

жавного прапора України, Державного герба України або Державного гімну України [9].

На сьогоднішній день актуальною проблемою залишається необхідність конституційного затвердження Державного герба України та законодавчого врегулювання опису і порядку використання Державного герба України та Державного прапора України.

Неясність на офіційному рівні в описі державних символів України суспільних та політичних принципів, засвід-

чення спадкоємності державності та інших ідей суспільства і держави, які висвітлюються за допомогою державних символів, переобтяжує уніфіковане сприйняття, гальмує становлення державницьких та національних традицій, які необхідні для формування політичних, ідеологічних та патріотичних цілей суспільства і держави загалом.

Належне і вчасне вирішення проблеми державних символів України — вагомий поступ на шляху до правової, соборної, самостійної Української держави.

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## THE PRINCIPLE OF PUBLIC NATURE OF ELECTIONS AND ITS CONSEQUENCES FOR DEPLOYMENT OF ELECTRONIC VOTING TECHNOLOGIES IN GERMANY

### ПРИНЦИП ПУБЛІЧНОСТІ ВИБОРІВ ТА ЙОГО ВПЛИВ НА ВПРОВАДЖЕННЯ ЕЛЕКТРОННИХ ТЕХНОЛОГІЙ ДЛЯ ГОЛОСУВАННЯ І ПІДРАХУНКУ ГОЛОСІВ (НА ПРИКЛАДІ НІМЕЧЧИНИ)

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The article is devoted to analysis of one of the modern issues in the field of constitutional law, related to the peculiarities of compliance with the principle of publicity in case of e-voting. The study is based on the relevant experience of Germany, since the legal system of this country is close to the Ukrainian one, and the decision of the Federal Constitutional Court on the issue in question has served as the basis for Germany's complete refusal to conduct electronic elections in the future. The article also covers the criteria which shall be satisfied prior to deployment of devices for casting and counting the votes, as well as the need to comply with such requirements in Ukrainian realities.

The purpose of this article is analysis of case law when the highest national courts found the use of implemented voting technologies non-compliant with the main constitutional principles. One of the most prominent examples of such decisions is the case related to scrutiny of elections, which was heard by the German Constitutional Court in 2009. The key task of this study is the formulation of the main thesis on how the recent German experience can be used in Ukraine while creating domestic e-voting system.

In the article the author considers that any official authorizations, licenses, permits cannot replace the controllability of the essential steps in the election procedure by the citizens. Each interested voter shall be able to monitor the essential steps of e-voting process to certain extent with no special background or education in order to be confident in trustworthiness of the introduced systems.

The proposed methodological approach to the algorithm of e-voting implementation assists in finding the ways of organizing and building an internal Ukrainian electronic elections process in future.

**Key words:** elections, e-voting, electronic technologies, principle of publicity, constitutionality, German experience, voting.

Стаття присвячена висвітленню однієї з актуальних проблем конституційного права, що стосується особливостей дотримання принципу публічності при проведенні виборів із використанням електронних технологій. Дослідження проводилось на основі досвіду Німеччини, оскільки правова система цієї країни є наближеною до української, а рішення Федерального Конституційного Суду з цього питання слугувало підставою для цілковитої відмови Німеччини від здійснення електронних виборів в подальшому. У статті аналізуються критерії, при дотриманні яких можуть бути використані електронні пристрої для голосування і підрахунку голосів, а також необхідність застосування таких вимог в українських реаліях.

**Ключові слова:** електронні вибори, електронні технології, принцип публічності, конституційність, Німеччина, голосування.

Статья посвящена анализу одной из актуальных проблем конституционного права, касающейся особенностей соблюдения принципа публичности при проведении выборов с использованием электронных технологий. Исследование проводилось на основе опыта Германии, поскольку правовая система этой страны является приближенной к украинской, а решение Федерального Конституционного Суда по этому вопросу послужило основанием для полного отказа Германии от проведения электронных выборов в дальнейшем. В статье анализируются критерии, при соблюдении которых могут быть использованы электронные устройства для голосования и подсчета голосов, а также необходимость применения таких требований в украинских реалиях.

**Ключевые слова:** электронные выборы, электронные технологии, принцип публичности, конституционность, Германия, голосование.

Development of modern IT-products influences not only casual life of ordinary people, but also the way how the public services are being provided. If the elections would have been invented in XXI century, definitely they would not be held in a way they are done today – involving hundreds of thousands election officials, one-meter-long paper ballots, as well as the night-lasting manual counts. Modern electronic voting and counting technologies may significantly advance the existing election procedures, in particular, by reducing the tabulation time, saving budget costs, enhancing participation of disabled voters, limiting human contact and thus minimizing potential falsification risks.

However, new voting technologies bring new challenges and threats to the existing legal requirements, mainly related to security issues, secrecy of the vote, integrity and verifiability of the deployed systems. Moreover, the Council of Europe has recognized that public confidence is an essential pre-requisite for holding electronic voting in a state [1, c. 7]. Hence, the direct interaction with the electronic machines, possibilities to monitor and control casting and counting of the votes electronically shall be guaranteed to interested citizens to the certain extent.

Even though the principle of public nature of elections is usually not directly stated in the constitutions, it arises from the idea of a democratic state. It is the principle of a high importance on the elections specifically, when eligible citizens mandate their representatives with wide competencies, thus, they shall be aware of trustworthiness of the system and be able to audit it. Non-compliance with this requirement recently led the Germany to complete termination of numerous electronic voting machines deployment after almost five decades of their successful use, audits, and trials.

This article is aimed at identifying the key legal and operational requirements set for the electronic voting technologies from the standpoint of compliance with the principle of public nature of elections. These criteria shall be taken into account by Ukrainian authorities as well when deciding on implementation of any e-voting devices for future elections or referendums.

Based on the similarity of Ukrainian and German legal systems, as well as recent comprehensive judgment issued by the German Federal Constitutional Court on the analyzed issue, this article will cover the study the relevant German experience only, in particular (i) its e-voting background; (ii) the legal reasoning in the Federal Constitutional Court Case of 2009; and (iii) consequences of the latter with respect to future of e-voting in the state.

**E-Voting Background.** Attempt to implement more rational methods rather than traditional ones to replace the manual counting of paper ballots was made in Germany in 1960s by introducing the voting machines. This was done pursuant to Art. 35.3 of the Federal Electoral Act dated 7 May 1956, according to which the Federal Minister of the Interior was authorized to permit officially audited electronic counting devices to be used instead of paper ballots. Moreover, the Ordinance on the Use of Vote Counting Devices in Elections to the German Bundestag of 24 August 1961 was adopted containing more precise legal regulation regarding the use of electronic voting and counting systems during German elections. These legal acts were the ground for introducing the (electro-) mechanical counting technologies for German elections [2].

The first electronic technologies used for German elections worked mechanically. Their core value was attached to the counting tool, which was increased by activating the button or by placing an election token in an opening allotted to the respective electoral proposal [2]. However, these machines were not able to deal with the huge volume of data (i. e. big number of candidates participating in the elections), and showed rather minor gain in time, that, indeed, served the ground for further development of both the electronic voting/counting technologies and the respective legal framework in Germany.

Based on the above, there were a number of amendments made to Art. 35 of the Federal Electoral Act and the Federal Voting Machines Ordinance in order to satisfy the preconditions necessary for deployment of electronic voting machines with the automated counting function. Most recent amendments to the Federal Electoral Act have been made in 2003 stating that voting machines may be used instead of ballot papers and ballot boxes to facilitate the casting and counting of votes. They shall guarantee the secrecy of the ballot [3]. The Ministry of Interior was hereby authorized to approve the voting machine under the manufacturer's request and permit it for use on the particular elections.

Pursuant to the Art. 1 of the amended Federal Voting Machine Ordinance, the electronic voting machines require a type approval (i. e. correspondence to the technical requirements set forth in the official Guidelines for the Construction of Voting Machines attached as an Annex 1 to the Federal Voting Machines Ordinance, containing the detailed provisions with regard to identification, technical appearance and functionality of the applied voting machines), and use authorization prior to each election (i. e. guaranteeing that only duly functional voting machines are to be used on the Election Day based on results of audit performed whether by the manufacturer or the local authority using the operating manuals and maintenance regulations) [2].

Based on the results of type approval and use authorization, there were over 1850 Netherland-manufactured NEDAP voting machines purchased by German authorities (of approx. EUR 3, 200-4300 each [4, c. 26]) in order to be used in the 1999 European Election, the 2004 European Election and the 2005 Bundestag Election [5].

Even though the purchased NEDAP voting machines were quite expensive, the authorities decided that their implementation would save costs for future and advance the overall procedure. Particularly, their use in the elections of all levels (federal, state and local) did not only speed up counting of the votes, but also required fewer election officials, who were in turn more motivated to work on elections. Moreover, since introduction of the electronic voting machines, it became easier for the voters to cast their votes properly in case of complex ballots involving many candidates from different party lists, making it impossible to inadvertently cast the invalid ballot or improperly interpret thereof [4, c. 26].

Provided the above, move towards implementation of electronic technologies for elections at all levels in Germany seemed to be logical. However, the Judgment of the Second Senate of 03 March 2009 № 2 BvC 3/07 the set strategy dramatically.

The Federal Constitutional Court Case of 2009. In the 2005 Bundestag Election, over 2 million of voters cast their votes using the electronic voting machines with the implemented counting function. The fact of their deployment for the nation-wide elections was the ground for two complaints related to the scrutiny of elections, which were firstly raised before the Election Scrutiny Committee, and then – before the Second Senate (the German Federal Constitutional Court). The deployment of the computer-controlled voting machines was said to have violated the principle of public nature of elections and the principle of the official nature of elections, the principle of democracy, and the principle of the rule of law. Moreover, the implemented voting machines were argued to be non-compliant with the established technical requirements pursuant to the Guidelines for the Construction of Voting Machines [2]. Meanwhile, on the other hand, there were no claims raised with regard to manipulation or specific malfunction of any of the deployed voting machines affecting the final count.

If to be more precise, the key element of these complaints was the alleged violation of the principle of public nature of elections because of the following reasons [2]:

(i) prevention of the effective monitoring both by the public and the election officials since a major part of casting the

vote procedure and tabulation of the results took place inside the voting machine;

(ii) exclusion of any possible verifiability means (e. g. paper record of the vote cast) when the NEDAP voting machines were used;

(iii) prevention of the public from checking due functionality of the installed software (i. e. the examination of NEDAP voting machines as to technical requirements was not made available to the interested public for independent examination, the source code was not disclosed, etc.).

In its official response, the Federal Ministry of the Interior rejected the complaints and argued that the public nature of the ballot and vote counting, as well as public monitoring of the 2005 Bundestag Election were guaranteed. In its objections, in particular, the authority stated the following [2]:

(i) the public was able to check that only eligible voters are provided the access to the voting machines;

(ii) the election officials were able to read the control paper and check whether each voter had in fact voted and had done so only once (ensuring with the same secrecy of each vote cast);

(iii) protection against falsification of the election results was ensured by a number of other measures (i. e. through technical examination of each voting machine type prior to an official approval), thus the totaling procedure verifiable by the public was not necessary;

(iv) in case anyone would be entitled to verify the entire election system, including the state activity prior to elections, preparations, study of the technical details, then the public nature of elections would be unproportional and overstretched.

In its judgment, the Federal Constitutional Court explained the essence and role of the principle of public nature of elections in a democratic state, which, in fact, is not directly prescribed by the German Constitution. In this respect the Court mentioned the following: «The public nature of elections is a fundamental precondition for democratic political will-formation. It ensures the correctness and verifiability of the election events, and hence creates a major precondition for the well-founded trust of the citizen in the correct operation of the elections. The state form of parliamentary democracy, in which the rule of the people is mediated by elections, in other words is not directly exercised, demands that the act of transferring state responsibility to parliamentarians is subject to special public monitoring. The fundamentally required public nature of the election procedure covers the electoral proposal procedure, the election act (broken regarding the ballot by the secret nature of elections) and the ascertainment of the election result» [2].

Based on the aforementioned explanation, the Court reveals the principle of public nature of elections from Art. 20 par. 1 and 2 of the Basic Law for the Federal Republic of Germany where the following provisions are set forth: the Federal Republic of Germany is a democratic and social federal state; all state authority is derived from the people. It shall be exercised by the people through elections and other votes and through specific legislative, executive and judicial bodies [6].

Moreover, it is emphasized that ensuring of the due delegation of the state power to the people's representation authorities with no shortcomings is only possible by monitoring the compliance of the elections with the respective constitutional principles [2].

In its judgment, the Court has highlighted three preconditions regarding deployment of electronic voting machines and ascertaining the election results automatically in order to be compatible with the constitutional requirements. These requirements are explained below in detail.

1) When electronic voting machines are deployed, it must be possible to check the essential steps in the election act and in the ascertainment of the results reliably and without special expert knowledge [2].

This requirement is strictly connected to the vulnerable area in which electronic voting takes place, where any errors

are difficult to report and causing of any negative affect shall not require physical presence in the controlled environment. Moreover, malfunctioning of one voting machine may cause falsification not only of one separate vote, but allegedly all the votes cast via certain electronic device, and software errors may affect multiple voting machines.

Therefore, it is not enough that the voter should just trust to the proper functionality of the previously audited and authorized electronic technologies; the voter shall be him-/herself able to verify whether his/her vote was cast as intended and counted as cast. It is not enough to satisfy the analyzed requirement if the system is enabled only to inform the voter that his/her vote has been registered – this does not fully implement the voter's right to perform sufficient monitoring over elections (both by the interested voters and the election officials).

When the deployed system may only provide the summary of the elections (i. e. how many votes were cast via technical device), and the only verifiability is the comparison of the displayed summary contrary to the registered number of voters at the polling station in question, such data may not be deemed to be the relevant proof for recognition of possible errors occurred to tabulation of votes cast.

The Court also admits that electronic voting machines may be authorized for use if the constitutionally required possibility of a reliable correctness check is ensured [2]. The Court suggest on the improvement to the existing electronic voting system. Particularly, it states that the verifiability requirement is satisfied if the electronic voting machine provides a voter with the print-out of his/her vote prior to its final cast, so that the voter may be sure that the vote is cast as intended and is able to change it in case any error occurs. Moreover, such print-out shall be put into a separate ballot box in order to make the potential re-count possible.

For the same reasons (personal verifiability and potential re-count option) the Court proposes to use the ballot scanning technologies – optical ballot scan and so-called digital pen.

Furthermore, it has been emphasized that the voter him-/herself shall be able to verify – also without a more detailed knowledge of computers – whether his/her vote as cast is recorded truthfully as a basis for counting or – if the votes are initially counted with technical support – at least as a basis for a subsequent re-count [2].

The election results shall be made available for verification as by the election authorities, as well as upon the request of any interested citizen [2].

2) A comprehensive bunch of official technical and organizational security measures (e. g. monitoring and safekeeping of the voting machines, comparability of the devices used with an officially checked sample at any time, criminal liability in respect of election falsification and local organization of the elections) does not compensate by itself the lack of controllability of the essential steps in the election procedure by the citizen [2].

The Court states that establishment of any procedures happening prior to the Election Day with respect to deployment of electronic voting and counting technologies is not enough to build public trust to the elections. All kinds of official testing performed by the technical specialists neglect the personal experience of a voter to understand the introduced electronic voting procedure. This is because by relying on such an evaluation (whether prior to elections or on the Election Day) a crucial part of election procedure is removed from the public having no special knowledge [4, c. 34].

3) The legislature can permit exceptions to the principle of the public nature of elections to a restricted degree in order to bring other constitutional interests to fruition (i. e. to ensure legitimate aim for such an exception) [2].

Particularly, the German Court provides an example and explanation why the principle of public nature of elections is not fully satisfied with regard to post voting: the existing re-

strictions are justified with the aim of enhancing most possible participation in the elections, thereby complying with the principle of generality of elections (Art. 38 par. 1 of the German Basic Law).

It is stated that the intention to overrule the emerging counting errors or incorrect interpretations of the voters' intentions marked on the paper ballots is not compatible with the decision on foregoing any type of verifiability towards the vote cast. The Court did not find that deployment of NEDAP voting machines violating the principle of public nature of elections may be justified with implementation of the equality of elections with the view of excluding the invalid ballots problem [2].

Furthermore, according to the Court, the principle of public nature of elections is not in a conflict with the principle of the secrecy of elections as far as the public controllability does not expand to the vote cast act – it covers the whole election procedure. Hence, the principle of secrecy of elections does not restrict interested citizens from tallying the votes cast to their count [2].

It is also worth mentioning that there is no constitutional requirement for the election result to be available shortly after closing of the polling stations. Therefore, rapid calculation of the elections is not a constitutionally recognized principle capable of imposing restrictions on the public nature of elections and control of the election events by interested citizens [2].

Provided that the Federal Voting Machine Ordinance [7] failed to ensure authorization and deployment of only those voting machines which comply with the constitutional preconditions of the principle of public nature of elections (i. e. effective monitoring of casting the ballot and reliable verifiability of the election results), it has been declared unconstitutional [2].

On a separate note, as far as there were no evidences presented as to irrational operation of the deployed voting machines or any malfunctioning acts, over 2 million of votes cast and counted electronically were not declared as invalid.

Consequences of the Federal Constitutional Court Case of 2009. Even though the aforementioned judgment is criticized due to lack of any reference to international legal instruments, analysis towards good international practices and compliance with the established international standards of electronic voting, for Germany it has put to an end its almost 50-year-old history of building the legal framework for electronic voting and counting technologies.

Despite the fact that the Federal Constitutional Court names three electronic voting technologies compatible with the required constitutional principles (i. e. direct recording electronic systems with print-outs, optical scan and digital pen), introduction of such technologies remain cumbersome. Particularly, this is because of the identified verifiability standards, according to which each interested citizen shall be able to request for a manual re-count of votes counted electronically [2].

ly [2]. Hence, it seems neither to be possible to demand any arguments, proofs or evidences from the voter to substantiate his/her request on re-count, nor to refer the voter to another polling station where such manual re-count took place on the sample basis. In either case voter would effectually be told to rely on the functionality of the electronic voting and counting technologies. Moreover, manual re-count shall be a case if any litigation pursuant to scrutiny of elections had been initiated [4, c. 38-39].

Provided the above, the simple possibility to request re-count by any voter for any voting machine imposes a heavy burden on the responsible electoral authorities, shall not lead to the desired results and makes further introduction of advanced voting machines unlike in Germany.

The principle of public nature of elections is necessary in any democratic society, especially when it comes to choosing public officials. As far as fast tabulation of the final election/referendum results is not constitutionally binding, it cannot be the reason justifying any limitation of the public nature of elections. Thus, this principle shall be fully implemented both for the traditional elections with paper ballots, as well as those involving any e-voting technologies.

Particularly, it must be possible to check the essential steps in the election act and in the ascertainment of the results reliably for any citizen and without special expert knowledge. Such a requirement may be satisfied when any relevant paper proof is created parallel to electronic vote (i. e. the direct recording electronic systems issue the print-outs, or the paper ballot is being marked with the digital pen, or the latter has been fed to optical scan), enabling later potential re-count.

However, any official authorizations, licenses, permits cannot replace the lack of controllability of the essential steps in the election procedure by the citizens. Thus, in order to build the public confidence into the trustworthiness of the e-voting system, each interested citizen shall be able to request for a manual re-count of votes counted electronically.

Summarizing the aforementioned, it is necessary to note that Ukrainian Constitution also does not set the principle of public nature of elections as such. However, it may be revealed from par. 2 Art. 5 (the bearer of sovereignty and the only source of powers in Ukraine are people; the people exercise their powers directly, as well as through the state authorities and municipalities) in conjunction with par. 1 Art. 69 (people exercise their will through elections, referendums and other forms of direct democracy) of the Constitution of Ukraine [8]. Therefore, legal and operational requirements proclaimed by the German Constitutional Court with respect to deployment of e-voting technologies shall be duly considered by the respective electoral authorities from the standpoint of compliance with the principle of public nature of elections, and compared with the other international e-voting standards and good practices.

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