Electoral Processes, Voter Authentication Device (VAD), E-registers, Internet Voting, Elections Automated System, E-identification, E-government.

## 1 Introduction

### 1.1 Electoral system

Armenia is a small country (area – 29,8 km<sup>2</sup>, population – 2.9 million, of which 2.5 million have voting rights) geographically located in the South Caucasus and generally considered geopolitically European. The citizens of Armenia vote in elections and referenda, at the state and local self-government level. The Constitution foresees the regular and extraordinary election of the National Assembly and elections of local self-government bodies (election of Head of Community and Member of Community Council of Elders). They are regulated in detail in the Electoral Code (EC). The Constitution further provides for direct participation in the administration of community affairs through the local referendum. At the national level, it is possible to vote in a referendum to modify the Constitution, on a draft law submitted by popular initiative and in a referendum on the membership of the Republic of Armenia in supranational or international organisations as well as on changes of territory.

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The principles of secret ballot and universal, equal, free and direct suffrage apply equally to elections and referenda. So do other relevant principles, namely the mandatory and periodic nature of elections and the publicity of elections (Articles 1-8 EC).

Armenia is a parliamentary republic since the 2015 constitutional amendments and the election of the National Assembly is the single nationwide election. It is also the most sophisticated one. The electoral system, in force from 1 June 2016 until April 2021, was quite complex.<sup>2</sup> The system was changed on 1<sup>st</sup> April 2021 when the Parliament approved amendments to the EC introducing a pure, one-tier proportional system, easier to handle also for the voters. The National Assembly that came out of the snap election of 20 June 2021 was elected through the new proportional system, with one multi-mandate constituency covering the entire territory of the Republic. Each party (or alliance of parties) running in the elections nominates one nationwide electoral closed list of candidates. The electoral list of the party (alliance of parties) includes not less than 80 and not more than 300 candidates.

## 1.2 Election administration

Elections are administered by a three-tier system comprising the Central Electoral Commission (CEC), 38 territorial electoral commissions (TECs) and 2,010 Precinct Election Commissions (PECs). A distinct governmental agency, the Police Passport and Visa Department, manages the State Population Register from which is drawn the electoral register. It updates the register and submits it electronically to the CEC for posting on the commission's website.<sup>3</sup> A search engine is available on the website of CEC. The Police Visa and Passport Department is also responsible for eliminating any inaccuracies in the register and notifying the applicant either directly or via a dedicated website,<sup>4</sup> which, technically, is not part of the elections management system.

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<sup>2</sup> It provided for a minimum of 101 members of parliament (MPs) to be elected through a two-tier proportional system. In that system, each party (or alliance of parties) participating in the elections nominated one electoral list of candidates, which consisted of two parts. The party (or alliance of parties) compiled regional electoral lists from the candidates included in its national electoral list. A candidate could be included in only one regional electoral list. During the National Assembly elections, 13 districts were formed in the Republic of Armenia (4 in Yerevan and 9 in the regions). Half of the seats were assigned through the nationwide list and the other half through territorial lists submitted in each of 13 territorial districts. According to OSCE/ODIHR EOM Report of 2017 Parliamentary elections, voters had difficulties in understanding the then-new voting process which led in some cases to group voting and attempts to influence voters as well as to procedural omissions during the counting.

<sup>3</sup> [www.elections.am](http://www.elections.am)

<sup>4</sup> [www.azdarar.am](http://www.azdarar.am)

### 1.3 Current use of ICT in elections

Use of ICT is envisaged as a mean for ensuring publicity and transparency of organising and holding elections and should be done in a manner that respects security, smooth operation and proper exercise of powers (Article 8§3 EC). Currently, several solutions based on so-called information and communication technologies (ICT) are used in election administration in Armenia.

**Voter Authentication Devices.** Use of ICTs during election day started mainly in 2016 with the adoption of the new Electoral Code whose main novelty was the introduction of Voter Authentication Devices (VADs). These devices have been used for the last three parliamentary elections (2017, 2018 and 2021). Even though the parliamentary elections held in April 2017 were generally well-administered, important shortcomings remained, including vote-buying and misuse of administrative resources which contributed to an overall lack of public confidence and trust in the election. Following the Velvet Revolution and democratic changes in 2018, the following two snap elections held respectively in 2018 and 2021 were claimed to be more democratic and transparent.

The introduction of VADs is one mechanism that not only assists in the identification of a voter but also aims to address the issue of trust in elections. International observers of the 2017 election noted that the introduction of the VADs was welcomed by most of their interlocutors as a useful tool for building confidence in the integrity of election day proceedings, while also recognizing a number of issues, such as the late development and delivery of the VADs which led to a limited time for testing of equipment and training of the VAD operators.<sup>5</sup> In contrast, international observers had noted in previous elections a number of serious violations including multiple and proxy voting, impersonation and issued recommendations to address them.<sup>6</sup> In all elections held before 2018, voting rights were allegedly infringed, and so public confidence in the outcome was very low. It was in this context that the Government of Armenia decided to implement new ICT-backed solutions to reduce the risks of double voting, namely by preventing undue use of credentials/identities of Armenians who are either living abroad or out of the region where they are registered and where their polling station is located. Additionally, the VADs were intended to also put an end to widespread allegations that the Government included names of dead voters on the voting lists.

VADs are considered a means to help preventing multiple voting, impersonation, and fraud and, according to observers, have helped instil trust in recent elections.<sup>7</sup>

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<sup>5</sup> See the OSCE/ODIHR Election Observation Mission Final Report on parliamentary elections 2 April 2017, p. 10 as well as p. 5, [https://res.elections.am/images/doc/osce02.04.18\\_en.pdf](https://res.elections.am/images/doc/osce02.04.18_en.pdf)

<sup>6</sup> See the OSCE/ODIHR Election Observation Mission Final Report on parliamentary elections 18 February 2013, page 21, <https://www.osce.org/files/f/documents/a/d/101314.pdf>

<sup>7</sup> See OSCE/ODIHR as well as Council of Europe PACE reports of the parliamentary elections of 2 April 2017 and of the 9 Dec. 2018 early parliamentary elections, available at:  
 – <https://www.osce.org/files/f/documents/6/7/328226.pdf>  
 – <https://www.osce.org/files/f/documents/b/7/413555.pdf>

They have been successfully used since 2017. Despite the identified shortcomings in the 2017 elections, the use of VADs was claimed to be successful: nine cases of attempted multiple voting were identified by the VADs and thus prevented.<sup>8</sup> The same VADs were also successfully used in the 2018 and the 2021 parliamentary elections, without any changes to the procedures.

The Voter Authentication Devices are used on voting day to authenticate voters and to collect fingerprints for post-election controls in case of alleged multiple voting. VADs verify the identity of the elector by reading the machine-readable zone (MRZ) of the identity document and comparing it with the electronic list of electors. Manual registration is foreseen for certain documents. In a next step, the VAD takes the fingerprint. The VAD then prints a voting pass which enables the voter to register as voting by signing (on paper) next to his or her data in the column envisaged for it on the list of electors.

It is to be noted at this juncture that the VADs are not connected to the internet. No data transfers, neither push nor pull, are done at any point during election day. The only data being sent happens after the election, whereby a scanned copy of the voters' list, including voters' signatures, is published on the CEC website. The possible control of the fingerprints entered in the system is done after the election, at the TEC level, by means of special software, in case of claims or disputes.

From a technical perspective, the VADs access the voters' data in the field by means of accessing a memory card which is prepopulated with the voters list. These memory cards are configured prior to the election and the data residing on the memory cards comes from the Central Voter Information System or commonly known as the CVIS. The CVIS is a web-based application which makes use of several processes to prepare the master data files for each VAD. Once the master data file is prepared making use of a replicator the data files are replicated and distributed to the TECs and finally to the polling stations according to CEC processes. The CVIS is very relevant in this entire cycle as not only does it prepare the master memory cards, but also for the consolidation of data collected from polling stations VADs after the election. This data is used to analyze voter turnouts and to produce reports as required by the CEC. The CVIS is an indispensable component of the voter authentication system. Major developments of both VADs and CVIS depend on the provider whereas the election administration oversees the rest.

**Internet voting.** Internet voting is used in a very limited capacity. The small size of the country and of its population, and the fact that polling stations are located very near each other, may be a reason why there doesn't seem to be demand for internet voting inside the country. The use of internet voting is however of interest to the Armenian broad diaspora. The law on the election of the President of the Republic of

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– <https://assembly.coe.int/nw/xml/XRef/Xref-XML2HTML-en.asp?fileid=23748&lang=en>

– <https://assembly.coe.int/nw/xml/XRef/Xref-XML2HTML-en.asp?fileid=25251&lang=en>

<sup>8</sup> See OSCE/ODIHR Election Observation Mission Final Report on parliamentary elections of Armenia of 2 april 2017, [https://res.elections.am/images/doc/osce02.04.18\\_en.pdf](https://res.elections.am/images/doc/osce02.04.18_en.pdf)

1996 provided for the first time the right of expatriates to vote from abroad.<sup>9</sup> Initially voting from abroad took place in diplomatic and consular representations: first at the 1996 election and then at the 1998 snap presidential election. In both cases it was considered successful.<sup>10</sup>

The 2005 constitutional amendments, which allowed dual citizenship, abolished however the voting rights of the large diaspora. The Electoral Code adopted in 2011 allowed voting from abroad only for citizens working in the diplomatic service in representations of Armenia abroad and members of their families residing abroad with them and having the right to vote as well as for a few other groups (the military, students and employees of certain firms registered in Armenia).

An internet voting system was introduced first at the parliamentary election of 6 May 2011 and then at the presidential election of 18 February 2012.<sup>11</sup> Noting that remote electronic voting is controversial, Venice Commission and OSCE/ODIHR have recommended that Armenian authorities carefully examine the need for Internet based voting against the alternative of organising polling stations at the consular offices on election day for this small group of voters.<sup>12</sup>

Whereas the Electoral Code foresees the use of internet voting to enable several groups of Armenians living abroad to participate in elections of the National Assembly (diplomatic and consular personal and their families, military, students, employees of certain firms registered in Armenia and located abroad, and members of their family), in practice internet voting has only been offered to diplomats and their families. The organisation and duration of internet voting is regulated by the CEC through a 17 June 2016 decision which establishes internet voting as an alternative channel, complementary to voting in polling station. It is organised between the 9<sup>th</sup> and the 7<sup>th</sup> day before election day. According to the EC, the CEC is “obliged to establish such terms for electronic voting that would ensure free expression of the will of voters and secrecy of voting”. The decision clarifies questions related to the lists of electors and the generation, sending and handling of personal codes, in a secure manner. It stipulates that the vote should be secret, and the voter has the possibility to vote multiple times, the last vote cancelling the precedent one. The system notifies the voter that he/she voted. After the vote ends, members of CEC enter their individual codes in alphabetical order of their surnames and the system produces a protocol of voting results which is then signed by the members of CEC. Results are entered in the “Elections” automated system. Conditions for the invalidity of ballots are foreseen. Recounting is foreseen as being a “counting the results of electronic voting for the second time”

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<sup>9</sup> Law on the Election of the President of the Republic of Armenia (adopted on April 30, 1996), Article 2, [www.arlis.am](http://www.arlis.am).

<sup>10</sup> Some 15'000 Armenians abroad participated which attested of their great interest in the election. See: Hamazasp Danielyan, “Internet voting in Armenia. Invisible Innovation Analysis” (in AM), [https://www.osf.am/wp-content/uploads/2015/10/Hamazasp\\_Danielyan\\_PP.pdf](https://www.osf.am/wp-content/uploads/2015/10/Hamazasp_Danielyan_PP.pdf)

<sup>11</sup> *Ibid.* Some 195 voters participated at the parliamentary election and 228 did so at the presidential election.

<sup>12</sup> Venice Commission, OSCE/ODIHR, Joint final opinion on the Electoral Code of Armenia, 26 May 2011 (CDL-AD(2011)032), [https://www.venice.coe.int/webforms/documents/default.aspx?pdffile=CDL-AD\(2011\)032-e](https://www.venice.coe.int/webforms/documents/default.aspx?pdffile=CDL-AD(2011)032-e)

with the mandatory participation of CEC members and optional participation of observers, journalists, representatives of parties and the candidates. It should be impossible to link the name of the voter and the vote, at the counting stage. The source code of the e-voting program is required to be published on the website of CEC. No information is available on past controls of the source code and their conclusions.

**Other ICT-backed solutions used in elections.** An automated system called “Elections” centralises information which feeds into the CEC website. It includes several stand-alone systems which “interact” with the CEC. Other ICT-backed solutions that aim at ensuring transparency include cameras that film participation as well as counting and a live webcast feed on election day. These were successfully used in 2016 and continue to be used. Live feed transmissions are recorded on the central servers for the purpose of being used to assist the judiciary with solving possible claims or objections. Such transparency measures do not apply to some specific groups of voters (e.g. the military).

Additionally, signed voters’ lists are published on the internet after the elections. These measures serve the same purpose as VADs: to prevent and detect fraud, multiple voting and impersonation. However, they also raise questions of compliance. Namely the filming of participation and publication of handwritten signatures question compliance with requirements on confidentiality and protection of personal data.

**E-identification and other e-government developments.** In addition to ICT solutions specific to elections, Armenia has been creating an ecosystem of web-based solutions for interactions between citizens and the administration.<sup>13</sup> The Government has an agenda of digitalization of state procedures and public services. A new “Digitalization Strategy”, summarizing previous decisions, was adopted by the Government on 11 February 2021. Several Government decisions (e.g. 31.08.2015 № 1093-N, 19.12.2019 № 1849-N, 25.05.2017 № 572-N and 26.12.2013 № 1521-N) introduce security, interoperability and other standards and requirements that are relevant for electronic information systems and web portals of state agencies.

Solutions for electronic identification have been available to Armenian citizens since 2009. The e-ID solution is foreseen for signing referendum demands, for instance. To gain access to the e-ID, citizens need to have an ID card reader and special software installed on their PC, which are tedious and costly procedures. As a result, digital identification is usually used only if people are obliged to do so. Sometime both e-ID and hand signatures are possible. For example, the E-Request portal<sup>14</sup> allows people to apply to any state body electronically either by introducing a document signed by electronic signature or by providing a scanned copy of a paper document which is hand signed. In 2018, a Mobile ID solution was introduced, which makes digital identification and signing possible with a special USIM card inserted in the mobile phone. Work is ongoing on a smartphone software solution to enable the users of Android and iOS smartphones to sign documents, as well as to login and gain ac-

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<sup>13</sup> Several solutions exist already and can be accessed through the portal [www.e-gov.am](http://www.e-gov.am)

<sup>14</sup> [www.e-request.am](http://www.e-request.am)

cess to e-services just by downloading an application and passing a registration procedure. No additional hardware would be needed, and the solution would be compliant with the standards of security of the EU eIDAS regulation.

Different distributed Armenian e-government public services are interconnected and exchange information via the Government Interoperability Platform (GIP) using secure means. A Governing Authority (EKENG) coordinates the GIP, creates and enforces standardized security policies and provides technical support to members of the governmental data exchange. The election management system and other election-related ICT solutions are not part of the GIP though.

#### **1.4 Extending the use of ICT in elections**

The Government of the Republic of Armenia has a strong political will to strengthen democratic processes and enhance the procedure and quality of the organization of elections. Both the Government and the Central Electoral Commission look with interest in the possibility of moving more services to a digital technology platform, including online spaces, as part of the Government's strategic planning. The COVID-19 pandemic has strengthened such interest.

The future of ICT use in elections is currently being studied. A big package of amendments to the Electoral Code was adopted in May 2021 (it did not apply to the election held on 20 June 2021). It addresses mainly past recommendations of international organizations and observers over the years. Depending on the decisions to be taken on the future development of ICT solutions in elections, other important amendments of the EC are to be expected.

The Electoral Code puts the use of ICT in elections under CEC responsibility. The EC currently enables the CEC to introduce e-voting and e-counting in small scale pilots during local elections. CEC is expressly enabled to organise and hold pilot projects involving ICT during elections of local self-government bodies (only) and at a small scale with no more than 2000 electors per community and no more than ten communities annually. Any use of e-voting and e-counting at a larger scale or during national elections or referendums, requires a specific legal mandate, which implies changes in the EC, whose modification should be endorsed by a qualified majority of the Parliament.

The international community has been assisting Armenia with the strengthening of democratic institutions, including election administration and use of ICT in electoral processes. For instance, UNDP Armenia has been assisting with the introduction and development of ICT solutions for elections since 2016 when Armenia decided to introduce Voter Authentication Devices (VADs) to assist in instilling more trust in the voting process. UNDP's contribution extends to IT infrastructure, hardware components, development and maintenance processes, professional trainings including an e-Learning platform and a Training and Resource Centre as well as to long term strategic planning at the CEC.

## 2 Trends and questions

Armenia, like other countries, is in the process of expanding its e-governance footprint. Its electoral authorities continuously look at streamlining and implementing more effective and efficient mechanisms to enhance the various electoral processes for the stakeholders involved. Building on the current state of election technology systems used in the country, the electoral authorities wish to explore possible technology solutions and systems which could be introduced in a structured manner in the future, and which would follow international standards and good practice.

One of the developments envisaged by the authorities is the feasibility of introducing e-voting in polling stations and/or e-counting. In a first step, the authorities ponder the development and transformation of some of the VADs into electronic voting machines (EVMs). Alternatively, they consider the introduction of totally new EVMs and/or of e-counting technology. Additionally, complementing and upgrading the elements of the Elections management system is being envisaged. There are no plans about extending the use of internet voting.<sup>15</sup>

When considering the further development of ICT in elections, several questions arise about both the current and the envisaged systems, including their purpose, their integration into the current election management system, their security, maintenance, development, and, finally, the sustainability of such developments. We present an overview of some of these questions which may present a general interest. Any detailed study of the current and future development of ICT in elections requires combined expertise from different fields, including electoral legislation, election administration, IT, socio-political aspects and international cooperation.

### 2.1 VADs

The Armenian CEC has opted to introduce a voter authentication device at polling stations in an attempt to reduce possible double voting as well as to strengthen the overall confidence in the elective process. From a purely technical perspective, while the idea was very sincere and the approach a step in the right direction, the question of what else could be done with this technology to further enhance and strengthen the process of voter authentication and ensure that it achieves the objective of reducing double voting begs.

The VAD, in its current form, only scans and saves the voter's fingerprint, doing no fingerprint algorithm validation/verification check on presented fingerprints. It can be argued that if biometric data is readily available, it could further be used to verify and validate voter data on the spot. This would not only deter people from taking the chance of defrauding the process but would certainly enhance the transparency aspect

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<sup>15</sup> In the context of recent reflections about a possible extension of use of ICT solutions in elections, UNDP Armenia conducted a feasibility study "Innovative technologies for the electoral process in Armenia" to assess and evaluate options of e-voting technologies, to identify international good practice and to discuss cases involving e-voting and other innovations, analyse pros and cons and propose solutions that best suit the needs and existing possibilities of the Republic of Armenia (see fn. 1).



of the elective process. By implementing a fingerprint analysis process brings to the fore the question relating to the possible centralising or de-centralising of voter data verifications and management thereof as well as related accuracy and security considerations, among others.

From a legal perspective, the VAD system is one of those “legacy systems” which despite being trusted and used through several elections, is not satisfactorily regulated. A closer look into the VAD regulation shows that it contains important gaps. It does not envisage the case of VAD malfunctioning or of erroneous answers provided by the voter authentication software. Legal provisions currently refer to a well-functioning system, only. How to handle possible malfunctioning is not clear. Such gaps are problematic especially in countries like Armenia, where regulation is very detailed, and issues are treated in a very formalistic way: if a situation is not foreseen and dealt with in the electoral regulation, it may fall beyond the control of authorities. A better way of handling these situations could be for the regulation to establish objectives that a solution should fulfil (instead of attempting to regulate any possible issue) and for the competent authority (CEC, judge, etc.) to evaluate whether the solution fulfils the objectives, and do so most probably in cooperation with academia, experts, etc.

VAD regulation does not address dispute settlement issues either. For instance, it is not clear what happens when a voter contests the “decision of the VAD”. This is a general preoccupation. Regulation of current and future ICT solutions should pay attention to dispute resolution mechanisms and remedies. These are even more important when the vast majority of people do not understand the technology solutions in place. It should be done in the light of the specific ICT solution and of the possibilities of verification offered to voters and other stakeholders. Criminal sanctions may need to be further developed to address ICT-related violations.

Another legal preoccupation with respect to VADs is the lack of a clear definition of competences of the various state bodies involved in the collection, storage, and use of personal data, including biometric ones like the fingerprints or the voters’ signatures.

Yet another issue is the publication, at the end, of sensitive data on the web. In this case, it’s the lists of voters which includes voters’ hand-written signatures which is made public, for transparency purposes. Although such publication is quite specific to Armenia, it points to a general tension that exists between requirements of transparency and publicity on one side and those of confidentiality of participation and of the signature on the other. In the case of Armenia, international observers have repeatedly noted that the publication of voters’ signatures is at odds with commonly shared principles of confidentiality and secrecy. Yet, in Armenia, such publication is considered to be an efficient measure for discouraging and discovering potential fraud in participation.

## **2.2 Internet voting**

Internet voting in the context of a parliamentary election in Armenia is only offered to diplomats and their families. Technically, the capabilities to make use of this

technology on a larger scale which meets all legal requirements are not available in Armenia. The long list of high-risk technical issues surrounding internet voting often sees EMB's shy away from it. There are many technical and nontechnical issues surrounding its use and most of these issues are so high risk that it is not worth deploying in fear of systems being compromised. The overall sentiment is that internet voting cannot be trusted. The issue of data and system security seems to be the top preoccupation.

If it were that internet voting was being considered, what are some of the more serious technical points that should be addressed as a minimum? Addressing security by adopting a strategy that considers cybersecurity in totality is an important point. Ensuring that the technology meets all legal, operational and system requirements is another one. The adoption and implementation of industry accepted failover technology systems and strategies, the inclusion of intelligent technology systems to monitor integrated internet data, system and services, the inclusion of defined system protocols that ensure good ICT governance and ensuring that ICT in the organisation drives the overall internet data, system and services in accordance with all provisioned directives are other important points to consider.

From a legal perspective, it is to be noted that the Armenian current regulation of the limited use of internet voting remains quite high-level, which is problematic because it lacks detailed requirements on how the general principles can be implemented and respected by the internet voting system. Additionally, internet voting regulation contains no provision on control of compliance of the system with the requirements. The consequences of non-compliance are not discussed either. There is however a detailed provision on multiple voting which is introduced as a mitigation to potential coercion and violation of secrecy as internet voting takes place from an uncontrolled environment.

Another observation is that the development of internet voting in Armenia illustrates the tension between universality and equality on one side and security on the other. By enabling a limited group of electors (diplomats) to vote through the internet voting channel (the limitation to this small group being a risk management/security measure), the competent authorities treat unequally electors who are in the same situation (military, students, etc. living abroad) but who, unlike diplomats, are offered no effective voting channel.

### **2.3 Electronic voting and counting machines**

Technology solutions in Armenia are increasingly being architected, designed, and implemented into current elective processes and procedures as the authorities realise that technology can play a big part in the process, from online training services to electronic voting systems.

The idea of implementing a centralised elections solution with the deployment of electronic voting systems has been analysed and documented as part of a feasibility study that was conducted by UNDP.<sup>16</sup> The CEC and other stakeholders are interested

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<sup>16</sup> See fn.1

in looking at the viability of transforming VADs into EVMs and at testing e-voting on EVMs. A possible ICT roadmap to follow would be one that defines a strategy that would see the CEC make use of a redesignated VAD into a EVM, testing the concept and then defining a longer terms strategy which could either see a completely different technology approach being followed or one that makes use of redesignated VADs.

The key technical points that must be reviewed when looking at implementing electronic voting machines include the following. It is always important to define all the technical requirements of the device in line with the legal directives. In the Council of Europe region, the acceptance of EVMs is increasingly linked to the level of verifiability that they offer. One must ensure that the technology stack of the device meets all the technical requirements – including but not limited to system security, device security, system and user interaction, ease of use, technical support, and availability thereof etc. The technology should be sustainable: the EMB must implement a technology which can be internally supported after the initial implementation for a sustained period. The technology must fit in with the defined technology roadmap (if a defined technology roadmap is not available the EMB must define one). The overall technology used and that which governs/enables it must be tested and meet the basic technology best practices and standards that are globally accepted. A defined technological methodology (ITIL as an example) must be used to implement the system or any system related changes. Upskilling maybe necessary if new technologies are implemented. This is important when knowledge transferring takes place.

Additionally, the Armenian case shows that authorities should be clear about the needs that are being addressed by new ICT. For instance, the use of EVMs alone cannot control that a person votes only once, which seems to be one of the main preoccupations in Armenia. More generally, technology alone cannot help to solve trust issues: indeed, trust in the electoral authorities is a precondition to introducing and developing e-voting solutions; technology is by no means a ‘silver bullet’ Technology must be seen in the context of a mechanism which is introduced to solve problems not create them. While the use of technology helps to assist in elections, it still needs to be governed.

## **2.4 Centralised Elections System**

Centralised Elections Systems can range from centralised or clustered systems, services or databases. Centralised systems for the most part help when consolidation of services, data or overall ICT outputs such as reports need to be done at a central level, whether to save costs or to manage resources as an example. In the case of the Armenian CEC, all ICT activities and outputs are done at a central level in Yerevan. No decentralised ICT activities happen outside of Yerevan as the CEC has limited ICT resources available. Should the CEC be looking at centralising systems, what should they maintain as a standard?

When looking at developing or implementing centralised solutions, the EMB must be skilled enough to support such solutions. The ICT maturity level within the EMB must be high, ensuring that they can support the operational environment without compromising any of the processes.

Strategic developments must be aligned to the overall strategy of the EMB. Systems that are developed or implemented must take all aspects of ICT good governance, security, system failover, networking etc into consideration. All associated systems which are integrated or are going to be integrated must be compatible, flexible, and sustainable. Cross platform friendly base must be identified and developed or implemented.

A clean design methodology must part of any solutions being developed or purchased. The last thing one wants is to develop an entire centralised solution/system only to learn afterwards that the database that was chosen is not easily integrated into other databases.

## 2.5 E-government solutions

Armenia has developed a number of innovative e-gov systems and solutions, which have assisted in many different aspects of life in Armenia. The data produced within the various civils systems can be and is in some instances consumed by other government institutions. One of these institutions is the CEC. The CEC relies on another state institution to provide it with the voters' roll and associated data.

Those EMBs that rely on other institutions to provide information or data such as is the case with CEC must always ensure that they are acting in line with directives specific to the EMB. The EMB must have ICT processes and procedures in place to verify and validate information and data which is provided by other sources.

The EMB should define a sound ICT good governance structure and ensure that institutions that are sources of information or data comply with the structures. Structured processes in the institutions that provide information and data to EMBs must be enforced. The EMB should be entitled to be part of all information or data sharing between the various institutions. The EMB should have the ability to enforce best practices and good ICT governance processes within institutions that deliver services to it. This is important when it comes to ensuring transparency of any elective process.

## 2.6 June 2021 snap elections under COVID

Use of ICT has been considered in the context of health restrictions related to the COVID19 pandemic as the June 2021 snap elections were held under such restrictions. However, no changes in technology were introduced and social distancing, mask wearing, and hand and surfaces sanitization were privileged.

At the beginning of the COVID pandemic the state of emergency was declared by Decree of the Government on 16 March 2020, initially for the duration of 30 days,<sup>17</sup> subsequently prolonged until 11 September 2020<sup>18</sup> and validated by the National Assembly. In particular, the following restrictions to fundamental rights, relevant for elections, were introduced: restrictions on the freedom of movement, of assembly,

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<sup>17</sup> <https://www.venice.coe.int/files/EmergencyPowersObservatory//T06-E.htm>

<sup>18</sup> <https://www.venice.coe.int/files/EmergencyPowersObservatory//T10-E.htm>

and of the press (later repealed). There were also restrictions on economic activities. In August and September 2020, restrictions were softened. The National Assembly introduced new amendments to the laws on Protection of Population in Emergency Situations and Provision of Sanitary-Epidemiological Security of the Population of Republic of Armenia which allowed for appropriate measures against COVID-19 without declaring the state of emergency. On 11 September the state of emergency was not prolonged and thus terminated.

By Decision no. 1514, the Government declared quarantine on 11 September 2020 for four months, until January 2021 and then extended it to 11 July 2021. The quarantine decision is a prerogative of the Government, which does not have to be approved by the National Assembly. Government's decision no. 1514 was completed by a decree of the Ministry of Health. Government's decision no. 1514 prescribes the use of personal protective equipment (PPE). The exact kind of PPE is foreseen by the Decree no. 23 of Minister of Health, adopted on 11 September 2020. Other restrictions introduced by Government's decision no. 1514 relate to travelling to and from Armenia, to some restrictions in penitentiary bodies, schools, army.

The legal regimes of state of emergency and of quarantine have different consequences on elections. Whereas holding elections or referendums is prohibited during the state of emergency or martial law, the quarantine regime allows holding elections or referendums. However, it introduces new rules which may affect electoral rights such as the wearing of masks in closed places or keeping physical distance of at least 1.5 meters and wearing masks during assemblies.

The very detailed nature of the Electoral Code which regulates the tasks of CEC and its room for manoeuvre suggests that the CEC's mandate to ensure the exercise of the right of suffrage does not enable the CEC to introduce new modalities that are not expressly foreseen in the EC. The application of quarantine related measures to restrict electoral rights is subject to a legal basis approved by Parliament. Furthermore, any new usage of ICT (e.g. to mitigate COVID related risks) would require the CEC to obtain a clear legal mandate for that.

June 2021 elections were held under COVID. The restrictions were maintained during the election process but were largely ignored during the pre-election phase, also by the candidates. The situation was different on election day. Entering the polling station was allowed only with wearing masks and if a voter didn't have a mask, the commission was providing it. The commission, observers, party and candidates' agents and journalists were strictly wearing masks inside the polling station. There were sanitizers inside the polling stations. The VAD's were being cleaned with special sanitizers the water content of which was low, to prevent water ingress of the scanner. There was no use of pen or other device to write on the ballot because the voter was given separate ballots for each nominated party and could vote by putting the ballot of the chosen party in the envelope. Eventually, election day activities had no significant influence on the pandemic situation, as showed by the statistics published by the Ministry of Health of Armenia.<sup>19</sup>

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<sup>19</sup> <https://ncdc.am/coronavirus/confirmed-cases-by-days/>

### 3 Final remarks

We conclude with a few general suggestions for situations where modernisation of electoral processes through increased use of ICT-backed solutions is considered.

The will of the authorities to modernise the electoral system does not remove the necessary identification of the actual needs of stakeholders, including of specific groups of voters (women, the sight-impaired, the expatriates), of staff, observers, parties, etc. The development of ICT should be needs-oriented and not an end. Identified needs should be carefully considered and addressed already during the design phase of the ICT solutions.

Legal regulation should be the driving force behind the use and development of ICT (and of any other solution) in elections. Legislation should dictate the values that ICT must respect, not the other way around. However, this is a challenge, in any country. Solving it requires, first, clarity about all legal principles that apply to elections, including but not limited to the right to universal, equal, free, direct and secret suffrage, periodic elections and publicity of elections as well as national or local principles. Second, it requires detailed requirements that ensure respect for the principles. Such requirements represent as many objectives that any solution used in elections, including ICT ones, must fulfil. Finally, it requires a good understanding of other requirements, coming from “outside” the traditional electoral legislation field, which are important when ICT is used. These include data protection, information and system security or cybersecurity, or international cooperation in fighting cybercrime requirements, among others.

In order to build a sound regulatory framework that guides the development of ICT in elections, recommendations from international bodies may be useful. These include the Council of Europe Recommendation CM/Rec(2017)5 on standards for e-voting and its accompanying documents, the OSCE/ODIHR Handbook for the observation of new voting technologies or the Council of Europe guidance documents on the application of the Budapest Convention on cybercrime and of the Convention 108+ on data protection to elections as well as European Union guidance documents on the application of the GDPR to elections.

The envisaged extension of use of ICT offers the opportunity to also evaluate and improve the regulation of existing “legacy” systems.

When implementing any new technologies, it is advisable to ensure that the EMB is not vendor locked, that knowledge transfer continually takes place and that support contracts and any other contracts are well defined.