PILOTING EUDI x DPP

A pilot for integrating digital identity systems and the digital product passport

STRGL

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Partnering with the Finnish Tax Administration, STRGL explores the compatibility of organizational digital identities and digital product passports (DPPs) in a technical pilot.

EUROPEAN DIGITAL IDENTITY

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A brief history of European digital identities: national eID schemes

Before the advent of cross-border digital identities, Member States developed independent digital identity (eID) schemes with varying levels of applicability.*



Estonia

A global leader in digital identity, Estonia allows its citizens to access **over 99 % of public services online**, including voting, tax filing, medical services, public transport, and education. First launched in the **early 2000s**, the e-Estonia eID is also widely used in the private sector. **Since 2012, Estonia has utilized blockchain technology** for data integrity in a growing number of state institutions, including the national business registry.



Finland

Launched in **2017**, the Suomi.fi digital identification system allows Finnish citizens to authenticate themselves through digital means such as banking credentials and mobile ID. The Suomi.fi data exchange layer facilitates secure data transference between public and private services. **The system aligns with the requirements presented by the eIDAS Regulation (p. 6).**

*In addition to Estonia and Finland (the latter of which enhanced the digitalization of IDs in reaction to eIDAS), other notable early national digital identity systems include those launched in Belgium (2004) and Spain (2006), both of which facilitate digital authentication and signature capabilities.

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A brief history of European digital identities: cross-border schemes

To facilitate cross-border services, the EU has introduced pan-European digital identification schemes. The more recent of the two, the EUDI wallet, plays a crucial part in the EU's Digital Decade initiative, which strives to make the EU a global leader in data economy and digitalization by 2030.

The eID (electronic identification) network

Introduced by the **eIDAS Regulation** (p. 6), the eID network refers to interoperable national electronic identification systems. While eIDAS required the development of a technology-neutral framework and introduced specified criteria, the Regulation did not mandate the creation of eIDs. Consequentially, the network turned out fragmented, stunting its widespread adoption and scaling to the private sector.

The European Digital Identity Wallet (EUDIW)

EIDAS2 (sometimes called the EUDI Regulation), adopted in 2024 (p. 6), builds on the eIDAS Regulation by necessitating the creation and utilization of **European Digital Identity Wallets** in both the public and private sectors.

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A legislative overview of the European digital identity

Abbreviation	Name	Summary	Adopted*	In force**
eIDAS	Regulation on electronic identification and trust services	• Sought to establish cross-border electronic identification (eID) usage, emphasizing trust services requiring security and verifiability • Required the mutual recognition of eIDs issued by Member States • Did not mandate the creation of national eID schemes, which resulted in discrepancies between countries and, consequentially, stunted scaling	2014	2016
eIDAS2/EUDI	Regulation on electronic identification and trust services 2/The European Digital Identity Regulation	• Amends the eIDAS Regulation by ◦ improving the current framework for the European digital identity ◦ extending the requirements to the private sector • Member States will be mandated to provide citizens and businesses with digital wallets.	20.5.2024	2026***

*Adopted by the European Parliament
**In national law
***Estimate. Member States must provide European Digital Identity Wallets to their citizens within 24 months from the Implementing Acts' adoption. The Acts outline technical specifications and certifications. They will be adopted within 6 to 12 months from the Regulation's approval.

DIGITAL PRODUCT PASSPORT

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What is the digital product passport?

The digital product passport (DPP) is a digital solution that collects and displays information about the environmental impacts, raw materials, and safety of products. Read more about the DPP in the context of the textile sector **here**.

What is it?

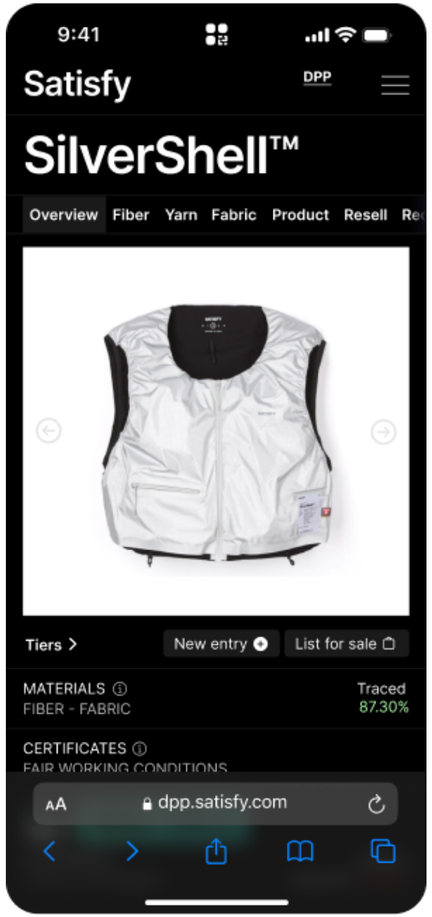
As its name suggests, the DPP is a digital representation of a physical product, collecting and displaying product information for various stakeholders across the product's value chain. The DPP will be attached to the physical item via a data carrier, most likely a QR code.

Why is it needed?

As required by the **Ecodesign for Sustainable Products Regulation (ESPR) expected to be adopted in 2024**, the EU strives to enhance the traceability and transparency of value chains with the DPP. The initiative aims to promote circularity and sustainability.

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What is the connection between the EUDI and the DPP?



The successful integration of EUDI and DPP systems represents a leap ahead of the pending requirements and anticipates the harmonization of data spaces across initiatives.

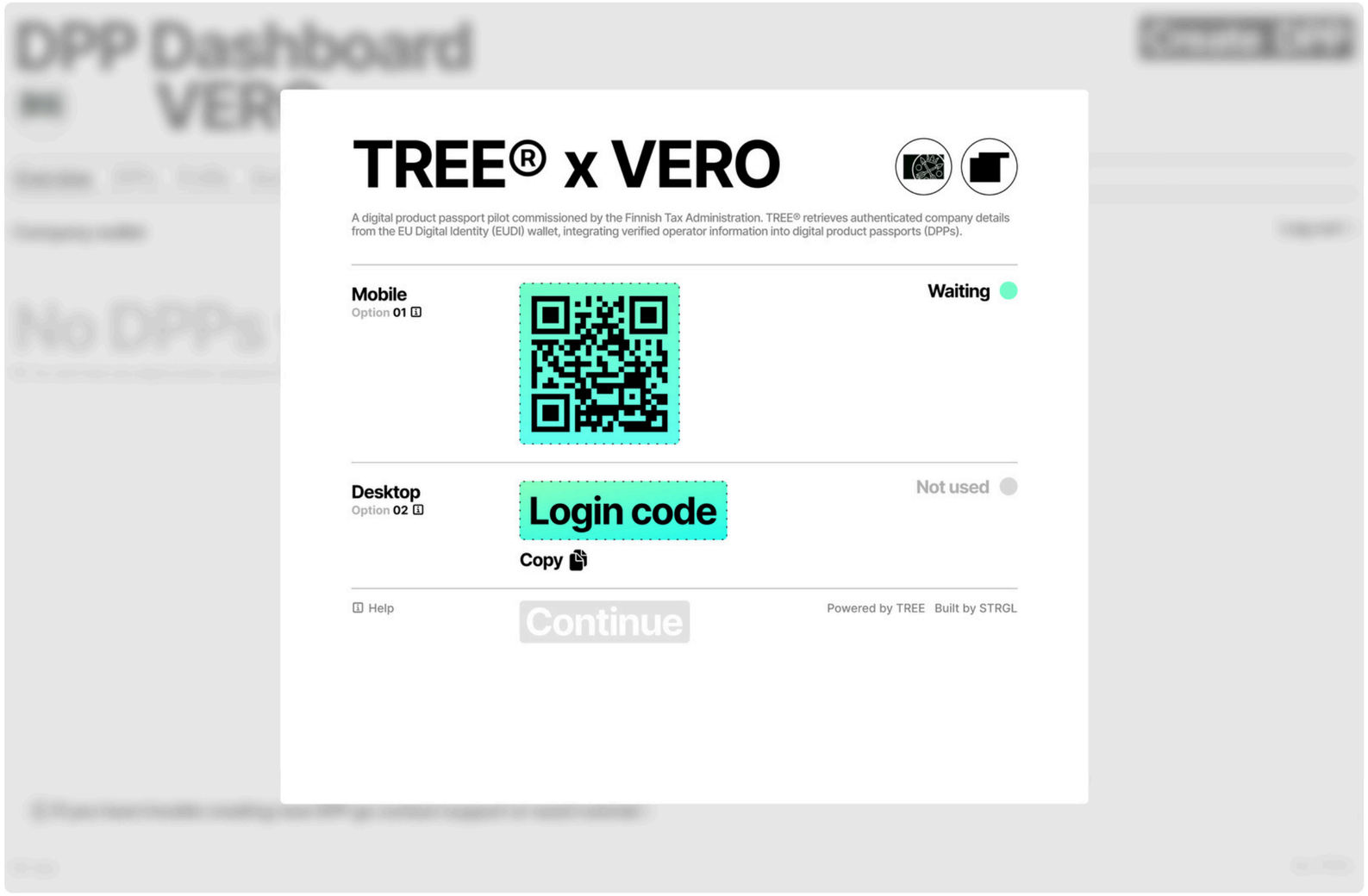
As central players in the EU's agenda for the Green Transition, enhanced digitalization, and the creation of a unified data economy, the DPP and the EUDI share similar technical performance requirements and implementation schedules.

The ESPR's requirement for cross-compatible and verifiable operator information shares the means and incentives of the eIDAS2 Regulation. Cross-system automation is a determining factor for the widespread and scalable adoption of DPPs. The ESPR calls for the accessibility and integrity of operator data associated with a product's value chain, presented in the DPP.

TECHNICAL PILOT

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EUDI wallet login process options in the pilot environment.

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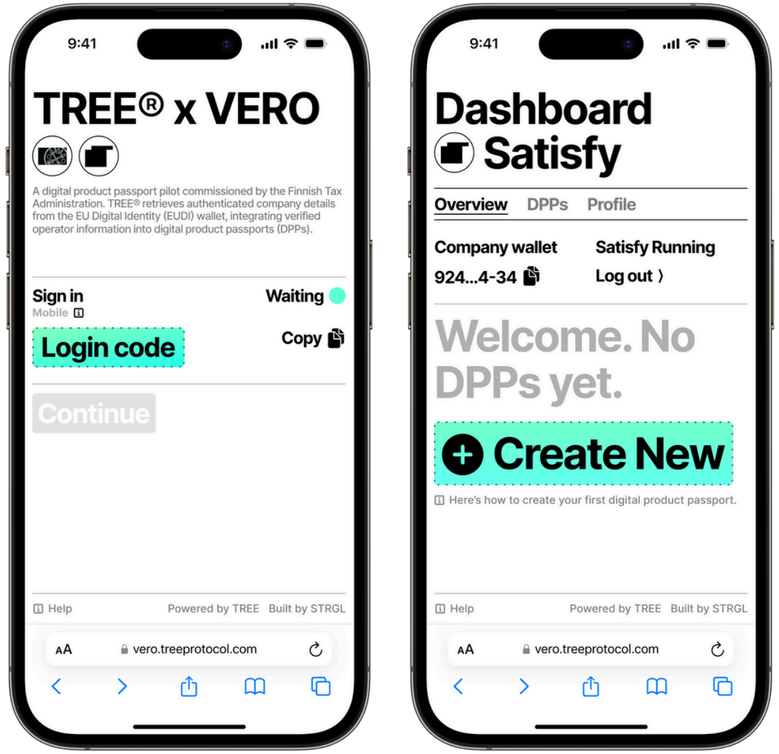
Key components of the pilot

The integrity of operator information is among the requirements for the DPP. The pilot enables the creation of an operator-specific decentralized wallet, allowing the systematic fetching of operator information.

MiniSuomi	The previously established MiniSuomi demo environment houses digitized company information.
The pilot system	Based on their business IDs, decentralized digital (onchain) wallets are created for each company featured in the MiniSuomi environment. Soulbound Tokens (SBTs) – non-transferrable designators of ownership and identity – are assigned to each wallet.
TREE®	Based on the SBTs, the TREE® infrastructure fetches company information, which is automatically filled for each DPP published by the company. The DPP and the associated company information is then displayed in a public interface.

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Process description



This pilot demonstrates an ESPR-compliant, onchain DPP compatible with decentralized corporate digital identity wallets.

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1 - The company creates an offchain wallet in the Walt.id environment

2 - The Finnish Patent and Registration Office (PRH) issues a Know Your Customer (KYC) certificate to an offchain wallet in a Verifiable Credential (VC) format

3 - The company registers for the DPP pilot environment with the Walt.id wallet

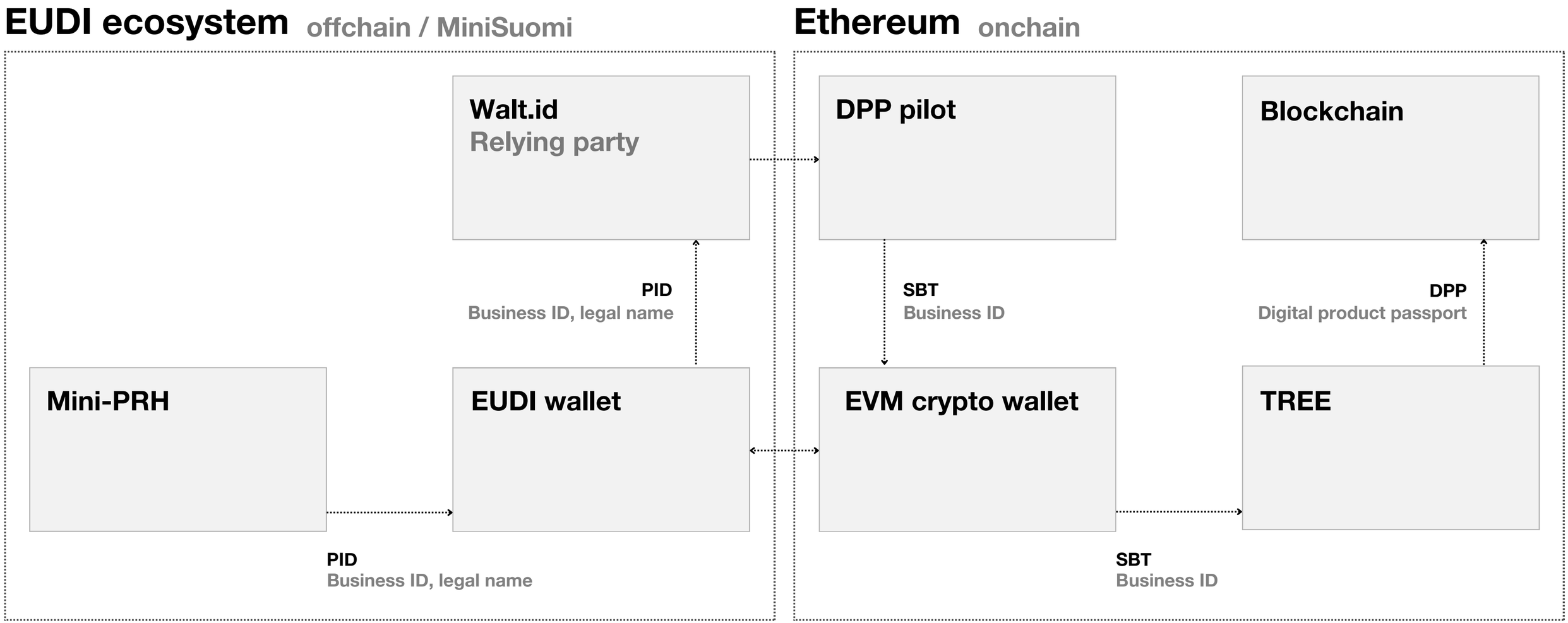
4 - The environment creates an onchain wallet for the user in the backend

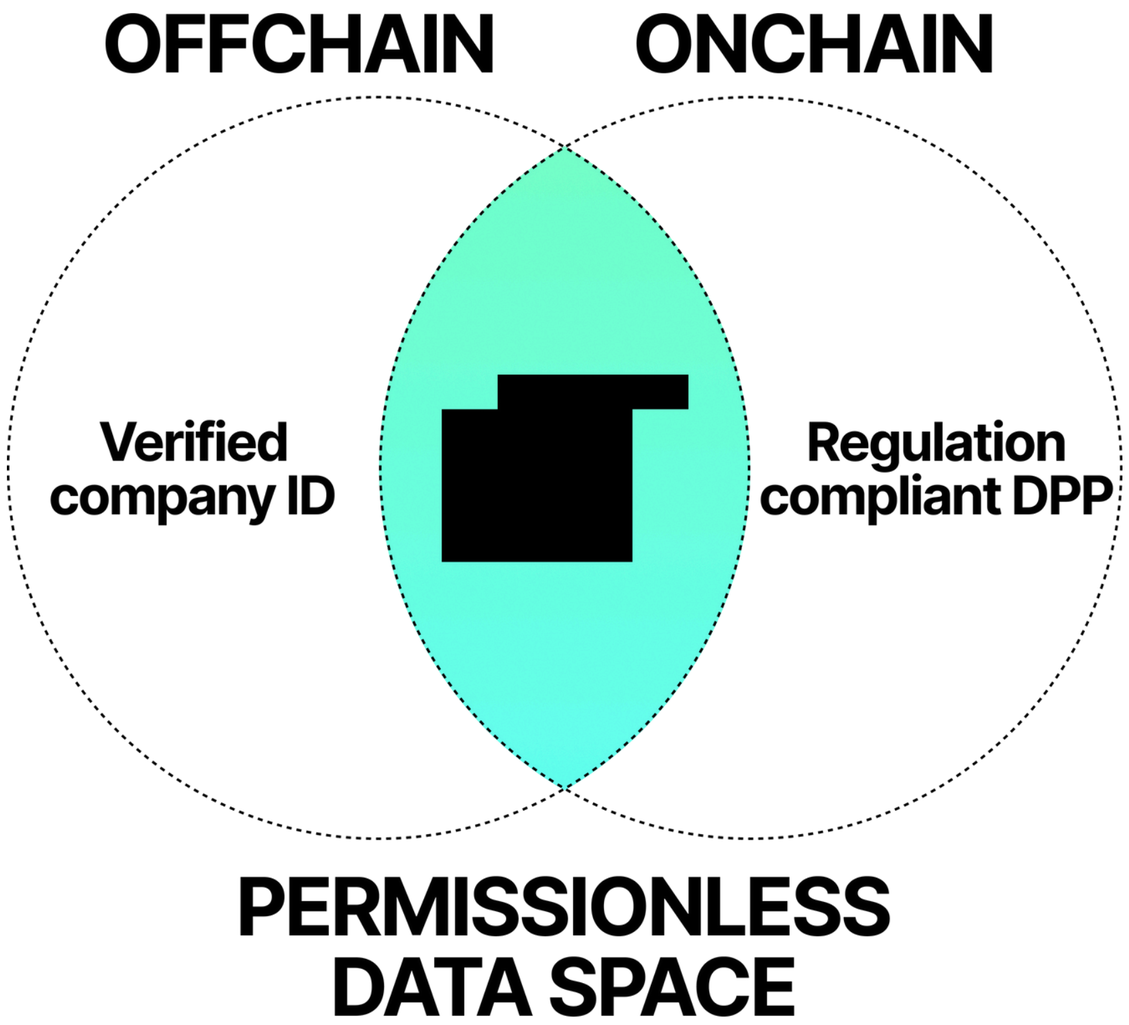
5 - The environment duplicates the exiting VC KYC data to an onchain wallet in the SBT format

6 - The company creates a demo product and publishes data in the SBT-signed onchain DPP format

7 - The company can view the published DPP and its onchain proof in the demo environment

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EUDI ecosystem
offchain / MiniSuomi
Ethereum
onchain
Walt.id
Relying party
DPP pilot
Blockchain
PID
Business ID, legal name
SBT
Business ID
DPP
Digital product passport
Mini-PRH
EUDI wallet
EVM crypto wallet
TREE
PID
Business ID, legal name
SBT
Business ID


OFFCHAIN
ONCHAIN
Verified company ID
Regulation compliant DPP
PERMISSIONLESS DATA SPACE

Pilot stakeholders

Real Time Economy

The Real-Time Economy project is building a national digital ecosystem for business actors. The project's vision is to establish cross-compatible digital systems in the Nordic countries by 2030.

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Specializing in decentralized technologies and the data economy, the R&D studio STRGL is piloting a solution integrating the digital product passport and the European corporate digital identity wallet.

TREE®

The pilot is built on the decentralized knowledge graph protocol TREE® to generate ESPR-compliant digital product passports, including a strong corporate identity in accordance with the eIDAS2 Regulation.

United Nations

TREE® utilizes the UN's UNTP data model for digital product passport data. The model ensures interoperability and prepares pilot companies for upcoming DPP standards.

WHAT'S NEXT?

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Building a harmonized data economy

This pilot paves the way for emerging opportunities enabled by the seamlessness of onchain and offchain wallets and digital identities.

ESPR-compliant tokenized DPPs

The pilot demonstrates the use of blockchain at the interface of digital product passports and European digital identities. Tokenized product passports offer significant opportunities for circularity, data economy growth, and innovation. The project's results are freely available to European and international actors, and we encourage their utilization in future endeavors.

Read our study with Sitra on textile value chain data and tokenized DPPs.

Tokenized Data Economy

The project's broader impact has been to examine the utilization of a decentralized non-fungible token format to achieve legislative compliance (of which the DPP represents just the tip of the iceberg). An open and constructive debate between institutions, authorities, and legislators drives research and piloting toward wider data economy adoption. Standards for cross-platform identities, currencies, and data can be achieved through tokenization.

Read our insights into the European Union's evolving strategy with DLT.

Ready to talk more?

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