Blog Post
N° 3/2025

Digital Identity Solutions in Europe 2025

Status Quo

Dr. Andreas Windisch

ASQUARED

The European digital identity landscape is undergoing a fundamental transformation. With eIDAS 2.0 and the mandatory EUDI Wallet by 2026, fragmented national standalone solutions are being transformed into a harmonized ecosystem. Six EU pilot projects with over 600 partners are testing practical implementation in real-world scenarios. While Nordic countries are making progress with penetration rates over 70 percent, other regions are catching up rapidly. This analysis documents the status quo of a transformation that is redefining digital sovereignty.

Introduction

Since our last comprehensive analyses of the European e-identity landscape in 2017 and 2018, the topic of digital identity has undergone fundamental changes. Back then, we reported on a fragmented landscape characterized by a multitude of national isolated solutions, differing technical standards, and limited cross-border interoperability.

Today, in the fall of 2025, a fundamentally different picture emerges. The European e-identity landscape is in the midst of a paradigm shift. With the entry into force of the eIDAS 2.0 Regulation in May 2024, the European Union has set the course for a harmonized, cross-border digital identity ecosystem. At the heart of this transformation is the European Digital Identity Wallet (EUDI Wallet), which must be deployed by all EU member states by the end of 2026.

Our current study shows significant growth in digital identity solutions in Europe. But the quantitative increase only tells part of the story. More crucial is the qualitative shift: from national fragmentation to European harmonization, from proprietary isolated solutions to interoperable ecosystems, and from purely government-driven initiatives to an increased public-private partnership dynamic.

This article highlights the regulatory changes, analyzes the current provider landscape, and takes a detailed look at developments in various European regions. A special focus is on the six EU-funded pilot projects, which are testing the practical implementation of the EUDI Wallet in real-world application scenarios with over 600 partners.

1 The Regulatory Framework: A European eID Puzzle

The European regulatory landscape for digital identities resembles a complex puzzle whose pieces have only begun to come together in recent years. Several regulations and directives interact to create the framework for a functioning digital identity ecosystem. Each of these regulatory pieces addresses a specific aspect, but only their interaction enables the vision of a secure, user-friendly, and cross-border system.

1.1 eIDAS 2.0: The Foundation of the System

The adoption of Regulation (EU) 2024/1183, known as eIDAS 2.0, marks the central building block of the European identity ecosystem. After intensive negotiations, the revised regulation was published in the Official Journal of the European Union on April 30, 2024, and entered into force on May 20, 2024.

Unlike the original eIDAS regulation of 2014, eIDAS 2.0 requires the mandatory provision of digital identity solutions. The new regulation defines clear deadlines: By September 2026, all EU member states must provide at least one certified EUDI wallet. From November 2027, companies and organizations that require citizens to identify or authenticate themselves are required to accept the EUDI wallet as a valid means of identification. This particularly applies to regulated industries such as financial services providers and telecommunications providers. The European Commission aims for at least 80 percent of EU citizens to actively use an EUDI wallet by 2030.

The technical specifications were finalized in November 2024 through three central implementing regulations. These define the integrity and core functionalities of the wallets, the protocols and interfaces, and the notification procedures. The Architecture and Reference Framework forms the technical basis, which is continuously being developed further.

The EUDI wallet differs conceptually from existing national eID solutions due to its comprehensive functionality. It functions as a secure, smartphone-based digital wallet in which users can store their government-certified basic data (Personal Identification Data), additional certificates (Electronic Attestations of Attributes), and qualified proofs. The principle of user autonomy is crucial: citizens have complete control over their data and decide for themselves which information they want to share with which service providers.

According to eIDAS 2.0, three trust levels are distinguished: low for simple authentication, substantial for transactions such as account opening, and high for official processes and qualified electronic signatures. The discrepancy between national requirements harbors the potential for a new form of fragmentation within the EUDI ecosystem.

1.2 The Interlocking of Regulations

While eIDAS 2.0 forms the core, it only functions in conjunction with other regulatory building blocks. This interlocking creates a coherent overall system for digital identities and data protection.

The **General Data Protection Regulation (GDPR)** provides the data protection framework for all digital identity solutions. Its principles, such as privacy by design, privacy by default, and data minimization, are directly incorporated into the EUDI Wallet specifications. The right to erasure and data portability enshrined in the GDPR are implemented in the wallet functionalities. Without the GDPR as a legal basis, the trustworthiness of the entire system would be at risk.

The **Payment Services Directive 2 (PSD2)** (or PSD3/PSR) creates a direct link between digital identity and financial services. It enables regulated third-party service providers to access account information with the account holder's consent. These third-party service providers are identified using qualified website certificates and seals, trust services defined by eIDAS. In conjunction with the EUDI Wallet, users could in future store verified bank details as a certificate in their wallet and use them for various purposes, from income verification for loan applications to simplified tax returns.

The **Anti-Money Laundering Directive (AMLD)** explicitly requires the use of electronic identification means in accordance with eIDAS for Know Your Customer processes. This creates a direct link between the digital identity infrastructure and the compliance requirements of the financial sector. The European Commission has established a group of experts specifically focused on the cross-border use of electronic identification means for KYC processes. For financial institutions, this opens up the prospect of digitizing their onboarding processes while simultaneously reducing compliance costs.

This regulatory integration exemplifies how various EU initiatives are merging into a coherent digital ecosystem. Each piece of the puzzle fulfills a specific function, but only their interaction enables a functioning overall system. Further regulations such as the Cybersecurity Act and the NIS 2 Directive complement this picture by defining the security requirements for critical digital infrastructures. As a highly sensitive component, the EUDI Wallet is subject to correspondingly strict cybersecurity requirements.

2 The Changing European Provider Landscape

The European e-identity landscape has evolved significantly in recent years. Our current study documents a significant increase in digital identity solutions. While our 2018 analysis focused primarily on EU member states, Switzerland, and Norway, the current survey also covers developments in Southeastern Europe and Eastern European non-EU countries. This expansion reflects the global importance of the topic and the impact of the European regulatory framework beyond the EU's borders.
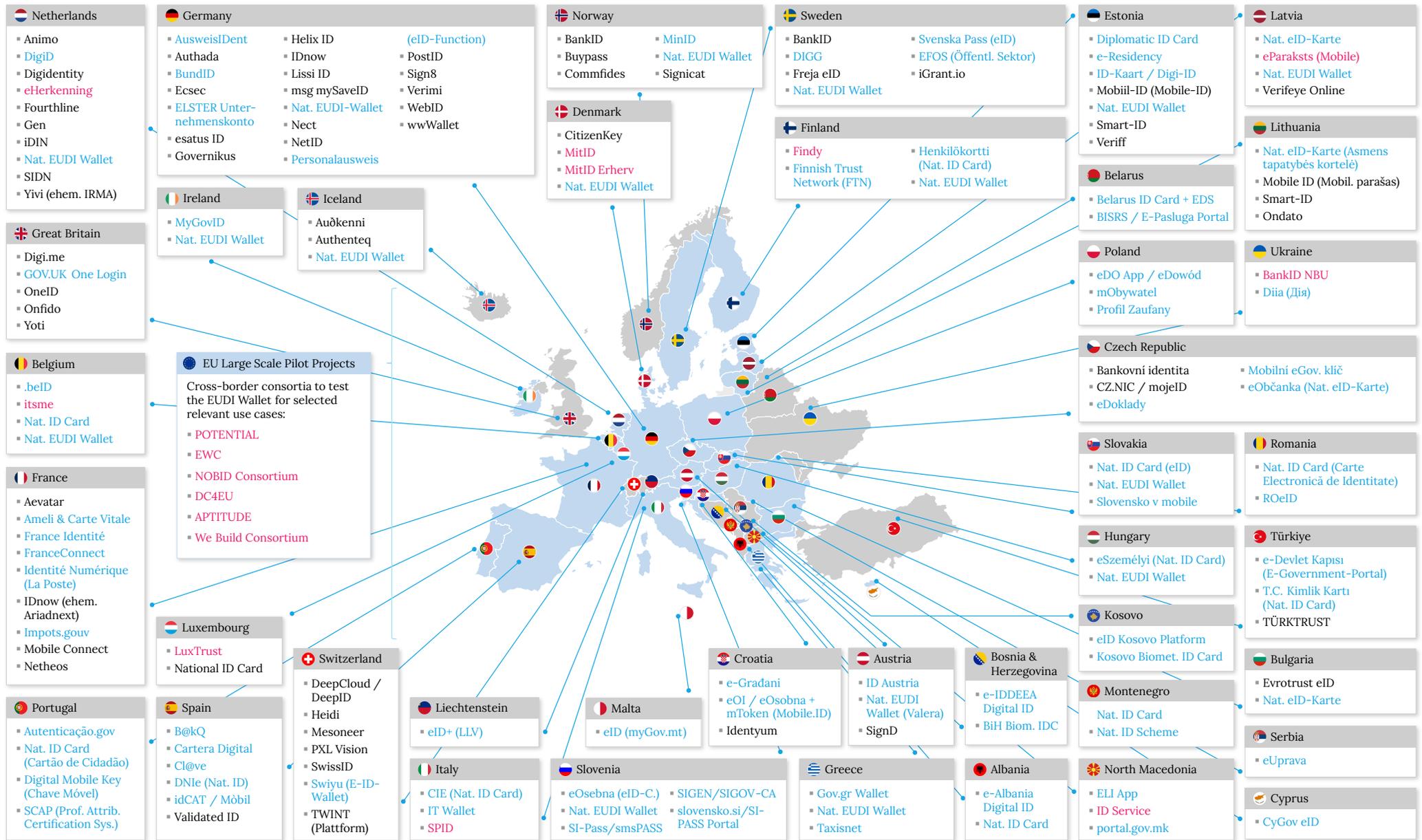
The distribution by governance model reveals interesting developments. Public solutions continue to form the backbone of the European identity infrastructure, but their relative

dominance has weakened slightly. At the same time, the number of private sector providers has increased significantly. Particularly noteworthy is the strong growth of public-private partnerships, which have proven to be a particularly successful model. This reflects the realization that the successful establishment of digital identity ecosystems requires both government legitimacy and trustworthiness as well as private-sector innovation and market expertise.

Of the identified solutions, only a portion have successfully completed the eIDAS notification process and are thus recognized for public services in all EU member states. The geographical distribution shows clear clusters in the Nordic countries, the Baltic states, and Western and Southern Europe. Germany was the first country to notify the online ID function of its national identity card in September 2017. Italy followed with its national eID system, SPID. It is noteworthy that some countries have notified multiple systems, illustrating the diversity of implementation approaches.

2.1 Visualization of the European Solution Landscape

The following illustration shows the prevalence and distribution of digital identity solutions in Europe by country and governance model. The chart shows both the geographical density of implementations and the different approaches taken by Member States in implementing their national eID strategies. The data used can be found in Table 1 in the appendix.

Netherlands
- Animo
- DigiD
- Digidentity
- eHerkenning
- Fourthline
- Gen
- iDIN
- Nat. EUDI Wallet
- SIDN
- Yivi (ehem. IRMA)

Germany
- AusweisIDent
- Authada
- BundID
- Ecsec
- ELSTER Unternehmenskonto
- esatus ID
- Governikus
- Helix ID
- IDnow
- Lissi ID
- msg mySaveID
- Nat. EUDI-Wallet
- Nect
- NetID
- Personalausweis
- (eID-Function)
- PostID
- Sign8
- Verimi
- WebID
- wwWallet

Norway
- BankID
- Buypass
- Commfides
- MinID
- Nat. EUDI Wallet
- Signicat

Denmark
- CitizenKey
- MitID
- MitID Erherv
- Nat. EUDI Wallet

Sweden
- BankID
- DIGG
- Freja eID
- Nat. EUDI Wallet
- Svenska Pass (eID)
- EFOS (Öffentl. Sektor)
- iGrant.io

Finland
- Findy
- Finnish Trust Network (FTN)
- Henkilökortti (Nat. ID Card)
- Nat. EUDI Wallet

Estonia
- Diplomatic ID Card
- e-Residency
- ID-Kaart / Digi-ID
- Mobiil-ID (Mobile-ID)
- Nat. EUDI Wallet
- Smart-ID
- Veriff

Latvia
- Nat. eID-Karte
- eParaksts (Mobile)
- Nat. EUDI Wallet
- Verifeye Online

Lithuania
- Nat. eID-Karte (Asmens tapatybės kortelė)
- Mobile ID (Mobil. parašas)
- Smart-ID
- Ondato

Belarus
- Belarus ID Card + EDS
- BISRS / E-Pasluga Portal

Poland
- eDO App / eDowód
- mObywatel
- Profil Zaufany

Ukraine
- BankID NBU
- Diia (Дія)

Ireland
- MyGovID
- Nat. EUDI Wallet

Iceland
- Auðkenni
- Authenteq
- Nat. EUDI Wallet

Great Britain
- Digi.me
- GOV.UK One Login
- OneID
- Onfido
- Yoti

Czech Republic
- Bankovní identita
- CZ.NIC / mojeID
- eDoklady
- Mobilní eGov. klíč
- eObčanka (Nat. eID-Karte)

Belgium
- .beID
- itsme
- Nat. ID Card
- Nat. EUDI Wallet

EU Large Scale Pilot Projects

Cross-border consortia to test the EUDI Wallet for selected relevant use cases:
- POTENTIAL
- EWC
- NOBID Consortium
- DC4EU
- APTITUDE
- We Build Consortium

Slovakia
- Nat. ID Card (eID)
- Nat. EUDI Wallet
- Slovensko v mobile

Romania
- Nat. ID Card (Carte Electronică de Identitate)
- ROeID

France
- Aevatar
- Ameli & Carte Vitale
- France Identité
- FranceConnect
- Identité Numérique (La Poste)
- IDnow (ehem. Ariadnext)
- Impots.gouv
- Mobile Connect
- Netheos

Hungary
- eSzemélyi (Nat. ID Card)
- Nat. EUDI Wallet

Türkiye
- e-Devlet Kapısı (E-Government-Portal)
- T.C. Kimlik Kartı (Nat. ID Card)
- TÜRKTRUST

Luxembourg
- LuxTrust
- National ID Card

Kosovo
- eID Kosovo Platform
- Kosovo Biomet. ID Card

Bulgaria
- Evrotrust eID
- Nat. eID-Karte

Portugal
- Autenticação.gov
- Nat. ID Card (Cartão de Cidadão)
- Digital Mobile Key (Chave Móvel)
- SCAP (Prof. Attrib. Certification Sys.)

Spain
- B@kQ
- Cartera Digital
- Cl@ve
- DNIe (Nat. ID)
- idCAT / Mòbil
- Validated ID

Switzerland
- DeepCloud / DeepID
- Heidi
- Mesoneer
- PXL Vision
- SwissID
- Swiyu (E-ID-Wallet)
- TWINT (Plattform)

Liechtenstein
- eID+ (LLV)

Malta
- eID (myGov.mt)

Croatia
- e-Građani
- eOI / eOsobna + mToken (Mobile.ID)

Austria
- ID Austria
- Nat. EUDI Wallet (Valera)
- SignD

Bosnia & Herzegovina
- e-IDDEEA Digital ID
- BiH Biom. IDC

Montenegro
- Nat. ID Card
- Nat. ID Scheme

Serbia
- eUprava

Italy
- CIE (Nat. ID Card)
- IT Wallet
- SPID

Slovenia
- eOsebna (eID-C.)
- Nat. EUDI Wallet
- SI-Pass/smsPASS
- SIGEN/SIGOV-CA
- slovensko.si/SI-PASS Portal

Greece
- Gov.gr Wallet
- Nat. EUDI Wallet
- Taxisnet

Albania
- e-Albania Digital ID
- Nat. ID Card

North Macedonia
- ELI App
- ID Service
- portal.gov.mk

Cyprus
- CyGov eID

Source: asquared / As of October 2025

Public Sector Solution
Private Sector Solution
Private Public Partnership

Figure 1: Overview of digital identity solutions in Europe 2025

ASQUARED

2.2 EUDI Wallet as a Growth Driver

One of the most striking developments is the proliferation of EUDI wallet initiatives. We were able to identify numerous solutions that are explicitly designed as EUDI wallets or meet the technical requirements for EUDI compliance.

Germany leads in terms of the number of identified EUDI wallet solutions, followed by the Netherlands and several countries with two solutions each, such as Finland, France, Greece, the United Kingdom, Sweden, and Slovakia. This reflects the size and digital maturity of these markets, but also the competition between public and private sector approaches.

Almost all EU member states are currently developing public EUDI wallets to meet the regulatory requirements by September 2026. At the same time, private providers are experimenting with innovative approaches, particularly in the area of self-sovereign identity and blockchain-based solutions.

2.3 Evolution of Provider Types

In our 2018 article, we noted a clear dominance of government-run solutions, particularly in the area of high-quality identification in accordance with anti-money laundering laws. Private-sector providers primarily focused on video identification procedures and login alliances with low security levels.

The current situation is significantly more differentiated. **Government-run solutions** have evolved and are increasingly mobile-first oriented. The need to provide EUDI wallets by 2026 has triggered a significant surge in innovation. Many member states are seizing the opportunity to fundamentally modernize their eID systems, some of which are over 15 years old. Austria, for example, replaced its previous mobile signature solution with the ID Austria app, a modern application optimized for accessibility and user-friendliness.

Private-sector solutions have significantly expanded their portfolios. In addition to traditional video and AI-based identification solutions, specialized providers for various segments have emerged. Qualified Trust Service Providers offer qualified electronic signatures and seals, which are essential for the EUDI ecosystem. SSI wallet providers develop self-sovereign identity solutions, often as EUDI wallet prototypes. ID brokers and federated solutions aggregate various means of identification and make them accessible to service providers. Furthermore, specialized consulting and integration services have emerged to support organizations in implementing eID solutions.

Public-private partnerships have proven to be a particularly successful model, especially in the Nordic countries. The Swedish BankID, established in 2003 as a cooperation between Sweden's largest banks, has achieved a penetration rate of over 70 percent of the population. The Danish MitID, in operation since 2021 as the successor to NemID, is the central means of identification for virtually all citizens. The Belgian itsme, an initiative of banks and telecommunications providers, was partially transferred into public ownership in 2021 and has established itself as one of the most widely deployed mobile eID systems in Europe. These examples illustrate that successful digital identity solutions often emerge at the interface between public trust anchors and private sector execution.

A significant shift is evident in the widespread adoption of mobile identity solutions. While card-based systems with dedicated hardware once dominated, smartphone-based solutions are now the standard. The vast majority of identification solutions are primarily or exclusively mobile, reflecting changing usage habits and technological possibilities.

3 Regional Developments: A Europe of Different Speeds

Despite the harmonizing effect of eIDAS 2.0, the European e-identity landscape is still characterized by significant regional differences. While some countries have been using digital identity solutions comprehensively for over two decades, others are only now beginning to systematically develop corresponding infrastructures.

3.1 Nordic Countries: The Pioneers

The Nordic countries will remain the undisputed pioneers in the field of digital identity in 2025. Their leading position is based on several factors, including early investments in digital infrastructure, high societal acceptance of digital solutions, transparent governance, and pragmatic public-private partnerships.

With BankID, developed since 2003 as a cooperation between Sweden's largest banks, **Sweden** has established one of the most successful eID systems worldwide. With over seven million users and a population of 10.5 million, BankID achieves a penetration rate of approximately 70 percent. The solution is used for virtually all digital government services, banking transactions, and even everyday services such as library registrations or gym memberships. EFOS, a government-sponsored eID system specifically for the public sector, exists in parallel. Both systems are eIDAS-notified. The Digitaliseringsmyndigheten acts as the coordinating authority and ensures interoperability between different solutions.

Norway pursues a decentralized approach. The government agency Digitaliseringsdirektoratet coordinates four different eID systems, all of which are usable in the public sector. This federation solution, called ID-porten, ensures interoperability and allows users to choose their preferred eID solution. The Norwegian BankID dominates with 3.7 million users and a population of 5.5 million. Norway coordinated the NOBID pilot project and is heavily involved in WE BUILD.

Denmark replaced the previous NemID with MitID in 2021. MitID is a mandatory eID for all citizens aged 15 and older and has achieved a penetration rate of nearly 100 percent. Mandatory digital communication with government agencies since 2012 has accelerated adoption. MitID, developed as a public-private partnership between the Danish government and Nets, is eIDAS-notified and serves both government contacts and private services. The eGovernment Monitor attests Denmark top marks in the use of e-government services and citizen satisfaction.

Finland has used TUPAS, an online banking-based authentication system operated by Finnish banks, for many years. FINeID also exists as a government eID solution. Findy, a modern SSI-based wallet solution, has been developed. Iceland is developing a national EUDI wallet and, despite its small population, has a highly developed digital infrastructure.

The Nordic countries demonstrate that early investments pay off in the long run, that public-private partnerships can be highly efficient, and that interoperability between different solutions is more important than monopoly formation.

3.2 DACH Region: Different Paths to the Same Goal

The DACH region exhibits significant differences in its approach to digital identity, although cultural and linguistic proximity suggest similarities.

Germany introduced a technically sophisticated eID solution with the electronic ID card in 2010. However, adoption remained disappointing for a long time. The 2024 eGovernment Monitor showed a usage rate of only 22 percent. The reasons are varied. Until recently, hardware hurdles required a special card reader. The lack of use cases led to a chicken-and-egg problem. Lack of communication and data protection concerns reinforced this reluctance. Encouragingly, usage has increased significantly since 2022 and now reaches 40 percent among younger generations.

The German Federal Government has commissioned SPRIN-D to conduct an innovation competition for German EUDI wallet prototypes. Several private-sector providers are developing their own solutions in parallel. The Federal Ministry for Digital Affairs and State Modernization is leading the national EUDI wallet implementation. Germany and

France are coordinating the POTENTIAL consortium. The digital driver's license has been in its pilot phase since April 2025, but only for the vehicle registration document, not for the driver's license itself.

In addition to the public system, a vibrant private sector provider scene is emerging. In addition to traditional video identification providers, specialized players for eID integration, login alliances, and government user accounts have emerged.

Austria has taken a pragmatic approach with ID Austria. The solution is mobile-first, designed for ease of use, and integrated into existing services. With approximately three million users and a population of nine million, ID Austria has already achieved considerable penetration. The eGovernment Monitor ranks Austria first in the DACH comparison. 66 percent of smartphone owners who have already used e-government did so via mobile. Awareness of ID Austria is 94 percent.

In June 2025, the ID Austria app was fundamentally revised with a focus on accessibility and intuitiveness. Austria's EUDI Wallet, Valera, has already been deployed and is in the rollout phase. This makes Austria one of the few countries to have a functional EUDI Wallet before the 2026 deadline. Austria's success is based on a consistent mobile focus, high awareness through intensive communication, practical benefits through broad acceptance, and continuous development based on user feedback.

As a non-EU member, **Switzerland** faces the unique situation of not being directly affected by eIDAS 2.0, yet still striving for interoperability with the EU. The initial attempt at a state-recognized e-ID with SuisseID failed due to excessive costs and technical complexity. As a private-sector alternative, SwissID was launched in 2017 as a joint venture between Swiss Post, SBB (Swiss Federal Railways), Swisscom, and other partners, and now reaches over four million users.

A first referendum on an e-ID in 2021 failed with two-thirds of the votes against, as it would have required private companies to issue the e-ID. On September 28, 2025, the electorate narrowly approved (50.4 percent) a revised law under which the federal government assumes full responsibility for the e-ID. The state-issued e-ID will be available free of charge via the "swiyu" app starting in summer 2026. At the end of October 2025, TWINT, the leading payment app in Switzerland with over six million users, announced that it would also open its platform to the new government e-ID and regulated digital currencies, which could significantly accelerate acceptance.

3.3 Baltic States: Digitalization Pioneers

The Baltic states of Estonia, Latvia, and Lithuania consciously embraced digital transformation after gaining independence, thereby overcoming legacy structures.

Estonia is considered the digital nation par excellence. The country began building a comprehensive digital infrastructure back in the 1990s. The Estonian ID card, introduced in 2002, serves as an identity card, health insurance card, voting card, travel card, and access key to all e-government services. 99 percent of all government services are available online. 98 percent of tax returns are submitted digitally, with an average processing time of three to five minutes. These figures are unique worldwide.

The technical basis is X-Road, a decentralized data exchange platform that securely connects various databases. This concept has proven resistant to cyberattacks and has been exported to several other countries. Estonia is developing a national EUDI wallet and actively contributing its extensive expertise to the European debate.

With e-Residency, **Estonia** has been offering a digital identity to non-Estonians since 2014. Over 100,000 people from 180 countries have applied for e-Residency, primarily to establish and manage remote businesses in Estonia.

Latvia and **Lithuania** are following similar paths, albeit with somewhat lower international visibility. Both countries have established comprehensive eID systems. Latvia has a mobile eID solution, eParaksts Mobile. Lithuania relies heavily on mobile signatures and was an early adopter of blockchain technology for certain administrative processes.

3.4 Western Europe: Large Markets, Diverse Dynamics

France is impressively demonstrating systematic digital transformation. With France Identité, the French government has been developing a mobile-first eID app since 2023, gradually integrating digital versions of all important documents. The digital identity card was introduced in 2023, followed by the digital driver's license in 2024, and the digital health card in 2025. This systematic approach is showing results. France coordinates the POTENTIAL consortium with Germany and leads the APTITUDE consortium. The French approach is more centralized, with a centralized government solution and a clear governance structure.

The **Netherlands** is pursuing a hybrid approach. DigiD, a government eID solution for government services, has existed since 2005. In parallel, iDIN, a bank-based identification system, has been established. The Dutch openness to innovative approaches is remarkable. Yivi, a privacy-oriented, SSI-based solution, has been developed. The Chamber of Commerce and Industry coordinates the WE BUILD consortium, which focuses on business identity.

With itsme, **Belgium** has established one of Europe's most successful e-ID solutions. Originally launched as a private sector initiative in 2017, itsme was partially transferred into public ownership in 2021. itsme has become the de facto standard for digital

identification in Belgium, both in the public and private sectors. The solution was eIDAS-notified in 2024. Parallel to this, .beID, the traditional chip card-based government eID, exists.

3.5. Southern Europe: Catching up and ambitious goals

Some Southern European countries started developing digital identity infrastructures later than Northern and Western Europe, but are catching up rapidly.

Italy introduced a federated eID system, SPID, in 2016. Private identity providers issue SPID identities, which can be used to access all public services. SPID now reaches over 35 million users. In parallel, another notified eID solution, the CIE, exists. In 2024, Italy deployed a national EUDI wallet, the IT Wallet. The government has announced ambitious goals for all important documents to be available in the IT Wallet by the end of 2025.

Spain faces the challenge of having various eID systems at both the national and regional levels. Coordination between these systems is complex. A national EUDI wallet, Cartera Digital Beta, is currently in the pilot phase. Portugal has achieved high penetration with the Cartão de Cidadão and the Chave Móvel Digital. Greece already has an active system with the Gov.gr Wallet. Cyprus and Malta, as small island states, can quickly roll out innovations across the board.

3.6 Eastern Europe: Heterogeneous Development

The Eastern European EU member states are experiencing heterogeneous development.

The **Czech Republic** has taken a remarkable approach. Three different eID systems have been notified: the national eID card, the Mobile eGovernment Key, and BankID. This diversity gives citizens true freedom of choice. In addition, a mobile wallet, eDoklady, has been deployed. **Poland** has developed mObywatel, a mobile-first eID app that has already been deployed and is being used intensively. Slovakia, Slovenia, Hungary, Bulgaria, Romania, and Croatia have all established eID systems and are at various stages of EUDI wallet development.

3.7 Southeastern Europe and Non-EU Countries

It is noteworthy that countries outside the EU are also developing digital identity solutions, often based on EU standards.

Ukraine has written a success story with the Diia app under the most difficult conditions. Launched in 2019, Diia has achieved impressive adoption despite the war. The app bundles over 50 different government services and documents. Diia is recognized

internationally as a role model. Ukraine has announced that it will make Diia EUDI-compatible to enable European interoperability.

Balkan states such as Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia, and Serbia are all working on digital identity solutions. Albania has announced an EUDI wallet for 2026, even though it is not yet an EU member. This demonstrates the willingness to implement EU standards in advance.

4 EU Large-Scale Pilots: Practical Tests for EUDI Wallet

The large-scale pilots funded by the European Commission play a key role in the development and testing of the EUDI Wallet. Unlike theoretical specifications, they enable testing in real-world application scenarios involving hundreds of organizations from the public and private sectors. The insights from these pilot projects flow directly into the further development of the Architecture and Reference Framework and help identify potential interoperability issues at an early stage.

The European Commission is funding a total of six large-scale pilots with a total budget in the tens of millions of euros through the Digital Europe Programme. Four pilots started in 2023 and are in the final phase, and two more were launched in 2025.

4.1 First generation of pilot projects

POTENTIAL

Coordination	▪ Germany (Federal Ministry of the Interior) ▪ France (Ministère de l'Intérieur)
Consortium	▪ 19 EU Member States + Ukraine ▪ >140 Partners
Duration	▪ December 2022 to the end of 2025
Use Cases	▪ eGovernment-Services (passport application, change of address, tax) ▪ Banking (account opening, KYC) ▪ Telecommunikations (SIM card registration) ▪ Mobile Driving License (digital driver's license) ▪ Qualified Electronic Signature (QES) ▪ Electronic Prescription (cross-border)

POTENTIAL is the largest and broadest-covering of the four original pilot projects. It addresses six key application areas that cover virtually all relevant life situations. The consortium was the first to conduct an innovation competition to evaluate various wallet implementation approaches. The finalist prototypes have been tested in cross-border scenarios since January 2025. This competitive approach is intended to ensure that a

monolithic standard does not emerge, but that different technical implementations remain interoperable.

The project has also worked intensively on the development of verifier solutions. While much attention is focused on the wallet apps themselves, functioning, user-friendly verification solutions for relying parties are essential for the system's acceptance.

EWC – EU Digital Identity Wallet Consortium

Coordination	▪ Sweden (Bolagsverket) ▪ Finland
Consortium	▪ 41 partners, 35 associated partners
Duration	▪ March 2023 to March 2025 (Phase 1) ▪ Extension until 2025
Use Cases	▪ Digital Travel Credentials (digital passport) ▪ Payments (payment method integration) ▪ Organizational Digital Identity (LPID)

The EU Digital Identity Wallet Consortium focuses on three key areas, with the primary focus being the implementation of digital travel documents. The EUDI Wallet is intended to serve as a digital passport that can be used at automated border control systems and for flight bookings.

During Phase 1, EWC gathered extensive insights into the acceptance of digital identity solutions. A key finding is that acceptance varies greatly between member states and depends significantly on digital maturity, political factors, and trust in digital solutions.

The consortium conducted practical interoperability tests early on. Successful cross-border verifications between Swedish and Finnish wallet implementations were achieved as early as 2023, which is considered a proof of concept for the technical feasibility of the European approach.

NOBID – Nordic-Baltic eID Project

Coordination	▪ Norway (Digitaliseringsdirektoratet)
Consortium	▪ 6 countries ▪ >20 partners
Duration	▪ March 2023 to March 2025 (completed)
Use Cases	▪ Payment Authorization ▪ Age Verification

NOBID primarily focuses on two application areas that have immediate everyday relevance. The use of the EUDI Wallet for authorizing account-to-account payments in retail demonstrates how the wallet can serve both to identify the payer and to authenticate the transaction in accordance with PSD2 requirements.

Age verification without revealing the full identity is a prime example of selective disclosure. The merchant only learns "over 18" or "over 21," but not the name, date of birth, or other identity characteristics.

The project has worked intensively with the retail sector. Several retail chains have conducted pilot installations in selected stores to test the customer journey from product selection to age verification and payment processing. A particular focus was on integration with existing payment infrastructures, rather than building parallel systems.

DC4EU – Digital Credentials for Europe

Coordination	▪ No clear leading nation
Consortium	▪ 25 countries + Ukraine ▪ >99 partners
Duration	▪ February 2023 to February 2025 (completed)
Use Cases	▪ Education (digital educational certificates) ▪ Social Security (social security certificates)

Digital Credentials for Europe addresses two areas of high social relevance. The consortium has intensively focused on the verification of credentials originating from a multitude of different issuers (schools, universities, social insurance providers). The challenge lies in establishing a trusted network that enables verifying parties to verify the authenticity and validity of certificates without having to maintain direct relationships with all potential issuers.

The consortium has experimented with the European Blockchain Services Infrastructure, a blockchain-based infrastructure for credential verification developed by the EU. However, the integration of EBSI components led to additional complexity and partially delayed implementation.

The work on the digital EHIC is particularly relevant. The possibility of accessing medical care abroad in the EU via a wallet without having to carry physical cards would have significant practical significance for millions of people.

4.2   Second generation of pilot projects

APTITUDE – Advanced Pilots for Travel Innovation and EUDI Wallet

Coordination	▪ France (Direction interministérielle du numérique)
Consortium	▪ 11 EU Member States + Ukraine ▪ 118 partners
Duration	▪ October 2025 to October 2027 (presumably)
Use Cases	▪ Travel & Mobility (deepening and expansion) ▪ Payments (advanced use cases)

APTITUDE deepens and expands the work of the EWC consortium in two areas. The consortium is launching with the advantage of being able to build on the findings of the first generation. With 118 partners from 11 member states plus Ukraine, APTITUDE is the second-largest consortium after WE BUILD. The broad international participation is intended to ensure that the developed solutions truly function across borders.

The focus on mobile vehicle documents (driver's license, registration certificate) addresses a use case with immediate everyday relevance. In many EU countries, carrying these documents while driving is required by law. A mobile version would provide millions of daily benefits.

WE BUILD – Wallet for European Business Identity and Legal Documentation

Coordination	▪ Netherlands (Kamer van Koophandel - KVK) ▪ Sweden
Consortium	▪ >200 partners
Duration	▪ September 2025 to September 2027
Use Cases	▪ Legal Person Identification Data (LPID) ▪ B2B & B2G Processes ▪ Ultimate Beneficial Owner (UBO) ▪ Power of Attorney ▪ B2C & Payments

WE BUILD is the most ambitious and largest of the large-scale pilots, with over 200 partners. Coordination by the Dutch Chamber of Commerce is a natural fit, as commercial registers are the central source of corporate data.

The focus on business identity addresses a previously under-researched aspect of the EUDI ecosystem. While natural persons are at the center of most discussions, corporate transactions account for a significant portion of the digital economy. The digitalization of processes such as public procurement, business registrations, and cross-border trade transactions promises significant efficiency gains.

The Dutch government has described WE BUILD as a strategic initiative to strengthen the competitiveness of European companies. The kick-off in Amsterdam in September 2025 was attended by high-level officials and was seen as a signal that Europe is also striving for digital sovereignty in the B2B sector.

4.3 Overall findings from the pilot projects

A technical meeting in January 2025, organized by the Dutch LSP Coordination Office with representatives from POTENTIAL, EWC, and DC4EU, revealed key challenges.

All pilot projects faced the problem that the Architecture and Reference Framework and the Reference Implementations were provided late and with insufficient detail. This led the consortia to pursue different technical strategies. EWC opted to make independent implementation decisions early on, POTENTIAL waited for the ARF, and DC4EU built on EBSI components.

Although all pilots share the common goal of developing interoperable EUDI wallet solutions, practical differences exist in versions, implementation scope, and national approaches. Cross-border credential exchange is possible in principle but requires significant harmonization efforts.

The differing member states' requirements regarding the level of trust for wallet registration effectively create different wallet classes. A wallet registered in Italy with video identification may not be accepted for all government services in Germany.

While much development effort has gone into wallet applications, user-friendly, secure verifier solutions remain a bottleneck. Many potential relying parties, especially small and medium-sized enterprises, lack the technical expertise or resources to implement complex verification systems.

The pilot projects have confirmed that the acceptance of the EUDI wallet depends largely on the user experience. Complicated registration processes, unintuitive design, or technical hurdles can lead to resistance, even when mandatory use is required by regulations.

5 Conclusion

The European e-identity landscape has undergone fundamental changes since our 2018 analyses. A fragmented collection of national isolated solutions is transforming into a coordinated, harmonized ecosystem of digital identities. eIDAS 2.0 and the EUDI Wallet are the catalysts of this transformation.

Europe is taking digital sovereignty seriously. While American and Chinese tech giants dominate proprietary identity platforms, Europe is focusing on open standards, interoperability, and user autonomy. The large-scale pilots, with over 600 participating organizations, demonstrate that cross-border digital identity is technically feasible. The challenges lie less in the technology than in governance, user acceptance, and ecosystem development.

Regional differences will persist for the foreseeable future. The Nordic countries remain pioneers, while others are catching up. What is crucial is that all member states follow the same path, at different paces, but in the same direction.

For companies, the introduction of the EUDI Wallet represents both an opportunity and an obligation. The opportunity lies in simplified, secure identification and authentication processes, efficiency gains in KYC and onboarding, and new service options. The obligation arises from the fact that regulated industries must accept the EUDI Wallet starting in November 2027.

For citizens, the EUDI Wallet promises more control over their own data, convenience through the bundling of various forms of identification, and cross-border usability. The challenge lies in striking a balance between data protection and user-friendliness and building trust in new technologies.

Europe is at a turning point. The coming years will show whether the vision of a unified, secure, user-centric digital identity ecosystem will become a reality. The foundations have been laid. Now the real work begins: the transformation of specifications into functioning, everyday solutions.

The story of digital identity in Europe will not end in 2025; it is just beginning its next chapter.

Appendix: Overview of digital identity solutions in Europe 2025

The following overview documents the current state of digital identity solutions in Europe based on a systematic survey conducted between September and October 2025. It forms the empirical basis for the analyses presented in the article and shows the diversity of implementation approaches, governance models, and technical solutions in the individual countries.

Table 1: Overview of digital identity solutions in Europe 2025

Country	Name of Solution	Provider/Operator	Governance	Start	URL
Albania	Albanian National ID Card (biometric)	Aleat / IDEMIA	Public	2009	https://www.idemia.com
Albania	e-Albania Digital ID	IdentiTek (state-owned enterprise) / Ministry of Internal Affairs	Public	2026 (planned)	https://me.rks-gov.net
Belarus	Belarus Biometric Passport	Ministry of Internal Affairs / Emperor Technology / X Infotech	Public	2021	https://www.mvd.gov.by
Belarus	Belarus ID Card (biometric)	Ministry of Internal Affairs / Emperor Technology / X Infotech / RUE Cryptotech	Public	2021	https://www.mpt.gov.by
Belarus	BISRS (Belarusian Integrated Service and Settlement System)	Ministry of Communications and Informatization	Public	2021	https://www.mpt.gov.by/ru/o-bisrs
Belarus	E-Pasluga Portal	National Center for Electronic Services (NCES)	Public	2021	https://e-pasluga.by
Belarus	Electronic Digital Signature (EDS)	National Center for Electronic Services (NCES)	Public	Before 2021	https://pki.gov.by
Belgium	.beID (national eID card)	Belgian government	Public	2004	https://eid.belgium.be/
Belgium	itsme	Belgian Mobile ID (Banks & Telcos)	PPP	2017	https://www.itsme-id.com/
Belgium	National ID Card (Foreigners & Citizens)	Belgian government	Public	2004	https://eid.belgium.be/
Belgium	National EUDI Wallet	Belgian government	Public	2025	
Bosnia and Herzegowina	BiH Biometric ID Card	IDDEEA	Public	2013	https://www.iddeea.gov.ba
Bosnia and Herzegowina	e-IDDEEA Digital ID App	IDDEEA (Agency for Identification Documents, Registers and Data Exchange)	Public	2025	https://www.iddeea.gov.ba
Bosnia and Herzegowina	Qualified Electronic Signature (QES)	IDDEEA	Public	2024	https://www.iddeea.gov.ba
Bulgaria	Evrotrust eID	Evrotrust Technologies AD	Private	2016	https://evrotrust.com/
Bulgaria	National eID-Card	Bulgarian government	Public	2009	
Denmark	CitizenKey	CitizenKey Foundation (planned)	Private	2017-2018	
Denmark	MitID	Danish Digital Government Agency	PPP	2021	https://www.mitid.dk/
Denmark	MitID Erhverv	Danish Digital Government Agency	PPP	2022	https://www.mitid-erhverv.dk/
Denmark	National EUDI Wallet	Nine (Trifork Group)	Public	2026	
Germany	AusweisIDent	Federal Printing Office	Public	2017	https://www.bundesdruckerei.de/
Germany	Authada	Authada GmbH	Private	2018	https://www.authada.de/
Germany	BundID	Federal Ministry of the Interior and Home Affairs (BMI)	Public	2019	https://id.bund.de/
Germany	ecsec	ecsec GmbH	Private	2010	https://www.ecsec.de/
Germany	ELSTER Unternehmenskonto	Financial Administration/ELSTER (Public)	Public	2023	https://info.mein-unternehmenskonto.de/
Germany	esatus AG	esatus AG	Private	2002	https://www.esatus.com/
Germany	Governikus	Governikus KG	Private	2005	https://www.governikus.de/
Germany	Helix ID	Helix ID GmbH	Private	2020	
Germany	IDnow	IDNow GmbH	Private	2014	https://www.idnow.io/
Germany	Lissi ID	Lissi GmbH	Private	2019	https://www.lissi.id/
Germany	msg mySaveID	msg systems AG	Private	2019	
Germany	National EUDI Wallet	SPRIND, BMDS, BMI, BSI, Federal Printing Office, Fraunhofer AISEC, PwC	Public	2026-2027	https://www.sprind.org/eudi-wallet
Germany	Nect	Nect GmbH	Private	2017	https://nect.com/
Germany	NetID	NetID GmbH (Publisher Alliance)	Private	2018	https://netid.de/
Germany	Personalausweis (eID-Function)	Federal Ministry of the Interior	Public	2010	https://www.personalausweisportal.de/

Country	Name	Provider	Type	Year	URL
Germany	PostID	Deutsche Post AG	Private (close to the state)	1996	https://www.deutschepost.de/postident
Germany	Sign8	Sign8 GmbH	Private	2017	
Germany	Verimi	Verimi GmbH	Private	2017	https://verimi.de/
Germany	WebID	WebID Solutions GmbH	Private	2012	https://www.webid-solutions.de/
Germany	wwWallet	Consortium (Sunet, GUnet, Yubico)	Private	2024	
Estonia	Diplomatic ID Card	Estonian Ministry of the Interior (RIA)	Public	2002	
Estonia	e-Residency	Estonian Ministry of the Interior (RIA)	Public	2014	https://www.e-resident.gov.ee/
Estonia	ID-Kaart / Digi-ID	Estonian Ministry of the Interior (RIA)	Public	2002	https://www.id.ee/
Estonia	Mobiil-ID (Mobile-ID)	Estonian Mobile Operators	Private	2007	https://www.id.ee/mobiil-id/
Estonia	National EUDI Wallet	Estonian Government	Public	2026-2027	
Estonia	Smart-ID	SK ID Solutions	Private	2016	https://www.smart-id.com/
Estonia	Veriff	Veriff	Private	2015	https://www.veriff.com/
EU (LSP)	APTITUDE	Consortium (118 Partners)	PPP	2025	
EU (LSP)	DC4EU (Digital Credentials for Europe)	Consortium (99 Institutions)	PPP	2023	
EU (LSP)	EWC (EU Digital Identity Wallet Consortium)	Consortium (41 P, 35 AP)	PPP	2023	
EU (LSP)	NOBID	Consortium (20+ Partners)	PPP	2023	
EU (LSP)	POTENTIAL	Consortium (140+ Partners)	PPP	2023	
EU (LSP)	WE BUILD	Consortium (200+ Partners)	PPP	2025	
Finland	Findy	Findy Cooperative	PPP	2020	https://findy.fi/
Finland	Finnish Trust Network (FTN)	Finnish Government	Public	2010	
Finland	Henkilökortti (National ID Card)	Finnish Government	Public	1999	
Finland	National EUDI Wallet	Digital and Population Data Services Agency (DVV)	Public	2026	https://dvv.fi/en/european-digital-identity-wallet
France	Aevatar	Aevatar SAS	Private	2018	
France	Ameli	Assurance Maladie	Public	2009	https://www.ameli.fr/
France	Carte Vitale (App)	French Government	Public	2025	
France	France Identité (App)	French Ministry of the Interior	Public	2024	https://france-identite.gouv.fr/
France	FranceConnect	DINSIC	Public	2016	https://franceconnect.gouv.fr/
France	Identité Numérique (La Poste)	La Poste	Public	2019	
France	IDnow (ehem. Ariadnext)	IDnow	Private	2012	https://www.idnow.io/
France	Impots.gouv	French Government	Public	2001	https://www.impots.gouv.fr/
France	Mobile Connect	Orange S.A.	Private	2014	
France	Netheos	Netheos	Private	2011	
Greece	Gov.gr Wallet	Greek Ministry of Digital Governance	Public	2022	https://wallet.gov.gr/
Greece	National EUDI Wallet	Greek Government	Public	2026	
Greece	Taxisnet	Greek Tax Authority	Public	2002	https://www.gsis.gr/
Great Britain	Digi.me	Digi.me Ltd.	Private	2009	https://digi.me/
Great Britain	GOV.UK One Login	Government Digital Service (GDS)	Public	2022	https://www.sign-in.service.gov.uk/
Great Britain	GOV.UK Verify (historisch)	GDS (with IdPs such as Digidentity, Post Office)	PPP	2016	
Great Britain	OneID	OneID	Private	2018	https://www.oneid.com/
Great Britain	Onfido	Entrust (acquisition)	Private	2012	https://onfido.com/
Great Britain	Yoti	Yoti Ltd.	Private	2014	https://www.yoti.com/
Ireland	MyGovID	Government of Ireland	Public	2017	https://www.mygovid.ie/
Ireland	National EUDI Wallet	Irish Government	Public	2026-2027	
Iceland	Auðkenni	Auðkenni ehf. (banking consortium)	Private	2008	https://www.audkenni.is/
Iceland	Authenteq	Authenteq	Private	2016	
Iceland	National EUDI Wallet	Icelandic Government	Public	2027	
Italy	CIE (Carta d'Identità Elettronica)	Italian Ministry of the Interior	Public	2016	https://www.cartaidentita.interno.gov.it/
Italy	IT Wallet	Italian Ministry of Digitalization (via IO App)	Public	2024	https://io.italia.it/
Italy	SPID	12 accredited IdPs	PPP	2016	https://www.spid.gov.it/
Kosovo	eID Kosovo Platform	Ministry of Economy / EU4Innovation Project	Public	2024	https://me.rks-gov.net
Kosovo	Kosovo Biometric ID Card	Ministry of Internal Affairs	Public	2013	https://www.mpb.rks-gov.net
Croatia	e-Grač'ani	Croatian Government	Public	2014	https://gov.hr/
Croatia	eOI / eOsobna + mToken (Mobile.ID)	Croatian Government	Public	2013	

Country	Solution	Provider	Type	Year	URL
Croatia	Identyum	Identyum d.o.o.	Private	2018	https://www.identyum.com/
Latvia	eID Card (Personas apliecč«ba)	Latvian Government	Public	2012	https://www.latvija.lv/
Latvia	eParaksts (Mobile)	LVRTC	PPP	2010	https://www.eparaksts.lv/
Latvia	National EUDI Wallet	Latvian Government	Public	2026-2027	
Latvia	Verifeye Online	Verifeye online	Private	2017	
Liechtenstein	eID+ (LLV)	Liechtenstein State Administration	Public	2009	https://www.llv.li/
Lithuania	eID Card (Asmens tapatybč—s kor- telč—)	Lithuanian Ministry of the Interior	Public	2009	
Lithuania	Mobile ID (Mobilusis parašas)	Lithuanian Mobile Operators	Private	2008	
Lithuania	Ondato	Ondato	Private	2019	https://ondato.com/
Lithuania	Smart-ID	SK ID Solutions	Private	2016	https://www.smart-id.com/
Luxembourg	LuxTrust	LuxTrust S.A.	PPP	2005	https://www.luxtrust.com/
Luxembourg	National ID Card	Luxembourg Government	Public	2014	
Malta	eID (myGov.mt)	Identity Malta Agency	Public	2017	https://www.mygov.mt/
Montenegro	Montenegrin National ID Card (3rd Generation)	Ministry of the Interior / Mühlbauer ID Services GmbH / S&T	Public	2020	https://www.gov.me
Montenegro	National Identity Scheme	Ministry for Public Administration	Public	2019-2020	https://www.gov.me
Netherlands	Animo Easy-PID	Animo Solutions B.V.	Private	2024	https://animo.id/
Netherlands	DigiD	Logius	Public	2005	https://www.digid.nl/
Netherlands	Digidentity	Digidentity B.V.	Private	2005	https://www.digidentity.eu/
Netherlands	eHerkenning	Accredited Privatee Providers	PPP	2010	https://www.eherkenning.nl/
Netherlands	Fourthline	Fourthline B.V.	Private	2017	https://www.fourthline.com/
Netherlands	iDIN	Betaalvereniging Nederland (Banks)	Private	2013	https://www.idin.nl/
Netherlands	National EUDI Wallet	Dutch Government / Logius	Public	2026-2027	https://www.nldigitalgovernment.nl/
Netherlands	SIDN	SIDN B.V.	Private	1996	https://www.sidn.nl/
Netherlands	Yivi (ehem. IRMA)	SIDN B.V.	Private	2016	https://www.yivi.app/
North Macedonia	e-Government Portal (por- tal.gov.mk)	Government of North Macedonia	Public	2020	https://portal.gov.mk
North Macedonia	ELI App (Digital ID Wallet)	Ministry of Digital Transformation	Public	2024	https://portal.gov.mk
North Macedonia	ID Service (operated by Evrotrust)	Mastercard / Evrotrust / MISA (Ministry of Infor- mation Society and Administration)	PPP	2021	https://evrotrust.mk / https://eid.com.mk
Norway	BankID	Finans Norge (banking sector)	Private	2003	https://www.bankid.no/
Norway	Buypass	Buypass AS	Private	2001	https://www.buypass.no/
Norway	Commfides	Commfides AS	Private	2005	https://www.commfides.com/
Norway	MinID	Directorate for economic development and eco- nomics (DFØ)	Public	2005	https://www.minid.no/
Norway	National EUDI Wallet	Norwegian government	Public	2027	
Norway	Signicat	Signicat AS	Private	2007	https://www.signicat.com/
Austria	ID Austria	Federal Ministry of Finance/Digitalization	Public	2023	https://www.id-austria.gv.at/
Austria	National EUDI Wallet (Valera)	A-SIT, Austrian Government	Public	2024-2025	https://a-sit-plus.github.io/
Austria	SignD	SignD Identity Solutions GmbH	Private	2017	
Poland	eDO App / eDowód	Polish Government	Public	2019	
Poland	mObywatel	Polish Government	Public	2018	https://www.gov.pl/mobywatel
Poland	Profil Zaufany (Vertrauensprofil)	Polish Government	Public	2013	https://www.gov.pl/web/profil-zaufany
Portugal	Autenticação.gov	AMA	Public	2007	https://autenticacao.gov.pt/
Portugal	Cartão de Cidadão (National ID Card)	Portuguese Government	Public	2007	https://www.autenticacao.gov.pt/
Portugal	Chave Móvel Digital (Digital Mo- bile Key)	AMA	Public	2014	https://www.autenticacao.gov.pt/cmd
Portugal	SCAP (Professional Attributes Cer- tification System)	AMA	Public	2015	
Romania	Carte Electronicčf de Identitate	Romanian Government	Public	2021	
Romania	ROeID	Romanian Government	Public	2021	https://roeid.ro/
Sweden	BankID	BankID (banking consortium)	Private	2003	https://www.bankid.com/
Sweden	DIGG	DIGG (Agency for Digital Government)	Public	2018	https://www.digg.se/
Sweden	EFOS (E-identitet för offentlig sektor)	Försäkringskassan	Public	2016	https://www.forsakringskassan.se/efos
Sweden	Freja eID	Freja eID Group AB	Private	2013	https://frejaeid.com/
Sweden	iGrant.io	iGrant.io (LCubed AB)	Private	2017	https://www.igrant.io/

Country	Solution	Provider	Type	Year	URL
Sweden	National EUDI Wallet	Swedish Government / DIGG	Public	2026-2027	
Sweden	Svenska Pass (eID)	Swedish Government	Public	2005	
Switzerland	DeepCloud / DeepID	DeepCloud AG	Private	2018	
Switzerland	Heidi	Ubique Innovation AG	Private	2024	
Switzerland	mesoneer	mesoneer AG	Private	2012	https://www.mesoneer.io/
Switzerland	SwissID	SwissSign AG (Post, SBB, Swisscom, etc.)	Private (close to the state)	2017	https://www.swissid.ch/
Switzerland	swiyu (E-ID Wallet)	Federal Office of Police (fedpol) / Federal Office for Information Technology and Telecommunication (BIT)	Public	Q3/2026 (planned)	https://www.eid.admin.ch/
Switzerland	TWINT (Platform)	TWINT AG (BCV, PostFinance, Raiffeisen, UBS, Zürcher Kantonalbank, SIX, Worldline)	Private	2016, E-ID integration planned	https://www.twint.ch/
Serbia	eUprava	Serbian Government	Public	2009	https://euprava.gov.rs/
Slovakia	Electronic ID-Card (eID)	Slovak Government	Public	2013	
Slovakia	National EUDI Wallet	Slovak Government	Public	2026-2027	
Slovakia	Slovensko v mobile	Slovak Government	Public	2017	
Slovenia	eOsebna izkaznica (eID-Card)	Slovak Government	Public	2014	
Slovenia	National EUDI Wallet	Slovenian Government	Public	2026-2027	
Slovenia	SI-Pass / smsPASS	Slovenian Government	Public	2006	
Slovenia	SIGEN-CA / SIGOV-CA	Slovenian Government	Public	2000	
Slovenia	slovensko.si / SI-PASS Portal	Slovenian Government	Public	2008	https://www.slovenija.si/
Spain	BakQ (B@kQ)	Slovenian Government	Public	2005	https://www.izenpe.eus/
Spain	Cartera Digital Beta	Slovenian Government	Public	2024	
Spain	Cl@ve	Slovenian Government	Public	2014	https://clave.gob.es/
Spain	DNIe (National ID Card)	Slovenian Government	Public	2006	
Spain	idCAT / idCAT Mòbil	IZENPE (Basque Country)	Public	2003	https://identitats.aoc.cat/
Spain	Validated ID	Spanish Government	Private	2014	https://www.validatedid.com/
Czech Republic	Bankovní identita (BankID)	Spanish Ministry of the Interior	Private	2017	https://www.bankovni-identita.cz/
Czech Republic	CZ.NIC / mojeID	Spanish Government	Private	2010	https://www.mojeid.cz/
Czech Republic	eDoklady	Consorci AOC (Catalonia)	Public	2022	https://www.edoklady.cz/
Czech Republic	Mobilní eGovernment klíč	Validated ID S.L.	Public	2016	
Czech Republic	National eID-Card (eObč anka)	Banking Consortium	Public	2012	
Türkiye	e-Devlet Kapısı (E-Government-Portal)	CZ.NIC z.s.p.o.	Public	2008	https://www.turkiye.gov.tr/
Türkiye	T.C. Kimlik Kartı (National ID Card)	Czech Government	Public	2017	
Türkiye	TÜRKTRUST	Ministry of the Interior	Private	2005	https://www.turktrust.com.tr/
Ukraine	BankID NBU	Czech Government	PPP	2018	https://id.gov.ua/
Ukraine	Diia (ДῐЯ)	Turkish Government	Public	2020	https://diia.gov.ua/
Hungary	eSzemélyi (national eID card)	Turkish Government	Public	2016	
Hungary	National EUDI Wallet	TürkTrust A.łż.	Public	2024	
Cyprus	CyGov eID	National Bank of Ukraine	Public	2020	https://www.cygov.gov.cy/

Sources

1   ADAC, Führerschein 2025: Um diese wichtigen Änderungen geht es, Oktober 2025, https://www.adac.de/verkehr/rund-um-den-fuehrerschein/fuehrerscheinaenderungen-2024/

2   Auto Motor und Sport, EU hat abgestimmt, das sind die neuen EU-Führerschein-regeln, Oktober 2025, https://www.auto-motor-und-sport.de/verkehr/fuehrerschein-novelle-das-sind-die-neuen-eu-fuehrerscheinregeln/

3   Bundesdruckerei, Die EUDI-Wallet: sicher digital identifizieren in Europa, 2024, https://www.bundesdruckerei.de/de/innovation-hub/eudi-wallet-sicher-digital-identifizieren-europa

4   Bundesministerium des Innern und für Heimat, Die eIDAS-Verordnung - EUDI-Wallets und ihre Bedeutung für europäische digitale Identitäten, 2025, https://www.digitale-verwaltung.de/Webs/DV/DE/digitale-identitaeten/eidas-2-0/

5   Bundeskanzleramt Österreich, eGovernment Monitor 2025: Österreich weiterhin an der Spitze im D-A-CH-Vergleich, September 2025, https://www.bundeskanzleramt.gv.at/bundeskanzleramt/nachrichten-der-bundesregierung/2025/09/egovernment-monitor-2025-oesterreich-weiterhin-an-der-spitze-im-d-a-ch-vergleich.html

6   DC4EU, Digital Credentials for Europe - Project Overview, 2024, https://www.dc4eu.eu

7   e-Estonia Briefing Centre, e-Estonia - Digital Society, 2024, https://e-estonia.com

8   EU Digital Identity Wallet Consortium (EWC), About the Consortium, 2024, https://eudiwalletconsortium.org

9   Europäische Kommission, Commission Implementing Regulation (EU) 2024/2979 on the integrity and core functionalities of European Digital Identity Wallets, 28.11.2024, https://eur-lex.europa.eu/eli/reg_impl/2024/2979/oj

10 Europäische Kommission, Commission Implementing Regulation (EU) 2024/2982 on the protocols and interfaces of European Digital Identity Wallets, 28.11.2024, https://eur-lex.europa.eu/eli/reg_impl/2024/2982/oj

11 Europäische Kommission, EU Digital Identity Wallet - Pilot Implementation, 2024, https://digital-strategy.ec.europa.eu/en/policies/eudi-wallet-implementation

12 Europäische Kommission, The European Digital Identity Wallet Architecture and Reference Framework, Version 1.4, Mai 2024, https://digital-
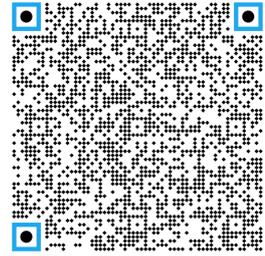
strategy.ec.europa.eu/en/library/european-digital-identity-wallet-architecture-and-reference-framework

13 Europäische Union, Verordnung (EU) 2024/1183 zur Änderung der Verordnung (EU) Nr. 910/2014, 30.04.2024, https://eur-lex.europa.eu/legal-content/DE/TXT/?uri=CELEX:32024R1183

14 Identity.com, eIDAS 2.0: Redefining Digital Identity in The EU, September 2025, https://www.identity.com/eidas-2-0-redefining-digital-identity-in-the-eu/

15 IDnow, Deutschlands Weg zur digitalen Identität, Juli 2025, https://www.idnow.de/blog/deutschlands-weg-zur-digitalen-identitaet/

16 Initiative D21 e.V., eGovernment Monitor 2024, September 2024, https://initiatived21.de/egovernment-monitor/

17 Initiative D21 e.V., eGovernment Monitor 2025, September 2025, https://initiatived21.de/egovernment-monitor/

18 Kuppinger Cole, A Closer Look at eIDAS 2.0 and the EU Digital Identity Wallet, Januar 2024, https://www.kuppingercole.com/blog/a-closer-look-at-eidas-2-0

19 NFCW, EU to begin large-scale European Digital Identity Wallet pilots, Dezember 2022, https://www.nfcw.com/2022/12/eu-to-begin-large-scale-european-digital-identity-wallet-pilots/

20 NOBID Consortium, Kick-off for NOBID and Large Scale Piloting, Mai 2023, https://www.nobidconsortium.com

21 Payment and Banking, Ausblick: Digitale Identität im Jahr 2024, Dezember 2023, https://paymentandbanking.com/digitale-identitaet-2024/

22 POTENTIAL Consortium, Technical Insights from the first EUDI wallet pilots, Januar 2025, https://www.digital-identity-wallet.eu/news/

23 Sphereon, The new EU eIDAS 2.0 regulation timeline, Mai 2025, https://sphereon.com/news-and-insights/the-new-eu-eidas2-regulation-timeline/

24 Tink, eIDAS 2.0: Transforming EU Digital Identity, November 2024, https://tink.com/blog/open-banking/eidas-eu-digital-identity-wallet/

25 Utimaco, eIDAS 2.0 and the EU Digital Identity Wallet - Status Quo, Mai 2025, https://utimaco.com/news/blog-posts/eidas-20-and-eu-digital-identity-wallet-status-quo

26 Various solutions from European countries, see Table 1.

Authors

Dr. Andreas Windisch is Managing Director at asquared. As a certified computer scientist and with a doctorate in engineering, he acted in leading positions in automotive, technology and consulting firms and disposes of many years of experience in the field of IT transformation management - especially in the banking and financial services sector.

About asquared

Asquared is a Berlin-based consulting firm. Our work focuses on developing practical solutions for the regulatory, technologically and/or socially induced change, associated with direct application and confirmation in an industrial environment.

Our attention is focused on business and technology and their interaction. Reaching from the reorientation of strategies, over the (re)design of products and services to the operationalization - our work focuses on shaping change. On all levels.

We present selected insights of our theoretic and practical research work to a broader audience in the form of publications and lectures.

asquared GmbH

Pappelallee 78/79

10437 Berlin - Deutschland

Phone   +49 (0) 30 22 66 79 60

E-Mail   contact@asquared.team

w3   asquared.company

B   asquared.blog

     twitter.com/asquaredgmbh

     instagram.com/asquaredgmbh

in   linkedin.com/company/asquared