

COUNCIL OF EUROPE



CONSEIL DE L'EUROPE

Study Guide
for
the Council of Europe

**Topic Area: Strengthening Democracy through
the integration of information technology in electoral process**

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1. Welcoming Message

Dear Honorable Ministers,

We are Michaela, Iana and Raphael and it is our distinct honor to extend a warm and hearty welcome to each one of you. We are reminded of the essential importance of our common commitment to protecting democratic ideals and enhancing election procedures in the digital age as we set out on this important journey of research and discourse. Democracy and technology are coming together, presenting us with both opportunities and problems that need careful thought and original answers.

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You will discover a thorough road map in the pages of this study guide, that aims to help delegates negotiate the challenging terrain of incorporating information technology into election procedures while protecting the validity and inclusivity of our democratic institutions. The sub-topics that we will be discussing, go well beyond the theoretical; they touch on the fundamental foundation of how we, as a continent and as nations, make sure that every citizen's voice is heard and their vote matters.

We believe that this committee has the capacity to produce recommendations through thorough deliberation, cooperative dialogue, and the sharing of insights from various perspectives. These recommendations will not only strengthen our democratic foundations but also serve as a roadmap for us as we harness the power of technology to improve transparency, security, and citizen engagement.

May our combined efforts result in suggestions that are both visionary and doable, ensuring that technology becomes a force that supports democracy and gives our citizens more power.

"In the digital era, the marriage of democracy and technology has the potential to show the way to a more inclusive and empowered society. Let's use this coalition wisely and

strategically, making sure that development always equates to the upholding of democratic principles.

Yours Sincerely,

Michaela Fournarakou

Iliana Axaroglou

Raphael Charisoulis

2. Introduction to the Committee

The Council of Europe, which was founded in the years following World War II, is an international organization committed to upholding and advancing democracy, basic human rights, and the supremacy of the law throughout the European continent. 46 member states, with a combined population of around 675 million people, have actively participated in it since its founding in 1949. The Council of Europe actively carries out its responsibility to build a peaceful and rights-respecting environment among its member states, supported by an annual budgetary commitment of over 500 million euros. The Council of Europe supports equality, minorities' protection, freedom of assembly, free speech, and the media. Campaigns have been started on topics including child protection, internet hate speech, and the rights of the Roma, the biggest minority in Europe. The Council of Europe supports member nations in their efforts to combat terrorism and corruption and implement essential judicial reforms. The Venice Commission, a group of its constitutional specialists, provides legal counsel to nations all around the world¹.

¹ Council of Europe. (n.d.). Council of Europe. <https://www.coe.int/en/web/portal/home>

International treaties like the Convention on Cybercrime and the Convention on Preventing and Combating Violence against Women and Domestic Violence are used by the Council of Europe to advance human rights. Through independent, professional monitoring organizations, it tracks the advancement of member nations in these areas and provides suggestions.

3. Introduction to the Topic

The introduction of electronic voting procedures in recent years has radically altered the landscape of democratic practices, especially in the setting of Europe, which is governed by the values defended by the Council of Europe. The goal of this evolution is to increase openness, accessibility, and voter involvement while preserving the integrity of elections. It is a reflection of the intersection of technical breakthroughs and democratic ambitions. This essay explores the many facets of electronic voting, highlighting its ramifications and difficulties from a mostly European viewpoint.

The investigation of electronic election procedures is supported by the Council of Europe's dedication to democratic principles and human rights. The Council emphasizes in the significance of transparent and fair elections that support public involvement and respect for the rule of law, within the parameters of its mandate. By utilizing technology to strengthen the democratic fabric of member states, electronic electoral processes adhere to these values. Both possibilities and challenges are introduced at this juncture, which calls for careful investigation.

The introduction of electronic voting techniques, including remote e-voting and digital voting platforms, represents a substantial improvement in the electoral system in Europe. Remote e-voting allows people to vote from anywhere, removing obstacles based on distance and promoting participation, particularly for those who are living overseas. This is consistent with the Council of Europe's emphasis on inclusive democratic practices, which makes sure that citizens may exercise their right to vote no matter where they are. Additionally, digital voting systems allow thorough voter education by giving users access to data about candidates,

party platforms, and policy ideas. This is in line with the Council's aim to encouraging an educated populace and a democratic atmosphere that encourages discussion.

However, the widespread use of computerized voting procedures poses a number of problems that need to be carefully considered. The safety and accuracy of electronic voting equipment is one of the main issues. Maintaining confidence in the voting process depends on making sure that these systems are resistant to hacking attempts and other forms of interference. In order to protect basic rights and freedoms, the Council of Europe places a high priority on cybersecurity. As a result, electronic voting systems must undergo thorough audits and use strong encryption.

According to the Council of Europe, the introduction of electronic voting procedures necessitates adherence to recognized democratic standards and human rights. It's crucial to strike a balance between advancing technology and preserving democracy's fundamental principles. To respect the norms of the European Convention on Human Rights and other pertinent agreements, a thorough legislative framework that ensures data security, voter privacy, and openness is necessary.

4. Historical Background

“The punched card system-the very first use of information technology in electoral processes”

The use of information technology in election processes dates back a surprising amount of time, with the first application taking place in the 1960s. Through the advent of punched card systems at this time, the United States of America led the way in the use of electronic voting systems. Punched cards were made of hard paper and carried digital data that was represented by holes placed in certain places. The processing of data and the direct operation of automated machines were two major applications for this technology.

Throughout a large portion of the 20th century, punched cards were widely used in the data processing sector. In order to create semi-automatic data processing systems, these cards were incorporated into specialized and sophisticated unit record machines. These systems

used punched cards for data input, output, and storage. When seven counties chose to use the punched card system to vote in the 1964 US presidential election, it made a noteworthy difference. The use of punched card systems, however, declined as time went on and technology advanced exponentially. Rapid technological development opened the door for alternate implementations, greatly expediting voting processes. Notably, throughout the years, more effective methods took the place of the punched card technique, which eventually vanished into oblivion.

As a popular substitute, optical scan voting systems emerged as one of the progressive implementations that completely altered the democratic scene. Computers are used in these systems to examine the voting markings on ballots. This technique is essential for speeding up the sometimes-laborious vote-counting process and reducing the chance of counting mistakes.

In conclusion, the introduction of punched card voting systems in the United States in the 1960s marked the beginning of the incorporation of information technology into electoral procedures. While this technique had some popularity, later technical advancements resulted in the creation of more effective substitutes, including optical scan voting systems. This development is evidence of how technology is advancing constantly and influencing and improving voting processes².

“The establishment of electronical voting”

Despite the first type of information technology usage for electoral purposes was implemented by the US in the mid-1960s, a complete electronical voting system was never applied until 2005, when Estonia became the very first country to establish a concrete electronic voting system by offering internet voting nationally in the local elections of the same year. In 2005, Estonia created the first introduced I-voting system. A system which relies heavily on strong voter authentication via eID. Since then, five elections of local governments, five parliamentary and three European Parliament elections have occurred. The application of this system paved the way to more countries establishing similar voting mechanisms with the help of using information technology. Specifically, the case of Estonia holds another

² NEWS. (n.d.). *Punch cards get a vote of confidence*. <https://www.nbcnews.com/id/wbna5132384>

noticeable record, as in this March's national elections, Estonia became the first country in history that had a majority of votes in a national parliamentary election being casted online rather than on paper, when a staggering 51 percent of citizens taking the online voting route. I-voting might provoke mixed feelings about safety and integrity, but one thing is for sure – if there were any doubt that elections might be compromised, I-voting would not be available like it has been for 18 years³.

5. Key Terms and Definitions

Electronic voting⁴: It is a type of computer-mediated voting in which candidates are chosen by voters using computers. The voter typically makes their selections using a touch-screen display, while voters with visual impairments can access auditory interfaces. It is helpful to think about the four fundamental steps in an election process before understanding electronic voting: ballot composition, where voters make their selections; ballot casting, where voters cast their ballots; ballot recording, where a system records the cast ballots; and tabulation, where votes are counted. Even with voting methods that are not technically electronic, computerized ballot casting, recording, and tabulation are frequently used. In the precise sense, electronic voting is a process where the formulation of the ballot is the initial stage.

Voter Verification⁵: The biometric database and/or voter cards are used to confirm each voter's identity and eligibility to cast a ballot on election day. The ultimate aim is to guarantee that only legitimately registered voters are permitted entry to the polling place and, more crucially, that no citizen will ever be wrongly denied the opportunity to exercise their right to vote. National Electoral Committees want a dependable system that can connect each voter

³ Erika & Piirmets. (2023, March 7). *How did Estonia carry out the world's first mostly online national elections*. <https://e-estonia.com/how-did-estonia-carry-out-the-worlds-first-mostly-online-national-elections/>

⁴ Britannica. (n.d.). *Electronic Voting*. <https://www.britannica.com/topic/electronic-voting>

⁵ Zetes. (n.d.). *Voter Verification*. <https://peopleid.zetes.com/en/solution/elections/voter-verification>

with data from their prior registrations. Here, a voter's identity and eligibility to vote are verified through biometric matching and/or voter card validation.

Cyberattack⁶: Any effort to breach a logical environment's security perimeter. An attack may be focused on intelligence gathering, disrupting business processes, exploiting holes, watching targets, stopping business operations, obtaining value, harming logical or physical assets, or leveraging system resources to enable assaults against other targets. Cyberattacks may start by taking advantage of a flaw in a publicly accessible service, deceiving a user into opening a contagious attachment, or even by inadvertently triggering the automated installation of exploitation tools through visits to harmless websites.

6. Legal Framework

The importance of regulation

Having gotten a thorough grasp of the major key terms that pertain to our topic, it is now essential to discuss the legal framework that encircles the application of information technology to the voting system. Before getting to the point of examining the actual provisions that are enclosed in the international law produced by international instruments such as the Council of Europe⁷ and the European Union, it is mandatory to come into an understanding when it comes to the importance and the necessity of regulating digital solutions (i.e. internet voting systems, optical scanners that count paper ballots etc.) used in the electoral process. As a direct product of information technology, implementing digital solutions to a voting system requires certain limitations and “barriers” that actually regulate and put under legal control the often-chaotic broadness of digitalization.

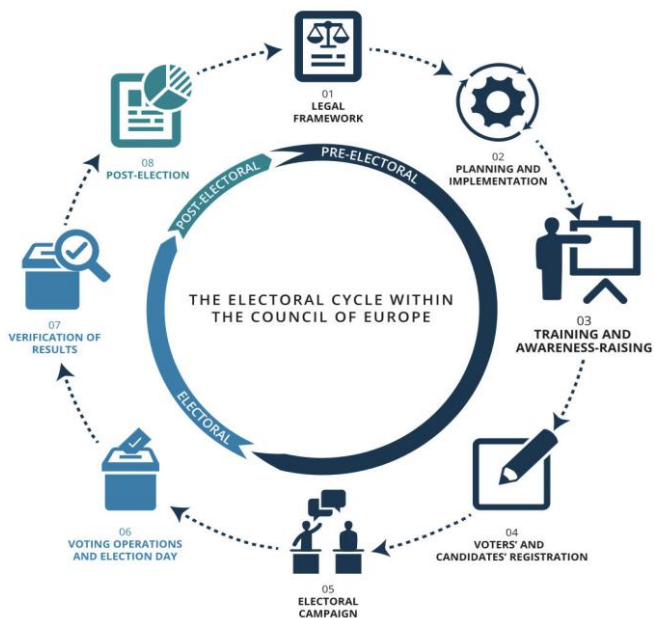
⁶ Global Knowledge. (n.d.). *Cybersecurity Glossary of Terms*. <https://www.globalknowledge.com/ca-en/topics/cybersecurity/glossary-of-terms/>

⁷ The Council of Europe. 01 - Legal Framework, <https://www.coe.int/en/web/elections/electoral-cycle/legal-framework>

Always in relation to the main international body that concerns us, the Council of Europe, these digital solutions need to adhere to the applicable principles for democratic elections. This request meets a certain challenge⁸: the contrast between the general and theoretical way of formulating legal principles on one hand, and the technical character of digital solutions on the other. Regulating the implementation of information technology goes hand in hand firstly with specifying which exact principles guarantee the democratic profile of electoral processes in order for them to be preserved and secondly with turning these - now - tangible principles into legal provisions that set the aforementioned boundaries to the practical nature of digital solutions. This configured framework must be clear in order to regulate sufficiently and ensure free, fair and democratic elections.

6.1) Council of Europe (CoE)

The Council of Europe hovering over the three core principles of human rights, the rule of law and democracy, considers the latter as an absolutely essential element that certifies the fairness and the transparency of the electoral processes completely detached from any limiting factors that curtail freedom. On this course, the Organization has developed the so-called electoral cycle⁹, which as a concept partitions the electoral process into several stages with specific standards which, if met, provide the electoral process with a democratic profile. The first stage, being the Legal Framework¹⁰ developed by the Council of Europe, is, along with other mechanisms, the cornerstone of any



⁸The Council of Europe. Digital technologies in elections - Questions, lessons learned, perspectives, 2020, <https://edoc.coe.int/en/elections/8156-digital-technologies-in-elections-questions-lessons-learned-perspectives.html>

⁹ The Council of Europe. The Council of Europe Electoral Cycle, <https://www.coe.int/en/web/elections/electoral-cycle>

¹⁰ The Council of Europe. 01 - Legal Framework, <https://www.coe.int/en/web/elections/electoral-cycle/legal-framework>

kind of electoral process conducted within the member states and it protects the Democratic nature of the voting system as following:

- The European Convention on Human rights in the Article 3 of Protocol No.1 establishes the right to free and fair elections, highlighting the importance of reinforcing through the transparency of the electoral procedures peoples' confidence in the institutions.
- The European Charter of Local Self-Government which emphasizes the ability of local authorities to carry the responsibility for regulating “a substantial share of public affairs”, including their right to determine the sort of electoral process and voting system they are going to abide by.
- The Committee of Ministers, as the major decision-making body of the Council of Europe, carries the competence of supervising the member states' compliance to the provisions entailed in the above-mentioned Convention.
- The Parliamentary Assembly of the Council of Europe (PACE) as the second statutory organ of the Council of Europe along with The Congress of Local and Regional Authorities, bear the responsibility of carrying election observation missions in accordance with the Guidelines for the observation of elections by the Parliamentary Assembly and has been conducting these observations since 1974, with the aim to achieve “greater democracy in elections”.
- The Resolution 1264 (2001) via which the Parliamentary Assembly called upon the Commission for Democracy through Law (Venice Commission) to put forward a Code of Good Practice in Electoral Matters preserving the high democratic standards set by the Council.
 - ***The European Committee on Democracy and Governance (CDDG) which develops certain standards concerning democratic governance including guidelines on the use of information and communication technology (ICT) in electoral processes.***
- The Convention on Cybercrime of the Council of Europe (Budapest Convention) can be utilized as a guideline for any country that develops national legislation against cybercrimes and it can apply to aspects of election interference by means of computer systems.

The afore-mentioned functions that appertain to the legal framework of the Council of Europe are the bare-bones, the fundamental principles that regulate electoral processes and as a more general regulatory base they accompany, as mentioned, every voting system conducted within the member-states, along with every other more specific provisions or mechanisms implemented in certain of these systems. Specifically the provisions found in the European Convention on Human rights, which are legally binding for all the member-States of the Council of Europe, are the corner-stone of preserving democratic practices.

When it comes to the more specific legal acts produced by the Council of Europe concerning the application of information technology in electoral processes, the main point of focus has been, since 2004, regulating the use of electronic means during the procedure of casting and counting votes, taking into consideration that information and communication technologies are increasingly being used in day-to-day life. **The Recommendation Rec (2004)11**¹¹ on legal, operational and technical standards for e-voting was the first non-binding legal act that was put forward by the Committee of Ministers with the aim to enhance policy coherence among the member-States on this matter.

Having been put under biennial review with the purpose of an update in view of any technological developments, the Recommendation Rec (2004)11 was enhanced by a new one, **the Recommendation CM/Rec(2017)5**,¹² drafted by the Ad Hoc Committee of Experts on Legal, Operational And Technical Standards for E-Voting (CAHVE), a Committee created by the Committee of Ministers in order to revise the standards for e-voting and e-counting that were set in the Recommendation Rec (2004)11. This renewed form of the 2004 Recommendation mainly calls for the member-States to show respect to all the principles of democratic elections and referendums, as well as focuses on the transparency, the reliability and the security of the system in accordance with the principles for universal, equal, free and secret suffrage. This Recommendation also comes with specific regulatory and organizational requirements, with Guidelines on the implementation of the provisions of Recommendation CM/Rec(2017)5 on standards for e-voting and with an Explanatory

¹¹ The Council of Europe. E-voting, <https://www.coe.int/en/web/electoral-assistance/e-voting>

¹² The Council of Europe: Newsroom. Information and communication technologies in elections: Council of Europe adopts new guidelines, 2022

<https://www.coe.int/en/web/portal/-/information-and-communication-technologies-in-elections-council-of-europe-adopts-new-guidelines>

Memorandum of the Recommendation. It is important to mention the references that the Recommendation CM/Rec(2017)5 has in its preambulatory clauses to three other Recommendations and specifically to the **Recommendation Rec(99)5** of the Committee of Ministers to member States on the protection of privacy on the Internet, the Recommendation **Rec(2004)15** of the Committee of Ministers to member States on electronic governance (e-governance) and the **Recommendation CM/Rec(2009)1**¹³ of the Committee of Ministers to member States on electronic democracy (e-democracy), which also regulate the use of electronic means in governance and democracy.

6.2) The European Union

The European Union as a supranational organization that is comprised of 27 member-states, solely carries and exercises the competences, which its founding treaties confer to it (principle of conferral) and thus can only act within the frame of its given powers, determined by the member-states in these treaties and only under its aim to fulfill its objectives as a union (principle of proportionality).

There are three main types of competences¹⁴ the Union bears: 1) exclusive competences, legislative areas that only the EU has the power to legislate, 2) shared competences, areas where both the member-states and the EU have the competence to pass laws, 3) supporting competences, areas in the legislation where the EU can only support, coordinate or complement the action of member countries.

It is safe to deem the regulation of the application of information technology on electoral processes as an area that falls into the Union's shared competences. Having said that and based on the third fundamental principle of the European Union (principle of subsidiarity), the Union's actions are forbidden, on condition however that the member-states can act on this matter as effectively or more effectively than the Union.

¹³ The Council of Europe: Democratic Institutions. Good governance in the Information Society, https://www.coe.int/t/dgap/democracy/Activities/GGIS/Default_en.asp

¹⁴ EUR-Lex. Division of competences within the European Union, 2022, <https://eur-lex.europa.eu/EN/legal-content/summary/division-of-competences-within-the-european-union.html>

Bearing in mind this brief legislative framework that regulates EU's actions, it is evident that any regulations concerning the digital solutions applied to the electoral system should originate from each member-state's legislative bodies and this is why Estonia was the only country-member that proceeded with the implementation of internet voting in 2005 producing its own national legislations on this matter along with adhering to the Recommendation Rec (2004)11 on legal, operational and technical standards for e-voting, drafted by the Council of Europe.

However, both of the two Recommendations produced by the Council of Europe on e-voting, namely the Recommendation Rec (2004)11 on legal, operational and technical standards for e-voting and the subsequent Recommendation CM/Rec(2017)5, state that the Council of Europe respects the obligations and commitments undertaken within the Charter of Fundamental Rights of the European Union. Specifically, in the 5th chapter of the Charter which concerns citizens' rights, article 39 paragraph 2 pinpoints the importance of preserving the secret and free character of the suffrage, which obligates all the EU member-states to follow an electoral process and a voting system that abides by this requirement, even if the case is electronic voting for instance.

Other than that the European Union has developed legislation to combat cyber-crime, such as the Directive 2013/40/EU of the European Parliament¹⁵ and of the Council on attacks against information systems, which as clearly stated in the Directive, are a "key element of political, social and economic interaction in the Union." This directive in view of the possible implementation of information technology on electoral processes by a member-state sets an aim to all member-states to create legislation against cyber-crime in order to preserve the democratic nature of the elections.

¹⁵ EUR-Lex. Directive 2013/40/EU of the European Parliament and of the Council of 12 August 2013 on attacks against information systems and replacing Council Framework Decision 2005/222/JHA, <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A32013L0040>

7. Main Discussion of the topic

7.1) Types of electoral systems

When it comes to voting systems, as one of the major parts of an electoral process and within the frame of Democracy, there is a constant urge for free and fair elections. As a mandatory base, guaranteeing the viability of a democratic regime, there was and there is an effort to surround this urge for electoral freedom and fairness by voting (electoral) systems that serve this exact purpose. Roughly, there are three major categories of electoral systems: a) the traditional voting system, b) the electronic voting system and c) a hybrid version of the two afore-mentioned systems.

7.1.1) Traditional in-person voting system

Despite the fact that electoral processes constitute a significant mechanism by which, the widely upheld modern representative democracy has functioned since approximately the 17th century, there are some key differences observed from one democratic state to another.

Following the observation method once more, paper ballots are currently and throughout the years the most common form of the traditional in-person voting system. ¹⁶By manually marking their personal election paper, which is considered an official document, electors are able to exercise their right to vote. These ballot papers usually entail the list of the candidates or parties running for the elections, providing the voters with the right to make a selection between them by marking their ballot, whereas in other countries there are as many ballots as the parties that run for the elections and the voters' selection and exercise of their right to vote is based on picking their preferred ballot, placing it inside an envelope and then depositing it to the ballot box. The closure of the polls is followed by the manual counting of votes usually by the appointed election judges and by the time the sum of all the candidates is consistent with the number of ballots counted in , the results must be publicly posted by handing over the official result documents to the determined state authorities. It goes without

¹⁶ Ace The Electoral Knowledge Network, Electoral Management, 2014, <https://aceproject.org/ace-en/topics/em/emia/emia01>

saying that the paper ballot system comes with certain requirements concerning the creation and the distribution of ballot papers in order to ensure the validity of the electoral process.

Other than that, and deviating from the in-person method of voting, postal ballot voting system usually operates in a complementary way to the paper ballot system. This system is often limited to individuals who fall into categories that meet certain criteria, such as the inability to move or travel. However, there are instances where the postal ballot voting system is the only voting method allowed and it is referred to as all-postal voting system. Switzerland, as the greatest example of this system's application, stipulates through a federal law that all voters receive their ballot paper through the post and they can either mail it back or cast it at the determined polling station.

7.1.1.2. Plurality/majority systems

The plurality voting system entails a plurality system, electoral process in which the candidate who polls more votes than any other candidate is elected. It is distinguished from the majority system, in which, to win, a candidate must receive more votes than all other candidates combined. Election by a plurality is the most common method of selecting candidates for public office. The advantages of the plurality system are that it is easily understood by voters, provides a quick decision, and is more convenient and less costly to operate than other methods. The main argument against it is that in an election with more than two candidates, it may result in the election of a candidate who has received only a minority of the votes cast: for example, in a closely contested election with four candidates, the total required to win by a plurality could be as little as 25 percent of the total vote plus one. To overcome this disadvantage, alternative devices, such as election by an absolute majority and proportional representation, are used. The plurality method operates best under a two-party system¹⁷.

On the other hand, the majority system operates under a different procedure. More specifically, Under the majority system, the party or candidate winning more than 50 percent of the vote in a constituency is awarded the contested seat. A difficulty in systems with the absolute-majority criterion is that it may not be satisfied in contests in which there are more than two candidates. Several variants of the majority formula have been developed to

¹⁷ Britannica. (n.d.). *Plurality system*. <https://www.britannica.com/topic/plurality-system>

address this problem. In Australia the alternative, or preferential, vote is used in lower-house elections. Voters rank the candidates on an alternative-preference ballot. If a majority is not achieved by first-preference votes, the weakest candidate is eliminated, and that candidate's votes are redistributed to the other candidates according to the second preference on the ballot. This redistributive process is repeated until one candidate has collected a majority of the votes. In France a double-ballot system is employed for National Assembly elections. If no candidate secures a majority in the first round of elections, another round is required. In the second round, only those candidates securing the votes of at least one-eighth of the registered electorate in the first round may compete, and the candidate securing a plurality of the popular vote in the second round is declared the winner. Some candidates eligible for the second round withdraw their candidacy and endorse one of the leading candidates. In contrast to the two-party norm of the plurality system, France has what some analysts have called a "two-bloc" system, in which the main parties of the left and the main parties of the right compete against each other in the first round of an election to be the representative of their respective ideological group and then ally with one another to maximize their bloc's representation in the second round. An infrequently used variant is the supplementary-vote system, which was instituted for London mayoral elections. Under this system, voters rank their top two preferences; in the event that no candidate wins a majority of first-preference votes, all ballots not indicating the top two vote getters as either a first or a second choice are discarded, and the combination of first and second preferences is used to determine the winner. Majority formulas usually are applied only within single-member electoral constituencies¹⁸. In 2023, the plurality/majority system is widely used as an electoral system. More specifically, research from recent elections around the world showed that this voting system entails the most used electoral system worldwide, with 87 countries, including the United States, India and many more, still following either the plurality or the majority system.

7.1.1.3. Proportional system

Although the plurality/majority system remains the most used voting system globally, the distance from the second most used electoral procedure is anything but significant. The

¹⁸ Britannica. (n.d.). *Plurality and majority systems*. <https://www.britannica.com/topic/election-political-science/Plurality-and-majority-systems>

reason for that being that around 37 percent of countries in the world prefer to follow a different electoral system called the 'proportional system'. Precisely, the proportional system entails a representational system that reflects the overall distribution of public support for each political party. Where majority or plurality systems effectively reward strong parties and penalize weak ones by providing the representation of a whole constituency to a single candidate who may have received fewer than half of the votes cast (as is the case, for example, in the United States), proportional representation ensures minority groups a measure of representation proportionate to their electoral support. Systems of proportional representation have been adopted in many countries, including Belgium, Denmark, Finland, Greece, Hungary, Israel, Italy, Luxembourg, Norway, Russia, Spain, Sweden, and Switzerland, among others¹⁹.

There are various systems of proportionality, with the most outstanding ones being the single transferable vote (STV), the party-list system and the additional-member system. The single transferable vote system has not been widely adopted, being used in national elections in Ireland and Malta, in Australian Senate elections, and in local and European Parliament elections in Northern Ireland. Under STV, voters rank candidates on the ballot in order of preference. This system has developed a quota to determine the number of votes a candidate needs to capture in order to win an election under STV. This quota is calculated by dividing the total number of valid votes cast by the number of seats to be filled plus one, and one is then added to the quotient. To make it more clear, if 250,000 votes are cast and 4 seats are to be allocated, the quota would equal 250,000 divided by 5, plus 1, or 50,001. After the first preference votes are counted, any candidate whose votes exceed the quota is elected. Votes received by successful candidates in excess of the quota are transferred to other candidates according to the voters' second preferences. Any surplus among subsequently elected candidates is similarly transferred, and so on, if necessary. If any seats are still vacant, the candidate with the fewest votes is eliminated, and all his ballots are transferred to the voters' second preferences, and so on, until all seats are filled. In this way the results reflect fairly accurately the preferences of the electors and, therefore, their support for both individuals and parties. Although the system provides representation to minor parties, results in STV elections generally have shown that minor centrist parties benefit from the system and minor

¹⁹ Britannica. (n.d.). *Proportional representation*. <https://www.britannica.com/topic/proportional-representation>

radical parties are penalized, with the example of the Democratic Left and Sinn Fein in the 1997 Irish general election of 1997, where both parties received similar shares of the national vote, the centrist Democratic Left won four seats to Fein's one, proving that the confusing STV system can lead to questionable and unfair results.

Another famous and more reliable proportional system is the party-list system, under which the elector votes not for a single candidate but for a list of candidates. Each list generally is submitted by a different party, though an individual can put forward his own list. District magnitude (i.e., the number of members per district) varies from country to country; for example, the Netherlands uses a single national district to elect the 150 members of its Tweede Kamer (Second Chamber), and Chile is electing members of its legislature body, by using two-seat constituencies. The overall proportionality of the system is dependent upon the district magnitude, with higher district magnitudes associated with more proportional results. Each party gets a share of the seats proportional to its share of the votes²⁰. There are various alternative rules in achieving the desired goal, with the two principal ones being the largest-remainder rule, in which the quota is set and each party is assigned one seat every time it meets said quota, and the highest-average rule, where the seats are assigned one at a time to the party with the highest total.

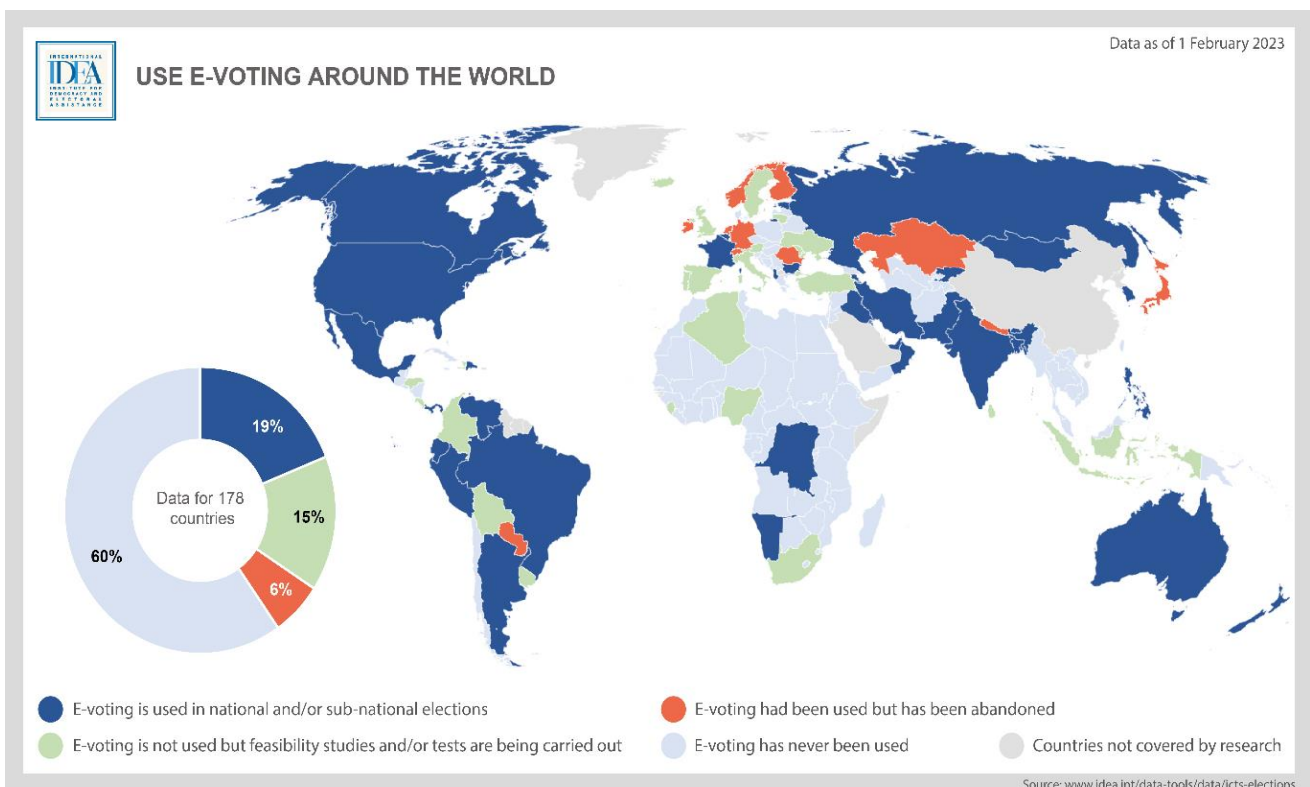
Finally, the last important and frequently used proportional electoral procedure is the additional-member system, adopted by Germany after the second World War as well as in several countries after the fall of communism in eastern Europe. The additional-member system combines proportionality with the geographic link between a citizen and a member of the legislature characteristic of constituency-based systems. In said system, each person casts two votes, one for a person and one for a political party. In most cases, however, the party vote is used as the basis in order to determine the overall partisan composition of the legislature.

7.1.2) Electronic voting system

As the progression of information technology goes by quickly and as this type of technology becomes a major part of day-to-day life, rapid changes are starting to question our traditional

²⁰ Britannica. (n.d.). *Systems of proportionality*. <https://www.britannica.com/topic/proportional-representation/Systems-of-proportionality>

perspective of viewing multiple aspects of daily reality, society, even Democracy. Electoral processes as a democratic facet, cannot stay intact by this significant alteration. Therefore electronic voting as a partially or holistically digitized voting method has made an introduction to modern Democracy and is divided into two types of electronic voting technologies²¹ based on whether the Internet is used or not: a) the standard E-voting and b) the remote E-voting or Internet voting (I-voting). In both of its forms, it is evident that electronic voting dramatically reduces direct human influence during the electoral process, introducing, however, a whole new array of concerns which are quite unprecedented.



Out of the four main stages of a voting procedure, namely the ballot composition in which voters make their choice, the ballot casting in which voters deposit their ballots, the ballot recording in which a system records the deposited ballots and the tabulation in which votes are counted, the digitization of the first stage constitutes the strict sense of electronic voting since using electronic means for all the other three stages is quite common in voting systems that are not deemed as, strictly speaking, electronic.

²¹ Rene Paralta. Britannica, electronic voting, <https://www.britannica.com/topic/electronic-voting>

The map below depicts the percentages of countries globally using the e-voting methods in different electoral procedures. As depicted, currently 19% of countries (34 out of 178 countries included in the Database) use e-voting at national and/or sub-national levels. In 15% of countries, feasibility studies or tests are being or have been carried out with the possibility of using e-voting in elections in the future. It has to be noted, however, that in 11 countries (6%) e-voting has been abandoned and one of the main reasons is the concern about trust and security of the vote²².

7.1.2.1) Physical E-voting

To consider a voting system as electronic, the use of electronic means at least during the stage of ballot casting and counting is required. Since the regulation of the voting procedure is a country's matter and responsibility, the existence and the practical application of different variations of the physical e-voting system is justified. On this course, and by observation, we can come to three main methods of physical e-voting²³ which are limited to the use of technology excluding the Internet.

The first method is referred to as the Punch card voting/tabulation system, according to which voters, by utilizing a punching device, punch a hole in their ballot card, which determines their candidate selection and they subsequently deposit their card into a computer vote tabulating device, that identifies the voter's preference and records the vote accordingly, or traditionally into a ballot box as desired.

Optical Scanning System is also a form of electronic voting system, which requires an optical scanning device that utilizes computer hardware and software. The function of this system is based on a computer's ability to scan a voter's marked machine-readable ballot using its hardware system and followingly to convert the scanned document into computer data using its software system. The electronic nature of this system lies in the computer tabulating device's ability to identify the marks on the electors' deposited ballots and record the votes accordingly. The use of specialized optical scanning technology such as Optical Mark Reading (OMR) or Optical Character Recognition is necessary for interpreting the marks or

²² MULTIMEDIA REPORT. (n.d.). *Use of E-Voting Around the World*. <https://www.idea.int/news-media/media/use-e-voting-around-world>

²³ Ace The Electoral Knowledge Network. Elections and Technology, <https://aceproject.org/ace-en/topics/et/eth/eth02/eth02b/eth02b4>

the symbols on the ballot and converting this interpretation into data. However, this system is not suitable for recording and gathering complex data but rather is efficient for voting procedures that require simple voter choices, such as referendums.

The most common and widely applied method of electronic voting is the Direct Recording Electronic, which as a voting system is expanding in several states mostly in Europe, South America and in Asia. This voting method does not require a paper-ballot because the electors make their selection on an electronic device, directly importing their preference, as data, by pushing a button or by using, for example, touch screen technology. The data inserted in the computer is stored usually in a hard disk and after the closure of the polls all the data accumulated from several voting locations nation-wide are amalgamated in a central computer, by computer network or by using removable portable devices (i.e. diskettes) where the data is stored, and formulates the election results. The use of the Direct Recording Electronic system remotely, away from polling places or election kiosks raises intense doubts, concerning the identification of electors, which are not yet resolved introducing a solid solution that meets the security standards that are set to ensure for instance the “one man one vote” demand.

7.1.2.2) Remote e-voting

Since the 1990s, which was the decade that marked the dawning of Internet spreading, remote voting systems ²⁴are being put to the test, initiating a totally autonomous and personal method of voting that gravitates toward the limitation of the voting procedure to each voter’s personal device and space. In this voting system, all voters cast their vote via any computer able to access the Internet, including their smartphones for reference. I-voting, through entirely transforming the voting scheme, comes with a lot of new opportunities and potential to reinforce the democratic nature of elections and the democratic practices in general. In the emergence of these new technologies and under the idea that location started to become irrelevant due to the creation of networks, many saw an opportunity to transform representative democracy into a technologically supported direct democracy providing citizens with the right to directly participate in the decision-making. When it comes to I-voting,

²⁴ Rene Paralta. Britannica, electronic voting, <https://www.britannica.com/topic/electronic-voting>

the luring effect of facilitating the voting procedure, had several countries including Estonia where, as already mentioned above, the most recent elections presented a staggering 51% of the population casting their votes online, Switzerland, France²⁵, Canada and USA run trials and tests over this new method that raised concerns over the highly possible vulnerability of personal computers to various malware and service attacks. Identification issues also came on the surface as previously mentioned. Moreover, internet voting has been used in sub-national participatory budgeting processes in Brazil, Portugal, Spain, and many other nations.

7.1.2) Hybrid System

Apart from the afore-mentioned systems, there are also instances of the application of hybrid voting systems that combine the traditional in-person electoral process with assistive technologies that facilitate the procedure. E-voting and mail-in paper ballots fall into this category. For instance, even in I-voting systems, the computers, that are able to access the Internet via which electors cast their vote, can be located in traditional polling stations or voting kiosks or booths, amalgamating, in this way, a more technologically oriented voting method with the old and typical one that maintains the existence of polling stations. While many countries around the globe are striving to complete the transition to a more technology-based electoral system, there are many cases where the people can vote either in polling stations or online. These are the so-called hybrid systems, which include an electronic ballot marking device (usually a touch screen system similar to a DRE) or other assistive technology to print a voter verified paper audit trail, then use a separate machine for electronic tabulation. Hybrid voting often includes both e-voting and mail-in paper ballots. The best example of this in the UK is the Additional Member System (AMS), which is also known as the Mixed Member Proportional System (MMS). It is used for elections to the Scottish Assembly, elections to the Bundestag in Germany, and also for elections in countries around the world, such as New Zealand. The aim of a hybrid system is to try to take the positive features from more than one electoral system, and mixing them together. Thus, AMS mixes the representative – constituent link provided by First-Past-the-Post (FPTP), with the more proportional relationship between vote % and seats% from the Party List system. Voters have one vote

²⁵ International Institute for Democracy and Electoral Assistance. IS E-VOTING CURRENTLY USED IN ANY ELECTIONS WITH EMB PARTICIPATION?, <https://www.idea.int/data-tools/question-view/742>

for a candidate in their constituency, with seats being won under FPTP rules, and one vote for a party, with the remainder of the seats in the Parliament being filled, usually on a strictly proportional basis (in Germany), although the Scottish AMS systems sees “top-up” seats being awarded to parties in the Party List system if they have been disadvantaged by the FPTP system²⁶. Additionally, countries like Scotland, Wales and Andorra have been reported to have implemented a form of hybrid or mixed system in some of their electoral processes.

7.2) Challenges and issues in traditional electoral systems

The particularly rapid and exponentially accelerated applicability and use of information technology in daily instances was definitely a factor that initiated the thought of deviating from the traditional voting method and orienting the voting systems towards the new technologies. However, the evolution of IT systems was not solely the reason for this switchover. Certain deficiencies that are spotted in the traditional voting system reinforce the need for this turnaround and further push forward the progression to hybrid or totally electronic voting systems.

7.2.1) Inefficiency

Referring to the meaning of efficiency, which is defined as the ability to accomplish something using the least amount of time and effort, it is quite evident why the traditional voting methods are characterized as inefficient and ineffective.²⁷ With traditional paper-ballot voting, the steps that form the electoral procedure are numerous, complex and quite bureaucratic, making the process slow and time consuming. From the ballot composition and the ballot casting, to the ballot recording and the tabulation, every single stage of the voting procedure is completed manually without any sort of automation which could be found extremely helpful and practical for long procedures, such as national elections. The mandatory in-person voting, the long lines in the polling stations, the manual identification of electors, and the endless paperwork are only a few of the prevalent system’s characteristics that are a great example of its

²⁷ The MIT Press. In Praise of the Brilliant Inefficiency of Paper Ballots, 2018, <https://mitpress.mit.edu/in-praise-of-the-brilliant-inefficiency-of-paper-ballots/>

dysfunctional character. However, its meticulous and over-controlling nature in combination with the scrutiny it comes with, preserve the traditional system in the first place of preference around the world, due to its reinforced democratic element.

7.2.2) Reduced voter engagement

In democratic nations, voter engagement is one of the elements that holds significant importance in preserving Democracy, since it concerns the basic element of this regime, the cornerstone of constitutionalism: the citizen's participation in decision-making. The higher percentages of this participation equate to a healthier Democracy. Undoubtedly, the paper ballot system, its deficiencies and especially its requirement for in-person voting have resulted in a reduced turnout and in an elector engagement that continuously declines. Especially, in today's circumstances and after the pandemic crisis, we experience a world where remote-working is quite popular and where there is a high tendency for a country's nationals and citizens to reside in different parts of the globe. The appearance of new technologies has made one's location irrelevant when at the same time the same location is very relevant for certain maintained old-fashioned procedures, such as the paper-ballot voting system. Bearing this in mind, the reduced voter engagement²⁸ is justifiable, since we have now entered an era of automation, efficiency and technological progression that does not align with the characteristics and requirements of the more prevalent voting system.

7.2.3 Ecological footprint

In addition to the concerns and issues that were mentioned above, it goes without saying that the traditional electoral systems can cause significant damage to a country's ecological footprint. To be precise, recent reports have shown that elections taking place in person can lead to noticeably bigger amounts of greenhouse gas emissions. Holding an in-person paper ballot election for 10,000 voters generates considerable greenhouse gas emissions. While the individual sheets of ballot paper are equivalent to 40kg1 of CO₂, getting voters to the polling station and back has the greatest impact. Assuming half the voters walk and half drive

²⁸ Adrien Petitpas, Julien M. Jaquet, Pascal Sciarini. Science Direct. Does E-Voting matter for turnout, and to whom?, 2021, <https://www.sciencedirect.com/science/article/pii/S0261379420301244>

a typical distance² to the polling station in a typical car³, the travel generates 4700kg⁴. Total: 4740kg of CO₂²⁹. It can be easily understood that in cities with much bigger amounts of population, these numbers are significantly bigger, causing massive damage to the environment. On the other hand, holding an election online generates about one thirtieth of the aforementioned emissions, with a total of about 120kg of CO₂ emitted in online elections by the same amount of people.

Furthermore, it would be a mistake to omit the fact that in-person elections cause massive damage due to the extensive use of paper. It is well-known that, during electoral processes, there is a huge amount of paper being used for any part of the process, from the promotion of the participants, using brochures and leaflets to the voting itself, with the use of ballots. The worst thing is that most of this paper is going to waste, with a very small percentage of it being recycled. This issue is tackled massively by electronic voting, where the use of paper to vote or even learn about who to vote is restrained significantly. All in all, it should be obvious that the traditional system of electoral procedures can have worrying effects on the environment, effects that are dealt with on a remarkable level with the establishment of electronic electoral processes.



²⁹ Simply Voting. (n.d.). *Green to the Core*. <https://www.simplyvoting.com/our-green-advantage/>

7.3) Information Technology and Democracy

7.3.1) Role of information technology in strengthening democracy

Information technology (IT) already permeates almost every aspect of contemporary life and has emerged as an unquestionable engine for major societal change. Its effect on democracy is particularly notable since it marks a crucial turning point where democratic ideals and technical progress collide. The Council of Europe, a staunch defender of democratic norms, recognizes the crucial role that IT can play in upholding democratic principles, fostering openness, and enhancing public involvement. This study guide aims to clarify the complex and multifaceted function of information technology in the



defense of democracy by highlighting its potential advantages, highlighting its obvious drawbacks, and providing nuanced recommendations that are especially targeted at the Council of Europe. A significant paradigm change in the communication of information in the context of elections has been sparked by information technology. Transparency is greatly improved by the real-time availability of data, such as voter registration, candidate biographies, and fast election results. The Council of Europe is committed to transparency, which is emphasized in this section. It also looks at countries that have successfully used IT to increase the transparency of their electoral processes and stresses the value of open data in facilitating public oversight, preventing potential fraud, and fostering strong democratic processes.³⁰

Digital voter education platforms are essential for democratizing information access. These platforms include in-depth analyses of party platforms, candidate platforms, and the political

³⁰ COUNCIL OF EUROPE PORTAL. (n.d.). *Council of Europe*. Council of Europe. <https://www.coe.int/en/web/portal/home>

process as a whole. The Council of Europe places a strong focus on inclusion and fair access, and its efforts to close the digital gap and guarantee that underrepresented or marginalized groups have equal access to crucial voter information highlight this commitment. Exemplary online resources that encourage civic participation arm people with the information they need to make wise decisions.

An in-depth analysis of electronic voting methods exposes both their potential benefits, including accelerated results and increased accessibility, and their drawbacks, primarily security and privacy issues. In line with the Council of Europe's emphasis on ensuring the inclusivity of e-voting for all citizens, including those with disabilities or living in geographically remote areas, secure e-voting practises, including biometric identification, cryptographic safeguards, and blockchain technology, are reviewed.

A thorough examination of electronic voting techniques reveals both their potential advantages, such as quicker results and more accessibility, and their disadvantages, chiefly security, and privacy concerns. Secure e-voting practises, such as biometric identification, cryptographic safeguards, and blockchain technology, are reviewed in line with the Council of Europe's emphasis on ensuring the inclusivity of e-voting for all citizens, including those with disabilities or living in geographically remote areas.

7.3.2) Concerns

7.3.2.1. Legal and Ethical Situations

When contemplating the incorporation of IT into the election process, in particular, the convergence of information technology (IT) and democracy creates a complicated interplay of legal and ethical problems. It is crucial to address these issues precisely in the framework of the Council of Europe's mandate to safeguard democratic norms. The most important legal and ethical aspects of the subject are highlighted in this section.

It is crucial to ensure compliance with the current legal frameworks controlling data protection, privacy, and election laws. Election rules and regional and national data protection legislation must be followed while using IT in the voting process. Important legal requirements include protecting voter data, prohibiting unwanted access, and upholding people's right to privacy. The Council of Europe's member nations must also match their IT policies with global treaties and accords that support democratic values, human rights, and fair elections. Maintaining public confidence in the voting process is a crucial ethical responsibility. The usage of IT should make sure that the technology is intelligible and auditable while also increasing transparency through the availability of real-time data. To avoid misunderstandings and concerns about the impartiality of the elections, open communication regarding the integration of IT, its purpose, and its possible influence on the democratic process is



crucial. To retain the public's trust in democratic institutions, ethical principles should place a strong emphasis on openness in IT adoption. The ethical problem of preventing disinformation and manipulation increases as IT becomes increasingly crucial to the election process³¹. A crucial factor to take into account is the establishment of rules or standards to stop the dissemination of misleading information, particularly during crucial electoral moments. The ethical and legal dilemma of limiting the spread of purposeful lies while balancing the protection of free expression calls for sophisticated tactics. Take the emergence of digital platforms as vehicles for the dissemination of political messaging, for instance. These platforms have democratized communication and strengthened political dialogue, but they also act as a breeding ground for false information to spread. Viral misinformation tactics provide a difficulty because they have the capacity to spread erroneous information quickly, affecting public opinion and undermining the democratic process. The Council of Europe is in the forefront of addressing this complex issue because of its well-

³¹ Professor Ines Mergel, University of Konstanz, Germany. (2021, July 26). *STUDY ON THE IMPACT OF DIGITAL TRANSFORMATION ON DEMOCRACY AND GOOD GOVERNANCE*. COUNCIL OF EUROPE. <https://rm.coe.int/study-on-the-impact-of-digital-transformation-on-democracy-and-good-go/1680a3b9f9>

known steadfast dedication to democratic values, openness, and people' rights. Its commitment to a democratic culture necessitates the creation of policies that preserve fundamental rights, such as freedom of expression, as well as election data integrity³².

7.3.2.2. Cybersecurity threats

Cybersecurity risks are a crucial issue that need careful attention in the area of enhancing democracy via the integration of information technology (IT), especially for the Council of Europe. The vulnerabilities that cyber threats reveal grow as technology becomes increasingly integrated into election processes, necessitating proactive steps to protect democratic mechanisms' integrity and maintain the public's confidence in the voting process.

In order to combat cybersecurity threats, the Council of Europe, which is tasked with defending democratic norms throughout its member nations, must overcome several obstacles. These dangers cover a wide range of concerns, including data breaches and deliberate misinformation efforts, which might compromise the integrity of elections and erode public trust in democratic institutions.

IT not only makes information flow quickly, but it also hastens the transmission of false information. Cyber attackers are able to plan coordinated misinformation operations that use fake information to influence voters' decisions. The transparency that the Council of Europe aims to promote in election processes is undercut by this kind of cyberthreat. Disinformation operations can skew public opinion by creating misunderstanding, which can undermine the validity of election results³³.

It is necessary for countries to work together and share information to address these cybersecurity issues. The exchange of best practices, threat intelligence, and knowledge for fending against cyber-attacks may be greatly facilitated by the Council of Europe, whose goal it is to foster cooperation among member nations. Establishing quick reaction and collaborative actions can strengthen the group's security against cyberattacks that target election systems.

³² Chantal Enguehard. (n.d.). *ETHICS AND ELECTRONIC VOTING*. HAL OPEN SCIENCE. <https://hal.science/hal-01016256/document>

³³ *Challenges to effective EU cybersecurity policy*. (2019, March). https://www.eca.europa.eu/Lists/ECADocuments/BRP_CYBERSECURITY/BRP_CYBERSECURITY_EN.pdf

The Council of Europe must invest in extensive capacity building if it is to properly address these developing cybersecurity risks. This entails educating election officials, creating effective incident response plans, and arguing for the funding of initiatives to strengthen electoral cybersecurity. The Council may contribute to strengthening democratic resilience in an environment where elections are increasingly conducted electronically by actively working with member states, encouraging the implementation of cybersecurity standards, and exchanging knowledge on fending off cyber-attacks.

7.3.2.3. Electoral fraud

The integration of information technology (IT) into the election process has given rise to new dimensions and complications in electoral fraud, a problem that has plagued democratic regimes for a long time. This academic investigation delves into the complex interaction between electoral fraud and IT, highlighting potential dangers, the degradation of democratic integrity, and the need for proactive measures to counter these threats, especially in light of the Council of Europe's commitment to promoting transparent, fair, and credible elections³⁴.

The influence of public opinion, the manipulation of voter behavior, or the delegitimization of election results is a major problem. The ubiquity of social media outlets and the quick diffusion of information make the world vulnerable to disinformation efforts. As a result, the legitimacy of the democratic discourse and the informed decision-making necessary for democratic government may be undermined. False narratives about candidates, voter suppression strategies, and the slanting of election issues can be disseminated on a previously unheard-of scale.

In the information age, protecting electoral infrastructure, such as voter lists, electronic voting machines, and communication networks, assumes crucial importance in preventing election fraud. The Council of Europe places a strong focus on accountability and openness, which is necessary given the need to protect these technological components. In addition to interfering with the voting process, a cyberattack on electoral infrastructure might erode public confidence in the entire system.

³⁴ The Electoral Commission. (n.d.). *Electoral fraud data*. The Electoral Commission. <https://www.electoralcommission.org.uk/who-we-are-and-what-we-do/our-views-and-research/our-research/electoral-fraud-data>

International cooperation appears as a crucial component in the fight against electoral fraud given the transnational nature of cyber threats. The Council of Europe serves as a crucial forum for exchanging best practices, threat intelligence, and collaborative efforts since it seeks to promote collaboration among its member nations. The collective defense against election fraud made possible by IT may be improved by establishing mechanisms for quick reaction, cooperating in cybersecurity research, and harmonizing norms across member states³⁵.

7.3.4 Case studies

7.3.4.1 The case of the Netherlands

The use of electronic voting devices in the Netherlands has a long history dating back to the middle of the 20th century. The innovative efforts of significant players inside the Dutch electoral structure, along with a respect for the mechanical voting machines used in the United States, have helped shape this unique trend. Notably, the Secretary of the political Council successfully lobbied the Ministry of Interior (Mol) to provide permission for the use of these American gadgets in the Dutch political environment in the 1960s after becoming enamored with their usefulness and effectiveness.

The adoption of a significant legislative change marked a turning point. A new version of the Electoral Law that fully outlined the conditions and rules regulating the use of electronic voting machines was put into effect in the Netherlands on November 25, 1965. With the passage of this landmark piece of legislation, local governments gained the authority to use these cutting-edge systems within polling places that have already been designated. The Netherlands' dedication to modernization and effective democratic procedures was highlighted by the convergence of technology innovation and legislative foresight that prepared the way for a fresh approach to the voting process.

³⁵ *Assessing Electoral Fraud in New Democracies: A Basic Conceptual Framework*. (n.d.). International Foundation for Electoral Systems. <https://www.ifes.org/publications/assessing-electoral-fraud-new-democracies-basic-conceptual-framework>

The introduction of the first electronic voting machines in the Netherlands during the late 1980s marked a significant technical transition in the country's electoral system. These voting machines had achieved general acceptability by the middle of the 1990s, signaling a significant change in how Dutch elections were conducted. Local governments embraced these tools because they were thought to be able to eliminate voting-process mistakes, cut down on the number of people needed to tabulate votes, and vastly speed up the release of election results. Despite the apparent excitement of voters for the use of electronic voting machines, there was no political or public discussion throughout the early stages of its implementation³⁶.

7.3.4.2. The case of Germany

The development and early use of electronic voting in Germany occurred between 1998 and 2005, including a trial phase that demonstrated perceived success and excitement among voters and election managers. Nearly 2 million German voters used the NEDAP electronic voting machines in the 2005 general election, which marked the culmination of this phase. The introduction of electronic voting was, however, swiftly contested before the German Constitutional Court by two people, igniting a critical legal and constitutional assessment of the technology's compliance with democratic ideals and the essential needs of electoral openness.

The primary issue raised before the German Constitutional Court was the constitutionality of electronic voting, which was claimed to have jeopardized the fairness of the democratic process. The NEDAP machines were the focus of the main argument, which asserted that they were vulnerable to hacking and so called into question the validity of the election results. This case emphasizes how crucial it is to respect the constitutional requirements that elections be open to public observation, transparent, and free from the possibility of manipulation or fraud³⁷.

³⁶ Ben Goldsmith, Holly Ruthrauff. (n.d.). *Case Study Report on Electronic Voting in the Netherlands*. Implementing and Overseeing Electronic Voting and Counting Technologies. https://www.ndi.org/sites/default/files/5_Netherlands.pdf

³⁷ National Democratic Institute. (n.d.). *The Constitutionality of Electronic Voting in Germany*. NDI. <https://www.ndi.org/e-voting-guide/examples/constitutionality-of-electronic-voting-germany>

The German Constitutional Court addressed the crucial nature of elections as public events in its decision, asserting that the fundamental principle of transparency requires that, barring exceptional circumstances warranted by compelling constitutional interests, all material phases of the voting process be open to the public's scrutiny. The court emphasized that only if the fundamental procedures of voting and result verification could be reliably inspected by the general public without necessitating specialist technical knowledge could the use of electronic voting machines be in compliance with constitutional standards. This demonstrates the court's diligence in making sure the voting process is accessible to and understanding by a larger population of citizens.

It's important to note that the court's ruling did not outright condemn the use of computerized voting machines. Instead, it emphasized how crucial it is to protect openness and public scrutiny of the democratic process. The court stressed that electronic voting machines may satisfy the constitutional requirements if they were created to permit additional review by voters, electoral organizations, or the broader public. This sophisticated strategy highlights the need for openness and accountability while also reflecting the court's appreciation of the possible advantages of electronic voting.

The ruling of the German Constitutional Court effectively placed a strong focus on the concept of transparency without the need for specialist technical knowledge, which finally caused Germany to stop using electronic voting in recent elections. Even while the judgment leaves open the potential of future electronic voting, it establishes strict guidelines for its use, ensuring that it adheres to the fundamental democratic principles of accessibility, openness, and dependability. As a result, the court's decision has had a considerable influence on Germany's electronic voting policy, leading to a reevaluation of the technology's deployment and reiterating the significance of preserving the electoral system's integrity.

7.3.2. Digital illiteracy and technology accessibility in Europe

Digital illiteracy refers to the lack of skills or familiarity with digital technologies, including the ability to use computers, navigate the internet, and interact with digital platforms. This issue poses a challenge in Europe, as there are disparities in digital literacy across different age groups, socio-economic backgrounds, and regions. While younger generations tend to be more digitally savvy, older adults may face difficulties in engaging with electronic voting

systems or accessing online voter information. Addressing digital illiteracy is essential to prevent the potential marginalization of certain segments of the population, particularly in the context of IT-integrated electoral processes. To avoid the possible marginalization of specific population groups, especially in the context of IT-integrated election processes, it is imperative to address digital illiteracy³⁸.

Equitable Access: European nations must give equal priority to online voter information and electronic voting systems. To do this, aggressive measures must be taken to close the digital divide, especially for underserved or underprivileged populations.

Education and Outreach: To reduce digital illiteracy, extensive voter education campaigns are required. User-friendly instructions must be given on how to utilize electronic voting systems, obtain candidate information online, and confirm the security of the process.

Assistive Technologies: To accommodate voters with disabilities and ensure their autonomous participation in the voting process, electoral systems should include assistive technologies like screen readers or sign language interpretation.

7.3.3 Deficiencies and Inaccuracies of electronic voting

Electronic voting system flaws and errors have sparked worries about its dependability, openness, and potential to jeopardize the fairness of elections. Here are a few instances that illustrate these issues:

1. Electronic voting systems are susceptible to hacking, manipulation, and illegal access if they are not properly secured. Inadequate cybersecurity safeguards might result in voter data being compromised, election results being tampered with, or even denial-of-service attacks that interfere with the voting process. For instance, if a hostile actor obtains access to the electronic voting system's backend, they might change the results covertly, raising questions about the validity of the vote.
2. Lack of Voter Verification: A lot of electronic voting systems don't have a reliable way to check if the vote the voter cast actually represents what they wanted to do. Votes

³⁸ European Commission. (2021, January 20). *Digital Skills for all Europeans—Brochure*. European Commission. <https://digital-strategy.ec.europa.eu/en/library/digital-skills-all-europeans-brochure>

run the possibility of being incorrectly recorded or changed without the voter's knowledge in the absence of a paper trail or a means for voters to independently confirm their choices. The electoral outcome's openness and reliability are compromised by this absence of verification.

3. Failure to Address misinformation: Due to their digital nature, electronic systems are vulnerable to misinformation efforts that might deceive voters about the legitimacy, security, or usability of the system. Even if the assertions made regarding the security or manipulation of electronic voting systems are unfounded, they may nonetheless cause people to lose faith in the technology and reduce voter turnout.
4. Technical Errors: Errors or breakdowns in the voting software might cause problems and cast doubt on the validity of the results. These bugs might be the consequence of communication problems, hardware problems, or software bugs. For instance, if an electronic voting device fails during the election, it may register votes incorrectly or create delays that deter voters.

8. Conclusion

In conclusion, the incorporation of information technology into election procedures is a transformational effort with both enormous potential and difficult problems. The development of electronic voting systems, as shown in examples from Germany and the Netherlands, demonstrates the complex interaction between legal issues, democratic principles, and technical improvements. While electronic voting has the potential to increase accessibility, transparency, and efficiency, it also raises issues with security flaws, digital literacy, and technological accessibility. The Council of Europe's function as an advocate for democratic values and human rights emphasizes how important it is to approach the integration of technology from a perspective that is fair and impartial. To promote an inclusive, transparent, and trustworthy democratic process, it is essential to acknowledge the advantages of technology while also addressing its drawbacks. The importance of justice, accountability, and public participation must be maintained as technology continues to change the election scene. Election integrity protection requires a holistic strategy, one that includes strong cybersecurity precautions, focused education initiatives to close the digital gap, and a

dedication to upholding public confidence. Lessons learned from both successful implementations and constitutional challenges highlight the need of having a comprehensive framework that protects democratic principles while using the possibilities of information technology.

By abiding by these rules, the incorporation of information technology into electoral procedures can serve as a catalyst for enhancing democracy, encouraging greater civic engagement, and establishing an electoral environment that is more inclusive and transparent in line with the ideals upheld by the Council of Europe. Our methods for ensuring that democratic processes remain strong, reliable, and representative of the various voices that make up contemporary society must also develop along with technology.

9. Points to be addressed:

1. How does the representation of minority parties change under various election systems, such as plurality/majority systems and proportional systems?
2. What aspects of conventional voting systems contribute to the decline in voter turnout? What role can technology play in boosting voter turnout?
3. What ways might digital platforms for voter education help to create a better-informed electorate? How can these platforms provide equitable access to information and help narrow the digital divide?
4. What are the main moral and legal issues raised by the use of information technology (IT) in elections, and how do these issues relate to the Council of Europe's responsibility to uphold democratic principles?
5. In light of the use of IT in the voting process, how do election laws, data protection laws, and privacy laws interact with one another? What are the precise legal standards that must be fulfilled in order to secure voter data and privacy?
6. What part does openness play in dealing with cybersecurity risks in IT-integrated elections, and how can the Council of Europe encourage member states to work together to successfully defend against cyberattacks aimed at election systems?

7. In terms of legal issues, openness, and the preservation of democratic ideals, how do the case studies of the Netherlands and Germany show the difficulties and successes of putting into place electronic voting systems?
8. How can a complete framework be built to guarantee the effective integration of information technology into election procedures? It should integrate cybersecurity measures, digital literacy programs, and public confidence-building tactics.
9. How does digital illiteracy affect specific demographic groups in the context of IT-integrated election processes, and what measures can European countries take to guarantee fair access to online voter information and electronic voting systems?
10. How does the Council of Europe's dedication to democratic principles, transparency, and human rights affect how it approaches the difficult legal, moral, and technological issues involved in incorporating IT into election processes?

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