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Law

Legal and Technological Challenges and Prospects for Development of E-Governance in Georgia

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Abstract. This paper examines technological and legal challenges to the development of e-governance in Georgia. These include inconsistent practices among state agencies in creating and maintaining online platforms for the public sector; problems regarding an access to open data; the "Digital Divide" and lack of interoperability standards for information exchange between governmental organizations, and low level of interactivity (conducting relevant transactions, operations, and actions electronically). The study uses comparative legal method to analyze the legal and technological mechanisms of advanced countries, especially Estonia. It analyzes the challenges facing e-governance in Georgia and the opportunities for implementing innovative services in this context. To address these challenges, a number of measures are proposed, particularly, the creation and development of an appropriate legislative framework and open data standards, as well as strengthening coordination between state agencies; increasing citizens' access to the internet; implementation of standards for information exchange between state organizations based on an interoperability framework; developing cybersecurity legal instruments at the national level to ensure sustainable digital systems; and in order to increase the low level of interactivity, it is recommended to introduce qualified electronic signatures and seal on a large scale in the process of interaction between various state agencies. *© 2025 Bull. Natl. Acad. Sci. Georg.*

Keywords: e-governance, digital divide, interactivity, interoperability, cybersecurity

Introduction

In recent decades, technological developments have reached unprecedented heights. Technological advancements have enabled the public sector to integrate digital tools into state governance functions, signaling an irreversible shift towards digital transformation. The development of e-governance has enabled countries to provide fully automated services to citizens. Digital transformation involves the rapid expansion of internet-based and digital services across both the private and public sectors. This led to the emergence of the doctrine of digital governance (e-governance). Georgia is likewise undertaking a transition to this model.

Several key issues emerge from the importance and positive characteristics of e-governance. E-governance increases the accessibility of govern-

ment services to citizens, reduces financial costs, and enables the automation of services, thereby ensuring easier access for individuals (Yadav & Rani, 2022). It also strengthens democracy by promoting citizen participation and engagement at all levels of government, enhances transparency and accountability, and fosters flexible, simple, and effective relations between the public and private sectors (Yadav & Rani, 2022). The implementation and development of e-governance constitute a complex process that involves number of challenges. The implementation of e-governance requires adequate technological and legal frameworks, in which local legislation and legal mechanisms play a significant role. At the same time, the experience of countries that have made significant progress in developing e-governance is important. One such country is Estonia, the study of whose practical and legal-technological aspects is important for various countries, including Georgia.

This study examines the legal and technological foundations of implementing and developing e-governance model in Georgia. The study used the comparative legal method to analyze the legal and technological mechanisms of advanced countries, especially Estonia, forming the foundation for developing a high-standard e-governance model in the country. Accordingly, the research analyzed the challenges of e-governance in Georgia and the opportunities for implementing innovative services in this context. The interviewing method was also employed. Representatives of legal entities under public law, operating within the governance sphere of the Ministry of Justice of Georgia, were interviewed using a pre-prepared questionnaire, which added a significant practical value to the research findings.

The study identifies several technological and legal challenges to the development of e-governance in Georgia, including inconsistent practices among state agencies in creation and development of online platforms for public sector; problems regarding an access to open data which arise due to the lack of an appropriate legislative framework and standards; “Digital Divide” and lack of interoperability standards for information exchange between governmental organizations; low level of interactivity (conducting relevant transactions, operations, and actions electronically).

To address the above challenges, a number of measures are proposed, including the creation and development of an appropriate legislative framework and standards for open data, as well as strengthening coordination between state agencies; increasing citizens' access to the internet; implementation of standards for information exchange between state organizations based on an interoperability framework, for which the use of the Estonian model in Georgia will be quite effective; developing cybersecurity legal instruments at the national level to ensure sustainable digital systems, while drawing on Estonia’s experience, is recommended; and in order to increase the low level of interactivity, it is recommended to introduce qualified electronic signatures and seal on a large scale in the process of interaction between various agencies.

Discussion

The process of ensuring e-governance can be structured into several main levels. The first level is the presence of information on various government platforms, such as websites, electronic brochures, and other digital channels (Stages of e-Governance and Government Initiatives). The second level involves two-way communication, or interaction (The Evolutionary Path of E-Governance: Understanding its Progressive Stages, 2024). This level facilitates the exchange of information between the government and citizens. The third level involves service delivery and transactions (The Evolutionary Path of E-Governance: Understanding its Progressive Stages, 2024). This level enables citizens to access government services online and conduct relevant transactions (The Evolutionary Path of E-Governance: Understanding its Progressive Stages,

2024). The fourth level of e-governance involves interactive participation (The Evolutionary Path of E-Governance: Understanding its Progressive Stages, 2024). At this level, citizens can access government and administrative services, and take a more active role in the decision-making process (The Evolutionary Path of E-Governance: Understanding its Progressive Stages, 2024).

Georgia has both general and special normative acts governing the implementation of e-governance. An analysis of the e-governance model shows that several hundred electronic services are currently available in Georgia (Digital Governance Strategy of Georgia 2025-2030, 2025). Users expect that the information will be available anytime, anywhere, and as quickly as possible; however, this cannot always be guaranteed due to the existing legislative framework and practices (Digital Governance Strategy of Georgia 2025-2030, 2025).

One of the main tools for implementing e-governance is the use of online platforms in the public sector, coordinated primarily by the LEPL Digital Governance Agency, under the Ministry of Justice of Georgia. The unified portal of electronic services is *my.gov.ge.* Despite its importance in providing services based on the "one-stop shop" principle, several challenges remain. In particular, some state agencies develop and manage their own web pages for service provision independently of this portal (Digital Governance Strategy of Georgia 2025-2030, 2025). As a result, this situation creates uneven practices, which hinder the development of the "one-stop shop" principle and limits access to state services in a single location (Digital Governance Strategy of Georgia 2025-2030, 2025).

Georgian public institutions possess a large amount of digital information, mainly generated through the exercise of public authority (Data.gov.ge – Open Data Portal). Under the General Administrative Code of Georgia, state institutions are required to proactively publish some of this data (Digital Governance Agency, 2022). All information published by public institutions does not automatically constitute open data; only raw, primary data in spreadsheet-compatible formats (e.g., CSV, Open XML) or accessible via an API meets this standard (Data.gov.ge – Open Data Portal). It is also important that published data to be updated at a specified frequency (Data.gov.ge – Open Data Portal).

The openness and accessibility of data constitute important characteristics of the public governance system (Neeme, 2024). Publishing open data in an appropriate format and on a regular basis enables citizens, the business sector, and other stakeholders to access existing data and use it to develop innovative projects and e-services (Neeme, 2024). Open data plays a crucial role in promoting the efficient use of state resources (European Commission, 2020).

One of the studies identified the lack of a proper legislative framework and standards as an obstacle to open data availability in Georgia (Institute for Development of Freedom of Information, 2018). The study also highlighted the need to update data continuously (Institute for Development of Freedom of Information, 2018). In essence, the accessibility of open data constitutes an important element in promoting e-governance (Neeme, 2024). In Georgia, access to open data continues to be a major challenge for the full implementation of e-governance, as noted in the Digital Governance Strategy (Digital Governance Strategy of Georgia 2025-2030, 2025). A survey conducted as part of our research among legal entities of public law under the Ministry of Justice of Georgia identified the need to regulate legal issues related to open data, update existing portals, and deepen knowledge in this field, while also highlighting the activities planned in these areas (Interviews, 2024). A key challenge is the absence of a legal requirement obliging administrative bodies to publish open data in machine-readable format on the Open Government Data Portal (Interviews, 2024). Administrative bodies are under no legislative obligation to publish open data in the proper format (Digital

Governance Strategy of Georgia 2025-2030, 2025). The publication of open data on the *data.gov.ge* portal depends on the decision of the respective public institution (Digital Governance Strategy of Georgia 2025-2030, 2025). To address the challenges related to the availability of open data, it is important to strengthen inter-agency coordination, ensuring that all state agencies participate adequately in implementing innovations and reforms, thereby creating basis for uniform practices (Digital Governance Strategy of Georgia 2025-2030, 2025).

As already mentioned, e-governance is inherently complex and requires legal, technological, technical, and institutional mechanisms for its functioning. The use of electronic services and systems, in turn, is an integral part of e-governance. Although a number of electronic services are already available in the public sphere, many products remain either underutilized or not used at all (Digital Governance Strategy of Georgia 2025-2030, 2025). One reason for this is the lack of awareness regarding digital services (Digital Governance Strategy of Georgia 2025-2030, 2025). This, in turn, presents a challenge for the development of e-governance. Addressing it requires the planning and implementing various initiatives, such as awareness-raising campaigns (Digital Governance Strategy of Georgia 2025-2030, 2025), the promotion of digital services, and information support across public and private sectors at the central, local, and regional levels (Digital Governance Strategy of Georgia 2025-2030, 2025). The need to raise awareness in order to strengthen citizen engagement was also emphasized in a survey conducted as part of our research among public law entities operating under the Ministry of Justice of Georgia (Digital Governance Strategy of Georgia 2025-2030, 2025).

Another important issue in the development and implementation of e-governance is the so-called "digital divide", which is particularly evident in developing countries. As already mentioned, digital fragmentation refers to a situation in which some citizens have access to information and communication technologies while others do not. It also arises when regions or cities within a country differ significantly in their socio-economic and cultural conditions with respect to such access, creating an imbalance in internet infrastructure availability (Stoiciu, 2011). Bridging the digital divide is essential for ensuring equal access to e-government services. Achieving this requires the implementation of various measures to guarantee internet access for citizens across the country (Stoiciu, 2011).

For the full implementation of e-governance, interoperability (Making E-Government Work) of digital systems is essential, as it constitutes one of its key components (Metcalf, 2022). Interoperability is the capacity of institutions to interact with one another through compatible data, systems, and processes (Kruger, 2023). This encompasses the sharing of information through data exchange mechanisms within information and communication technologies (Kruger, 2023). It entails the coordinated integration and communication of software systems, devices, applications, and other tools necessary for ensuring e-governance (Lewis, 2023).

In Georgia, a major obstacle to the development of e-governance is the absence of interoperability standards for information exchange among public sector organizations and public institutions (Digital Governance Strategy of Georgia 2025-2030, 2025). As a result thereof, administrative bodies make additional effort, time, and resources to obtain information, leading to higher costs, delays in information flow, and ultimately reducing decision-making efficiency and overall effectiveness (Digital Governance Strategy of Georgia 2025-2030, 2025). In such cases, e-governance becomes fragmented and less effective, failing to achieve the outcomes expected from a fully realized e-governance system.

To overcome the challenges described above and ensure complete interoperability, it is necessary to implement measures such as establishing stan-

dards for information exchange between state agencies within an interoperability framework (Digital Governance Strategy of Georgia 2025-2030, 2025). In addition, we believe that introducing the Estonian model in Georgia could be highly effective. Estonia ensures interoperability of its e-government systems through a platform called "X-Road", which connects various databases via a common interface (X-Road – interoperability services). This system allows a state agency to access data from another agency's database, when necessary, even if the information is not stored locally (Metcalf, 2019). Accordingly, citizens submit their data 'only once', which is stored in a single agency's database, after which other agencies can access it as needed.

In terms of legal support, Estonia has a Public Information Act, which largely regulates the interoperability of e-government systems (Public Information Act, 2000) and prohibits requiring citizens to submit their data more than once (Metcalf, 2019). This system ensures both data security and integrity, and it allows citizens to track when third parties access their data through the "X-Road" platform (Nortal, 2022). The Public Information Act includes important provisions related to interoperability, such as prohibiting duplicate data collection, defining the concept of databases, and coordinating with information technology processes (Digital Government Factsheet, 2019).

When discussing e-governance, particularly the interoperability of e-government systems and the fourth level of e-governance – Interactive Participation – it is essential to address cybersecurity and the protection of technological systems. To ensure sustainable digital systems, several researchers emphasize the need to develop national-level legal frameworks for cybersecurity (Neeme, 2024).

This could be considered particularly important for developing countries, including Georgia. At the national level, special law on cybersecurity is designed to protect critical infrastructure, ensure security, and safeguard the rights and interests of citizens (Neeme, 2024). Broadly speaking, special laws act as instruments for regulating and implementing state policies. When several state agencies are involved in cybersecurity, these laws can additionally provide legal coordination of their activities.

In 2021, the Georgian government adopted the National Cybersecurity Strategy and its Action Plan (Resolution, 2021), which stress the importance of reviewing and updating the legal framework governing cybersecurity in Georgia in line with the leading international best practices. In this context, the experience of Estonia, one of the global leaders in e-governance, is noteworthy. In 2018, Estonia adopted a Cybersecurity Act (Cybersecurity Act, 2018) aimed at strengthening the digital systems used to deliver essential public services (Digital Government Factsheet, 2019). The act provides for the necessary requirements governing public, state, and local government networks and information systems, including the prevention and management of cyber incidents, oversight mechanisms, and associated liabilities (Digital Government Factsheet, 2019).

A further element of e-governance is interactivity, which encompasses the electronic execution of transactions and operations, as well as the controlled access to non-public data (Metcalf, 2022). The implementation of digital identification (Metcalf, 2022), which involves digital signatures, is necessary. Although the current legislative framework in Georgia allows the use of qualified signatures and stamps on electronic documents, a major challenge lies in their enforcement, particularly regarding the extensive adoption of qualified signatures and stamps in inter-agency relations (Digital Governance Strategy of Georgia 2025-2030, 2025).

Conclusion

Georgia has made tangible progress in the development of e-governance. Several services have been introduced, relevant legislation updated, insti-

tutional mechanisms and state units established, and platforms for citizen engagement and service delivery created. Importantly, a digital governance strategy exists, and relevant issues are being analyzed, problems identified, and comprehensive approaches developed.

Today, the development of e-governance in Georgia is characterized by both achievements and challenges. One of the main tools for implementing e-governance is the online platforms operating in the public sector, many of which exist in Georgia. However, challenges remain, in particularly, some state agencies create and maintain their own web pages independently of the main portal. This leads to heterogeneous practices, which in turn hinder the implementation of the "one-stop-shop" principle and the ability to access state services through a single point.

Open data and accessibility thereto are among the characteristics of the public governance system and play an important role in ensuring the efficient use of state resources. Implementation of open data accessibility is a key element supporting e-governance. However, in Georgia, access to open data remains a challenge for the full implementation of e-governance. This is largely due to the lack of a legal obligation for administrative bodies to publish open data in a machine-readable format on the Open Government Data Portal.

Another obstacle to the development of e-governance in Georgia is the lack of interoperability standards for information exchange between public sector organizations. This leads to increased effort, time, and costs for administrative bodies, including delays in information exchange, which negatively affect decision-making and reduce the efficiency of administrative operations.

Another component of e-governance is interactivity, which refers to carrying out transactions, operations, and other actions electronically, in an online environment, including access to non-public data. This requires digital identification, which is linked to the use of digital signatures. Although the existing legislative framework and practice in Georgia allow for the use of qualified electronic signatures and seals on digital documents, challenges remain in terms of enforcement – particularly with regard to their large-scale adoption in inter-agency interactions.

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REFERENCES

Cybersecurity Act. (2018). Riigikogu. Estonia. Available at: https://www.riigiteataja.ee/en/eli/ee/526082022002/consolide/current last accessed 05 September 2025.

Data.gov.ge – Open Data Portal. Available at: https://ogp.gov.ge/projects/datagovge/ last accessed 10 August 2025.

Digital Governance Strategy of Georgia 2025-2030. (2025). Available at: https://matsne.gov.ge/ka/document/view/6467487?publication=0 last accessed 09 August, 2025.

Digital Governance Agency. (2022). Open Data Portal. Available at: https://dga.gov.ge/?m=articles&id=XC5m496cQQ last accessed 11 August 2025.

Digital Government Factsheet. (2019). Estonia. Available at: https://interoperable-europe.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Estonia_2019.pdf last accessed 05 September 2025.

European Commission. (2020). European Data Portal. Analytical Report 9: The Economic Benefits of Open Data. Available at: https://data.europa.eu/sites/default/files/analytical_report_n9_economic_benefits_of_open_data.pdf last accessed 12 August 2025.

Institute for Development of Freedom of Information. (2018). Access to Open Data in Georgia and the Visegrad Countries. Available at: https://idfi.ge/ge/access_to_open_data_ing_georgia_and_visegrad_countries last accessed 12 August 2025.

Interviews. (2024). LEPL "Digital Governance Agency". LEPL "Service Development Agency".

Kruger, B. (2023). Interoperability - the key enabler of e-government. Available at: https://joinup.ec.europa.eu/collection/digital-skills-public-sector/solution/interoperable-europe-academy/news/interoperability-key-enabler-e-government last accessed 17 August 2025.

Lewis, S. (2023). Interoperability. Available at: https://www.techtarget.com/searchapparchitecture/definition/interoperability last accessed 20 August 2025.

Making E-Government Work. available at: https://thehagueacademy.com/news/the-essential-elements-that-make-e-government-work/ last accessed 15 August 2025.

Metcalf, K. (2022). e-Governance and Good Administration: Examples from Estonia. European Review of Digital Administration & Law – Erdal (3), 1.

Metcalf, K. (2019). How to build E-Governance in a digital society: The Case of Estonia. Revista Catalana de Dret Públic (58).

Neeme, E. (2024). Building a resilient digital future: A strategic blueprint for tomorrow's security. e-Governance Academy Yearbook 2023/2024. Unlocking digital success. Available at: https://ega.ee/wp-content/uploads/2021/05/Aastaraamat-ENG-2023-2024_1.pdf last accessed 25 August 2025.

Nortal. (2022). X-Road: Estonia's digital backbone. Available at: https://nortal.com/insights/x-road-estonias-digital-backbone/ last accessed 15 September 2025.

Public Information Act. (2000). Riigikogu. Available at: https://www.riigiteataja.ee/en/eli/514112013001/consolide last accessed 15 September 2025

Resolution. (2021). No. 482 of the Government of Georgia "On Approval of the National Cybersecurity Strategy of Georgia for 2021-2024 and its Action Plan". Available at: https://matsne.gov.ge/document/view/5263611?publication=0 last accessed 30 August 2025.

Stages of e-Governance and Government Initiatives. Available at: https://unacademy.com/content/upsc/study-material/governance/stages-of-e-governance-and-government-initiatives/ last accessed 05 August 2025.

Stoiciu, A. (2011). The role of e-governance in bridging the digital divide. Available at: https://www.un.org/en/chronicle/article/role-e-governance-bridging-digital-divide last accessed 10 September 2025.

The evolutionary path of E-Governance: Understanding its progressive stages. (2024). Available at: https://journalism.university/digital-media/evolution-e-governance-progressive-stages/ last accessed 06 August 2025.

X-Road – interoperability services. Available at: https://e-estonia.com/solutions/interoperability-services/x-road/ last accessed 12 September 2025.

Yadav, R., Rani, J. (2022). E-Governance: Concept, strategy and its implication. *Journal of American Science, 18*(6), https://www.jofamericanscience.org/journals/am-sci/jas180622/07_37959jas180622_59_63.pdf last accessed 15 September 2025.

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