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Case Study 5

The Revised eIDAS Regulation: Impacts on Digital Standardisation Practices and Technical Interoperability in Europe

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1. Introduction

The revision of the eIDAS Regulation illustrates how EU regulation increasingly depends on agile, software-centric standards to deliver policy goals. The European Digital Identity Wallet exemplifies the 'softwarisation' trend highlighted in this report: trust services and credentials are no longer hardware-bound but protocol-driven. Its technical framework—built on global standards such as OpenID for Verified Credentials, ISO/IEC 18013-5, and ETSI profiles—demonstrates both Europe's ambition to shape international interoperability and the strains placed on ESOs to translate experimental architectures into harmonised specifications under tight regulatory deadlines.

This case study aims to examine how the revised eIDAS Regulation reshapes digital standardisation practices and drives technical interoperability. It highlights the increasing involvement of global standardisation bodies, the interplay between regulatory goals and technical frameworks, and the practical challenges of implementation.

2. Harmonisation Through Multilateral Standardisation

The revised eIDAS Regulation introduces new requirements for harmonisation to ensure interoperability both within the EU and with international digital identity frameworks. These requirements include mutual authentication between relying parties and wallets, the integration of Qualified Electronic Signatures (QES), and privacy-preserving data-sharing capabilities. To address these needs, the European Commission has worked with a range of international and European standardisation organisations, recognising that digital identity infrastructures depend on compatibility across jurisdictions.

A central example is the choice of OpenID for Verified Credentials (OpenID4VC), developed by the OpenID Foundation, as the protocol layer for issuing and presenting credentials. OpenID4VC enables the wallet to handle multiple credential formats—such as ISO/IEC 18013-5 (mobile driving licences), IETF's SD-JWT, and W3C's Verifiable Credentials (VC)—and provides an interoperability layer that facilitates integration with existing applications. This decision illustrates how European regulation increasingly builds on established global specifications to achieve its objectives.

The regulation also relies on ETSI to profile OpenID4VC so that it meets the specific regulatory and trust-service requirements of the EUDI Wallet, while W3C's Digital Credentials API is intended to support native wallet functions in browsers and operating systems. These activities reflect the collaborative and multilateral nature of digital identity standardisation, with European and international bodies contributing complementary components.

The implementing acts serve as a link between technical experimentation and binding requirements. They draw on the Architecture and Reference Framework (ARF), which pilots wallet interoperability across member states and uses standards from ETSI, IETF and ISO. This iterative approach—pilot, refine, codify—aims to ensure that legal specifications reflect operational experience.

The process is intended to address the fragmentation that characterised the 2014 eIDAS framework, which struggled to achieve consistent technical interoperability across member states. At the same time, it highlights continuing challenges: developing implementing acts that keep pace with evolving technical work requires sustained coordination and technical expertise within the Commission and the ESOs. Weaknesses in these areas could slow deployment or result in uneven implementation across the EU.

3. Implementing Technical Interoperability

Ensuring technical interoperability across 27 EU member states requires common frameworks and coordinated testing. Large-scale pilot initiatives such as Digital Credentials for Europe (DC4EU), launched in 2023, play a central role in this effort. These pilots assess how different EUDI Wallet implementations work in practice and provide feedback to adjust both standards and technical solutions.

The deployment of privacy-enhancing technologies adds further complexity. For example, selective disclosure allows users to prove specific attributes—such as being over 18—without disclosing full personal data. This function relies on standards such as SD-JWT, developed jointly by the OpenID Foundation and IETF, and requires close coordination among regulators, standardisation bodies and national authorities to ensure consistent application.

The integration of Qualified Electronic Signatures (QES) into the EUDI Wallet illustrates the close link between regulation and technical standards. QES provides a high-assurance mechanism for digital transactions but depends on precise interoperability specifications to operate consistently across member states. ETSI, in cooperation with the Cloud Signature Consortium (CSC) and other actors, has worked to align these specifications with EU legal requirements.

Despite progress, several challenges persist. Member states differ in their technical infrastructures and in how they interpret regulatory provisions, which can complicate the deployment of a uniform system. In addition, the pace of technological change requires ongoing updates to relevant standards and frameworks, highlighting the need to reconcile regulatory predictability with technical innovation.

4. Conclusion

The revised eIDAS Regulation has reshaped the standardisation landscape for digital identity in Europe by linking regulatory objectives to both European and global technical frameworks. It has brought together organisations such as ETSI, the OpenID Foundation, IETF and W3C, highlighting the EU's reliance on multilateral collaboration to achieve interoperable and secure digital identity solutions.

The initiative also illustrates the evolving role of the European Commission as a coordinator of standardisation efforts. While the approach has strengthened cooperation across standard-setting communities, it raises practical and legal questions, including those highlighted by the Malamud case (2019) and by recent discussions over the EU's relationship with international standardisation bodies.

The future of the EUDI Wallet depends on the timely finalisation of its technical specifications and their consistent implementation across member states. Pilot projects such as DC4EU remain important for validating standards in operational settings, while continued engagement of all relevant stakeholders will be critical to address remaining interoperability challenges.

Lessons from eIDAS are likely to inform other cross-border digital public-infrastructure projects, for example in healthcare or taxation. Achieving durable interoperability will require ongoing cooperation between regulators, standardisation organisations and implementers, as well as attention to privacy, security and user trust.

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