

## **ИНФОРМАТИКА И КОМПЮТЪРНИ НАУКИ INFORMATICS AND COMPUTER SCIENCES**

### **REGIME OF THE PRIVATE ELECTRONIC IDENTIFICATION SCHEMES IN BULGARIA**

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**Abstract:** *This article investigates the regime of private Electronic Identification (eID) schemes in Bulgaria, set against the backdrop of EU regulations, particularly the eIDAS Regulation (EU) No 910/2014. It explores the legal framework, operational mechanisms, and coverage of private eID schemes, using Bulgaria as a case study within the EU's digital agenda. The analysis reveals Bulgaria's innovative approach to implementing private eID schemes that enhance digital security, user convenience, and comply with EU standards. By dissecting the legal regime governing these schemes, the article highlights the pivotal role of the Bulgarian Communications Regulation Commission in ensuring adherence to both national and EU regulations. The operational mechanisms illustrated through the Evrotrust system showcase advanced technologies in user registration, identity verification, and the integration of biometric analysis and video identification to mitigate identity fraud. Coverage across sectors demonstrates the schemes' adaptability and their impact on banking, e-government, healthcare, and beyond, enhancing the digital infrastructure and citizen engagement. This comprehensive examination aims to contribute to the understanding of private eID schemes' significance in the EU's digital transformation landscape, emphasizing the balance between innovation, legal compliance, and user accessibility.*

**Keywords:** *Electronic Identification, eIDAS Regulation, Bulgaria, Evrotrust, Legal Framework*

#### **INTRODUCTION**

In the rapidly evolving digital era, the significance of secure and reliable electronic identification (eID) systems has become paramount, particularly in the context of European Union (EU) member states. This article delves into the intricacies of private eID schemes in Bulgaria, a critical component in the broader landscape of electronic identification and authentication (Alonso et al., 2019). These private eID schemes, which operate under the overarching framework of EU regulations, offer unique insights into the fusion of technology, legal compliance, and user accessibility.

Bulgaria's approach to electronic identification presents a compelling case study within the EU's digital agenda. The country has adopted a pioneering stance in implementing private eID schemes that align with the eIDAS regulation – a cornerstone EU legislation that standardizes electronic identification and trust services for electronic transactions across EU member states. This article aims to dissect the legal framework governing these private eID schemes in Bulgaria, explore their operational mechanisms, and assess their coverage levels.

Through this exploration, the article seeks to illuminate the nuances of Bulgaria's eID schemes, underscoring their role in enhancing digital security and user convenience. By providing a

comprehensive analysis of these schemes, we aim to contribute to the broader understanding of eID systems' evolving landscape in the EU and the implications for digital governance and citizen engagement.

### **LEGAL REGIME OF PRIVATE EID SCHEMES IN BULGARIA**

The legal regime governing private electronic identification (eID) schemes in Bulgaria is a complex interplay of national legislation and European Union (EU) regulations, particularly the eIDAS Regulation (EU) No 910/2014. This section delves into the nuances of this regime, exploring its foundations, operational oversight, and the intricate process of aligning national laws with EU standards.

At the heart of Bulgaria's legal framework for private eID schemes lies the eIDAS Regulation, an EU-wide directive established to standardize electronic identification and trust services for electronic transactions across the Union. This regulation is instrumental in creating a digital single market, fostering trust and security in electronic transactions.

Bulgaria, as an EU member state, has transposed the eIDAS Regulation into its national law, thereby committing to its principles and requirements. This transposition involved the enactment of specific laws and amendments to existing legislation, ensuring that national legal provisions align with the EU's overarching digital agenda. These national laws govern the operational aspects of private eID schemes, stipulating standards for security, interoperability, and user protection (Shehu, Pinto & Correia 2018).

The Bulgarian Communications Regulation Commission is the primary authority responsible for the oversight of private eID schemes. This body ensures that these schemes adhere to both national laws and EU regulations. Its role encompasses a wide range of responsibilities, from the initial assessment and approval of private eID schemes to ongoing monitoring and enforcement of compliance standards.

The Commission operates under a mandate to safeguard the public interest, focusing on the security and reliability of electronic identification services. It works in close collaboration with other national and EU authorities, exchanging information and best practices to enhance the overall efficacy of eID schemes.

A critical component of the legal regime is the notification and evaluation process for private eID schemes. This process is governed by a Methodology established by the Minister of e-Government, providing a structured approach to the assessment of these schemes.

The evaluation process begins with a detailed application by the eID service provider, outlining the technical specifications, security measures, and compliance mechanisms of the proposed scheme. This application is subjected to a rigorous review, examining aspects such as data protection protocols, authentication processes, and the scheme's ability to meet the high levels of assurance as required by the eIDAS Regulation.

Experts from various fields, including cybersecurity, digital governance, and legal compliance, are involved in this evaluation. Their analysis ensures that the eID scheme meets the stringent criteria set forth in both national and EU regulations (Park & Lee 2018).

As the digital landscape evolves, the legal regime governing private eID schemes in Bulgaria faces ongoing challenges. These include keeping pace with technological advancements, addressing emerging security threats, and ensuring interoperability with other EU member states' systems.

The Bulgarian government, in response, is committed to regular updates and revisions of its legal framework. This proactive approach aims to maintain the relevancy and effectiveness of private eID schemes, ensuring they continue to serve as a cornerstone in Bulgaria's digital infrastructure.

## **BULGARIAN NOTIFIED EID SCHEMES**

In Bulgaria, the mechanism of action for private electronic identification (eID) schemes demonstrates a sophisticated blend of technology, security, and compliance, aligning with both national and European Union (EU) standards. This section explores the intricate processes and technologies employed in these schemes, using the Evrotrust system as a prime example.

The cornerstone of any eID scheme is the process of user registration and identity verification. In the case of Evrotrust, this process is designed to be both user-friendly and highly secure, utilizing cutting-edge technologies to verify user identities remotely. The initial step involves users submitting their personal identification documents through a secure online platform. This submission triggers a series of automated checks, where advanced algorithms analyze the documents for authenticity.

The Evrotrust system goes a step further by incorporating biometric analysis into its verification process. This involves using facial recognition technology to match the user's live image with the photograph on their identification document. This biometric verification ensures that the eID is uniquely and securely linked to the rightful owner, significantly reducing the risk of identity fraud (Páez et al. 2020)

Video identification is another innovative feature of the Evrotrust eID scheme. This process involves an automated live video interaction between the user and the system, during which trained personnel conduct additional verification checks. This interaction not only enhances the security of the identity verification process but also ensures compliance with Anti-Money Laundering (AML) and Know Your Customer (KYC) regulations.

The security protocols employed in this stage are multifaceted. They include real-time monitoring for signs of identity tampering or fraud, encryption of the video interaction, and secure storage of the recorded session for audit and compliance purposes.

Once the user's identity is verified, the Evrotrust system issues an eID in real-time. This eID enables users to access a range of digital services, sign documents electronically, and carry out secure online transactions. The eID is linked to a digital signature (Vasileva & Zahariev 2020), providing a legally binding method for users to sign documents and authenticate their identity in digital interactions (Dimitrov 2023).

The qualified electronic signature technology employed by Evrotrust adheres to the highest standards of security and is recognized across the EU, thanks to the compliance with the eIDAS regulation. This cross-border recognition is crucial for facilitating seamless digital transactions both within Bulgaria and throughout the EU.

A key aspect of the Evrotrust eID scheme is its integration capabilities. The system is designed to be interoperable with various digital platforms and services, ranging from government portals to private sector e-commerce sites. This integration is facilitated through well-documented APIs and secure authentication protocols, allowing for a smooth and secure user experience.

The Evrotrust scheme also supports multi-factor authentication processes, adding an additional layer of security for sensitive transactions. This feature is particularly important in sectors such as online banking (Dimitrov & Zahariev, 2022), e-government services, and healthcare, where data security and user privacy are paramount (Shrishak, Erkin & Schaar 2016).

The Evrotrust eID scheme is not static; it is continually evolving to adapt to new technological advancements and emerging security challenges. This adaptability ensures that the scheme remains effective and relevant in a rapidly changing digital landscape. Additionally, the Evrotrust team actively monitors trends in cybersecurity and eID technologies, ready to incorporate innovative solutions that enhance the system's security and user experience.

## **COVERAGE OF PRIVATE EID SCHEMES IN BULGARIA**

The coverage levels of private electronic identification (eID) schemes in Bulgaria are a critical indicator of their effectiveness and reach. This section examines the extent to which these schemes have been integrated across various sectors, focusing on their adaptability, scalability, and the diversity of services they support.

Private eID schemes in Bulgaria, particularly the Evrotrust model, have achieved significant integration across multiple sectors. This wide-ranging application is crucial in a country striving to enhance its digital infrastructure. The Evrotrust eID scheme, for instance, is utilized in sectors as varied as banking, telecommunications, e-government services, healthcare, and real estate. This diverse applicability demonstrates the scheme's flexibility and its ability to meet specific sectoral needs.

In the banking sector, Evrotrust's eID scheme has streamlined online banking processes, enabling secure digital transactions and identity verification. Similarly, in healthcare, it has facilitated the secure access to and exchange of medical records, while in real estate, it has simplified the process of digital signing of property documents.

A significant area where private eID schemes have made an impact is in the provision of e-government services. The Bulgarian government has actively incorporated Evrotrust's eID technology to provide citizens with easier access to public services. This integration allows citizens to securely authenticate their identities online, access government portals, and complete administrative procedures digitally, significantly reducing the need for physical visits to government offices.

In the private sector, the Evrotrust eID scheme has revolutionized the way businesses and consumers interact. From online shopping to digital contract signing, the scheme has provided a secure and efficient way to authenticate identities and complete transactions. This has not only enhanced user convenience but also contributed to building trust in digital commerce.

The coverage level of the Evrotrust eID scheme is also notable in terms of its geographical and demographic reach. The scheme has been successful in making electronic identification accessible to a broad spectrum of the Bulgarian population, including remote and rural areas where digital services were previously limited. This inclusivity is vital for ensuring that the benefits of digital transformation are evenly distributed across the country.

An essential aspect of the Evrotrust eID scheme is its compliance with the eIDAS regulation, ensuring that it is recognized and accepted across the EU. This cross-border recognition is crucial for Bulgarians traveling or living abroad, as it enables them to access services and perform digital transactions within the EU seamlessly.

Looking ahead, the potential for further expansion and enhancement of private eID schemes in Bulgaria is vast. With the continuous evolution of digital technologies and the growing demand for secure digital services, these schemes are expected to extend their reach. Future developments could include integration with emerging technologies such as blockchain and AI, further enhancing security and efficiency.

## **CONCLUSION**

The exploration of private electronic identification (eID) schemes in Bulgaria, particularly through the lens of the Evrotrust model, reveals a sophisticated landscape of digital identity management. These private eID schemes represent a significant stride towards enhancing digital security, efficiency, and user convenience within Bulgaria and in the broader context of the European Union (EU).

The legal and regulatory framework, as established by EU directives and Bulgarian national laws, provides a solid foundation for these eID schemes, ensuring compliance with the highest standards of security and interoperability. The operational mechanisms of these schemes, exemplified by the Evrotrust model, demonstrate innovative use of technology in facilitating secure and real-time electronic identification. The comprehensive coverage of these schemes across various sectors indicates their scalability and adaptability, making them instrumental in Bulgaria's ongoing digital transformation.

Furthermore, the success of these schemes in Bulgaria serves as an encouraging benchmark for other EU member states. It highlights the potential of private eID schemes in fostering a secure and seamless digital environment, essential for the growth of the digital economy and the enhancement of citizen-government interactions.

In conclusion, Bulgaria's implementation of private eID schemes, aligned with EU regulations, sets a precedent in digital identity management. It underscores the country's commitment to advancing its digital infrastructure and the pivotal role of private eID schemes in shaping the future of secure digital interactions.

## REFERENCES

- Alonso et al. (2019). An Identity Framework for Providing Access to FIWARE OAuth 2.0-Based Services According to the eIDAS European Regulation. In: *Proceedings of the European Conference on e-Government, ECEG*. [viewed on 14 February 2023]. Available from: [https://www.researchgate.net/publication/334286806\\_An\\_Identity\\_Framework\\_for\\_Providing\\_Access\\_to\\_FIWARE\\_OAuth\\_20-based\\_Services\\_according\\_to\\_the\\_eIDAS\\_European\\_Regulation](https://www.researchgate.net/publication/334286806_An_Identity_Framework_for_Providing_Access_to_FIWARE_OAuth_20-based_Services_according_to_the_eIDAS_European_Regulation).
- Dimitrov, G. (2023). *Legal Regime of Digital Transformation. Electronic Identification. Electronic Documents. Electronic Trust Services*. Sofia: Law and Internet Foundation.
- Dimitrov, G., M. Zahariev (2022). *Cyber Law in Bulgaria*. Kluwer Law International BV, The Netherlands.
- Páez, R. et al. (2020). *An Architecture for Biometric Electronic Identification Document System Based on Blockchain* [viewed 12 February 2023]. Available from: [<https://www.mdpi.com/1999-5903/12/1/10>].
- Park, N. & D. Lee (2018). *Electronic Identity Information Hiding Methods Using a Secret Sharing Scheme in Multimedia-Centric Internet of Things Environment*.
- Shehu, A., A. Pinto & M. Correia (2018). On the Interoperability of European National Identity Cards. In: *Security and Communication Networks, Vol. 2018, Article ID 5274630*. [viewed on 14 February 2023]. Available from: [https://www.researchgate.net/publication/328736120\\_On\\_the\\_Interoperability\\_of\\_European\\_National\\_Identity\\_Cards](https://www.researchgate.net/publication/328736120_On_the_Interoperability_of_European_National_Identity_Cards).
- Shrishak, K., Z. Erkin & R. Schaar (2016). Enhancing User Privacy in Federated eID Schemes. In: *Journal of Information Security and Applications, Vol. 21, No. 4, pp. 102–112*. [viewed on 14 February 2023] Available from: <https://repository.tudelft.nl/islandora/object/uuid:e278daa5-a035-49cb-896c-ee36621861c0/datastream/OBJ/>.
- Vasileva, R., M. Zahariev (2020). *About the Types of Electronic Signatures and Their Practical Application in the Modern Business Relations*. // "Commercial and Obligation Law" Magazine, Sofia: ed. "Labor and Law", Vol. 11, pp. 34–51.

## РЕЖИМ НА ЧАСТНИТЕ СХЕМИ ЗА ЕЛЕКТРОННА ИДЕНТИФИКАЦИЯ В БЪЛГАРИЯ

**Резюме:** Тази статия изследва режима на схемите за частна електронна идентификация (EID) в България, определени на фона на разпоредбите на ЕС, по-специално Регламент на EIDAS (ЕС) № 910/2014. Изследва се правната рамка, оперативните механизми и обхвата на частните схеми на ИД, използвайки България като пример в рамките на дигиталната програма на ЕС. Анализът разкрива иновативния подход на България към прилагането на частни схеми на EID, които подобряват цифровата сигурност, удобството на потребителите и съответстват на стандартите на ЕС. Чрез разглеждане на правния режим, регулиращ тези схеми, статията подчертава основната роля на Комисията за регулиране на съобщенията в България за осигуряване както на националните, така и на ЕС разпоредбите. Оперативните механизми, илюстрирани чрез системата EVROTRUST,

*показват разширени технологии в регистрацията на потребителите, проверка на идентичността и интегриране на биометричния анализ и идентификацията на видео за смекчаване на измамите с идентичност. Покритието в секторите демонстрира адаптивността на схемите и тяхното въздействие върху банковото дело, електронното правителство, здравеопазването и извън него, подобрявайки цифровата инфраструктура и ангажираността на гражданите. Този цялостен анализ има за цел да допринесе за разбирането на значението на частните схеми на EID в пейзажа на дигиталната трансформация на ЕС, като подчертава баланса между иновациите, законодателството и достъпността на потребителите.*

**Ключови думи:** *електронна идентификация, Регламент EIDAS, България, Eurotrust, Правна рамка*

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