Editorial

Bosnia and Herzegovina's e-Identity Initiative: A Technological Leap in Digital solutions and Governance

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1. Introduction

Bosnia and Herzegovina's (BiH) e-Identity initiative, led by the Agency for Identification Documents, Registers, and Data Exchange (IDDEEA), is a landmark achievement enabling digital solutions and digital governance in the country. The initiative aligns with United Nations Sustainable Development Goals (UN SDGs) and European Union strategies and policies for a digital transformation. Implemented in three phases, the initiative aims to secure, streamline, and enhance public services, thereby positioning BiH as a leader in digital identity technology within Western Balkan countries. This editorial will utilize qualitative and quantitative data from published strategies to provide an overview of the initiative's development and possible impacts, with a particular focus on its implications for digital services and governance. Expected outcomes include an understanding of this pioneering initiative's effectiveness and its contribution to public service enhancement.

The digital identity landscape in Europe is rapidly evolving, driven by technological advancements and policy frameworks such as the EU's Digital Single Market strategy and the eIDAS Regulation. These initiatives aim to create a secure and seamless digital environment, enhancing cross-border services and stimulating economic growth (Shaping Europe's digital future, 2020) EU member states are adopting various digital identity solutions to streamline processes and bolster security, ensuring that digital transformation aligns with broader economic and social goals (Digital transition) Additionally, the *2030 Digital Compass: The European Way for the Digital Decade* outlines the EU's targets for achieving digital sovereignty and resilience by 2030, emphasizing the importance of digital skills, infrastructure, business transformation, and public services?

In this context, despite its complex constitutional structure and fragmented administrative jurisdictions, BiH has made significant strides in digital governance through the Agency for Identification Documents,

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Registers, and Data Exchange (IDDEEA). This centralization of identification and data exchange processes provides BiH with a notable advantage over many countries that struggle with fragmented records and overlapping jurisdictions. IDDEEA's comprehensive approach consolidates critical functions under one agency, thereby aligning seamlessly with the stringent requirements of the eIDAS 2.0 regulation, which emphasizes identity security and interoperability in digital transactions.

In the Western Balkan region, digital transformation is a strategic goal, with varying levels of implementation across countries due to differences in infrastructure and resources. BiH stands out in this regard, with its e-Identity initiative led by IDDEEA. This initiative underpins all digital transformation efforts by establishing e-Identity as a foundational element for all e-services in the country. By aligning with United Nations Sustainable Development Goals (UN SDGs) and European Union digital strategies, the initiative aims to secure, streamline, and enhance public services. This positions BiH as a potential regional leader in digital identity technology, showcasing a model for effective digital governance.

IDDEEA's initiatives contribute significantly to various aspects of sustainable development and digital transformation. By ensuring the availability and validity of identification documents, IDDEEA supports the reduction of poverty and social inequalities, enabling broader access to public services and financial opportunities. Its efforts in advancing digital solutions and electronic signatures foster innovation and infrastructure development, promoting a more inclusive and technologically advanced society. Furthermore, IDDEEA's focus on cybersecurity strengthens the protection of digital infrastructure, ensuring the safety and integrity of sensitive information. The digitization of services and facilitation of data exchange enhance efficiency, reduce environmental impact, and promote interoperability.

Digital identity is becoming increasingly crucial for effective governance and public service delivery. The e-Identity initiative in BiH is particularly significant for its holistic approach to improving citizen interaction with government services, increasing transparency, and reducing administrative burdens. A notable impact is anticipated in the healthcare sector, where digital identities will revolutionize patient care and administrative processes. By empowering patients to take ownership of their data, the initiative promotes a holistic approach to healthcare, with identification data accessible via the BiH e-Identity platform enhancing patient autonomy and engagement.

The journey towards a digital society requires meticulous planning and phased implementation. The e-Identity initiative in BiH is structured into three phases, each aimed at progressively enhancing the security, efficiency, and accessibility of public services. This editorial will examine the development and impact of this initiative, utilizing qualitative and quantitative data from published strategies. By analyzing the effectiveness of this pioneering initiative and its contributions to public service enhancement, we aim to provide a comprehensive overview of BiH's progress in digital governance.

2. Current state

The e-Identity initiative is structured into three essential phases, which together form a cohesive framework for digital transformation.

2.1. Phase 1: Introducing the qualified digital signature

One of the significant challenges in digitizing public services has been the absence of a reliable electronic signature. The introduction of the qualified digital signature through the BiH e-Identity program addresses this gap, ensuring secure and legally binding digital interactions. In specific IDDEEA developed a remote qualified digital signature solution, which underwent a test phase before receiving accreditation from the Accreditation Office of the Ministry of Transport and Communications of Bosnia and Herzegovina in July of this year, through IDDEEA's web portal. The intention is to implement this

solution as a pilot project through a digital wallet platform by the end of 2024. This introduction of the qualified digital signature through the BiH e-Identity program ensures secure and legally binding digital interactions.

Implementation steps	Milestones completed	Status
Digital Signing Infrastructure	2019	Completed
Legislative Alignment	2020	Completed
Pilot Projects	2021	Completed
Digital signing infrastructure established remote qualified digital signature solution	2024	Completed
Legislative Alignment – Accreditation from Accreditation Office	2024	Completed
Pilot Projects – Digital wallet platform integration	2024	Planned for end of 2024

3. Proposed procedure

3.1. Phase 2: Developing electronic services

With the digital signature infrastructure established, the second phase of BiH's e-Identity initiative focuses on the development and integration of comprehensive electronic services across various public and private sectors. The implementation and utilization of qualified electronic signatures present significant potential and opportunities for both individuals and legal entities, transforming the landscape of digital interactions and governance.

The integration of secure digital signatures into the operations of banks, municipalities, telecommunications companies, government bodies, healthcare, and general e-governance services offers numerous advantages.

3.2. Banking sector

The banking sector stands to benefit immensely from the implementation of qualified electronic signatures. These signatures can streamline a variety of banking processes, including the opening of accounts, loan applications, and digital contracts, by reducing the need for physical presence and paper-based documentation. This not only enhances the efficiency of banking services but also significantly improves security and customer trust. By enabling customers to authenticate transactions and sign documents electronically, banks can offer faster, more convenient services, ultimately leading to higher customer satisfaction and reduced operational costs.

3.3. Municipalities and cities

For municipalities and city administrations, the adoption of electronic signatures can revolutionize the delivery of public services. Electronic signatures facilitate the digital submission and processing of applications for permits, licenses, and other municipal services. This leads to a more efficient administration by reducing paperwork, minimizing errors, and accelerating service delivery. Residents can interact with local government services from the comfort of their homes, enhancing the overall accessibility and responsiveness of municipal services.

3.4. Telecommunications sector

Telecommunications companies can leverage electronic signatures to simplify and secure customer interactions, such as the signing of service contracts, the authentication of user identities, and the management of subscriptions and billing. The use of digital signatures ensures the integrity and authenticity of electronic documents, reducing fraud and enhancing customer trust. This also streamlines operational

106 processes, allowing telecoms to offer more efficient and user-friendly services.

3.5. Government bodies

Government bodies at all levels can significantly benefit from the implementation of electronic signatures and the developed digital identity platform. Electronic signatures enable the secure and efficient handling of official documents, internal communications, and public services. This is particularly important for e-governance initiatives, where the goal is to provide transparent, efficient, and accessible services to citizens. By integrating digital signatures, government processes can be expedited, reducing administrative burdens and enhancing service delivery.

3.6. Healthcare sector

In the healthcare sector, digital identities and electronic signatures can revolutionize patient care and administrative processes. By allowing patients to access their medical records and sign consent forms electronically, healthcare providers can improve the efficiency and security of patient data management. This not only enhances patient autonomy and engagement but also facilitates a more integrated and holistic approach to healthcare. Secure electronic interactions between healthcare providers and patients ensure that sensitive medical information is protected, thereby enhancing trust and compliance with privacy regulations.

3.7. E-Governance services

E-governance services, supported by digital identities and electronic signatures, can transform the interaction between citizens and the state. The ability to sign documents electronically means that citizens can access a wide range of government services online, from tax filings to voting in elections. This shift towards digital service delivery can lead to greater transparency, reduced corruption, and more efficient public administration. By embracing these technologies, governments can better meet the needs of their citizens, providing more accessible, reliable, and secure services.

The development and implementation of electronic services through the use of qualified electronic signatures and a robust digital identity platform represent a significant step forward for BiH. This phase not only enhances the efficiency and security of various sectors but also aligns with broader objectives of sustainable development and digital transformation. By fostering an environment where digital services can thrive, BiH positions itself as a leader in digital governance within the Western Balkans, demonstrating the potential of technology to improve public administration and service delivery.

Sector	Service	Integration phase	Status
Healthcare	Patient Records, E-Prescriptions	Phase 2	In Progress
Banking	Online Account Setup, Loan Applications	Phase 2	In Progress
Municipalities	Citizen Records, Local Taxes	Phase 2	In Progress
Telecoms	Contract Signing, Customer Verification	Phase 2	In Progress

4. Discussion and conclusion

4.1. Phase 3: Educating and motivating citizens

Educating and motivating citizens to adopt electronic services that utilize digital identity and electronic signatures is crucial for several interconnected reasons. First and foremost, the effectiveness and efficiency

139 of digital governance heavily rely on citizen participation. Without a well-informed and engaged populace,
140 the potential benefits of digital identity solutions and electronic signatures remain unrealized. This
141 engagement is vital for achieving the overarching goals of streamlined administrative processes, enhanced
142 service delivery, and increased transparency.

143 One primary reason for focusing on education and motivation is to ensure that citizens understand
144 the security and convenience offered by digital identities and electronic signatures. These tools can
145 significantly reduce the time and effort required for various transactions and interactions with both public
146 and private sector entities. For example, in the banking sector, digital identities simplify the process of
147 verifying customer identities, enabling quicker account openings, more secure transactions, and improved
148 customer satisfaction. In municipalities and cities, electronic signatures can expedite the processing of
149 permits and licenses, making local governance more efficient and accessible to citizens.

150 In telecommunications, digital identities play a critical role in securing customer authentication and
151 facilitating service agreements, thus reducing the risk of fraud and enhancing customer trust. Government
152 agencies benefit from reduced paperwork and faster administrative processes, allowing them to deliver
153 services more efficiently and transparently. Healthcare providers can leverage digital identities to manage
154 patient records securely, ensuring better care and protecting patient privacy. Overall, the integration
155 of digital identities into these sectors fosters a more responsive, transparent, and efficient governance
156 ecosystem.

157 Drawing from successful implementations in other countries provides valuable insights into effective
158 strategies for citizen education and motivation. Estonia, renowned for its pioneering digital identity
159 system, employed comprehensive public awareness campaigns to educate its citizens about the benefits
160 and security of digital services. Estonia's success was partly due to its user-friendly digital platforms and
161 continuous government support, which helped build trust and understanding among its citizens. Similarly,
162 Denmark's NemID initiative combined public and private sector efforts to create a secure and accessible
163 digital identity system, supported by extensive user education and engagement programs.

164 For BiH, a multifaceted approach is essential. Public awareness campaigns using various media
165 channels can inform citizens about the benefits and security of digital identity and electronic signatures.
166 Highlighting success stories and practical examples can demystify the technology and build trust.
167 Workshops and training programs, in collaboration with local governments, community centers, and
168 educational institutions, can empower citizens with the skills and confidence needed to use electronic
169 services effectively. Moreover, partnerships with banks, telecom companies, and other private entities can
170 promote digital identity usage through incentives, driving adoption rates. Ensuring that digital services
171 are intuitive and accessible, with comprehensive support, is crucial to encourage widespread use.

172 The technological impact of digital identity and electronic signatures on various sectors in BiH is
173 profound. In the banking sector, digital identities will streamline customer verification processes, enabling
174 quicker account openings and more secure transactions, enhancing both user convenience and operational
175 efficiency. Municipalities and cities can transform local governance by enabling online applications for
176 services like permits, reducing wait times, and improving overall efficiency. Secure digital identities in the
177 telecommunications sector facilitate robust customer authentication and streamlined service agreements,
178 reducing fraud and improving customer trust. Government bodies will see a reduction in paperwork and
179 faster administrative processes, while healthcare providers will be able to manage patient records more
180 effectively, improving patient care and privacy.

181 The societal impact of these technologies extends beyond individual sectors. For citizens, the widespread
182 use of digital identities and electronic signatures means greater convenience, reduced administrative
183 burdens, and enhanced access to services. For the country, it translates into improved governance,

economic growth, and a stronger foundation for innovation. The successful implementation of these digital solutions positions BiH and other Western Balkan countries closer to fulfilling the requirements for full EU membership. By adopting EU-aligned digital standards and practices, these countries demonstrate their commitment to modernization and integration, enhancing their appeal as candidates for accession. This alignment with EU digital strategies and regulations facilitates smoother cross-border interactions, promotes economic cooperation, and strengthens political and economic ties with EU member states.

In conclusion, Phase 3 of the e-Identity initiative is critical for ensuring the successful adoption and utilization of digital services in BiH. By educating and motivating citizens, IDDEEA can unlock the full potential of digital identity and electronic signatures, driving technological advancements across various sectors and contributing to the country's broader goals of sustainable development and EU integration. This comprehensive approach not only enhances the immediate benefits for citizens and government but also positions BiH as a leader in digital governance within the Western Balkans.

Conflict of interest

None to report.