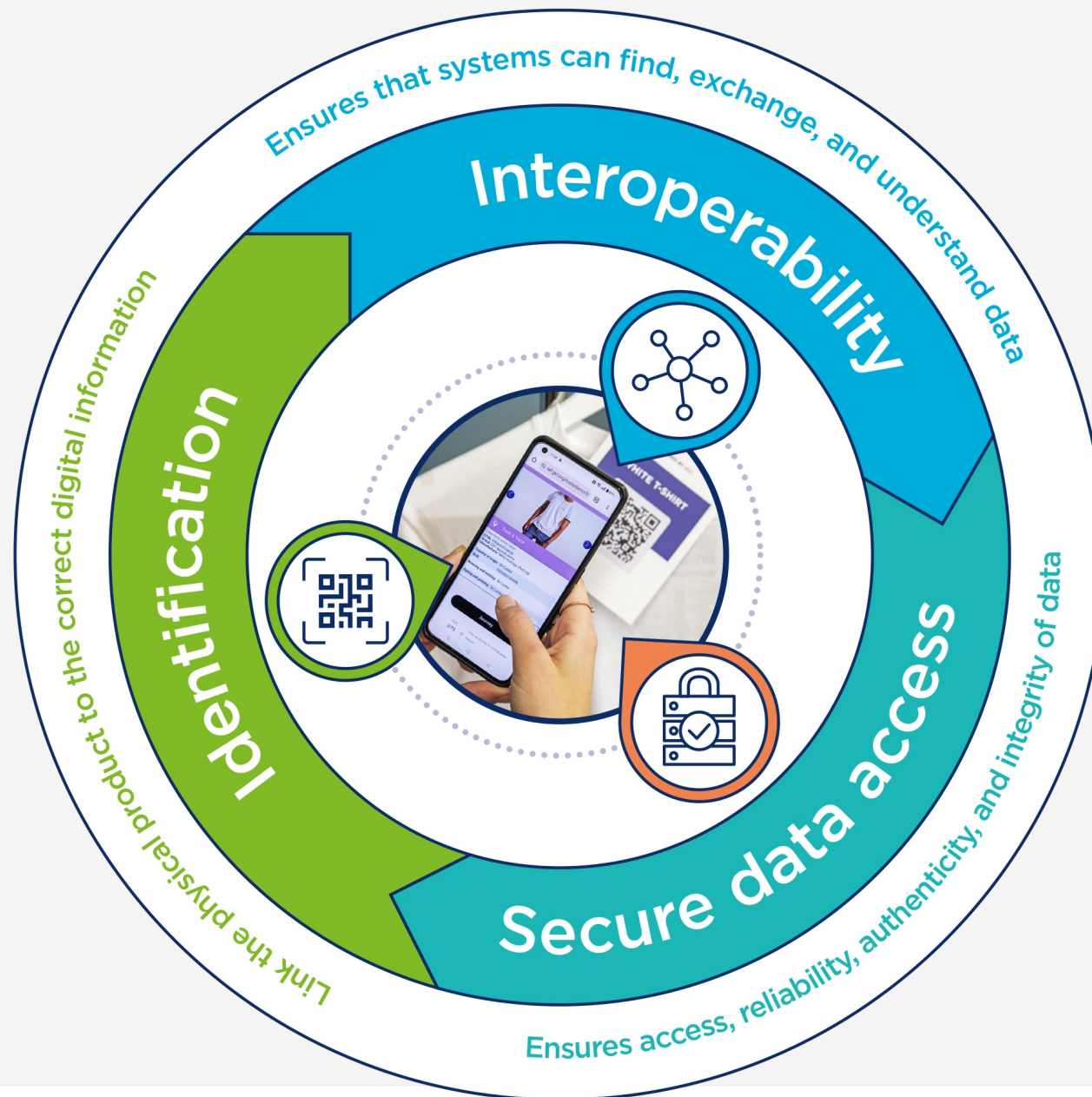


New European standards for the Digital Product Passport

Building blocks for reliable, interoperable and secure product information



CEN-CENELEC JTC 24 - Harmonised Standards for a DPP

a unified, cross-sectoral technical
infrastructure for EU market compliance

Unique Identifiers	S. Interoperability
Data Carriers	Storage, ..Persistence
Data Exchange P	Access Rights, ...
API's	Authentication, ...

Separates the ***system infrastructure*** (defined once via JTC 24) from ***data content*** (defined separately by specific product regulations like batteries or textiles)

DPP Standardisation Request

“based on a **decentralised** data system”

“to foster the sustainability of products by **making information available** to actors along the **entire value chain**”

“should be as **uniform as possible** across products, industry sectors and relevant EU legislations”

“should be **easily shared and used across** different systems and platforms”

“rely on **harmonised standards**”

“to **avoid costs** to companies and to the public ... should be defined at the item, batch or product model”

“the standards should **build mainly on existing standards and best industry practice** at international level”





IDENTIFICATION

The right information with the right product

A product passport starts with unambiguous identification. Products, economic operators and locations must be recognizable using the same principles.

Standard: EN 18219 (Unique identifiers)

Key Elements:

- Structure and syntax guidelines for creating globally unique, machine-readable IDs.
- Universally scalable to handle individual items, production batches, or overall models.
- Integrates seamlessly with existing syntax frameworks (e.g., GS1, ISO/IEC URI schemas)

Note: Q2 2027: Delegated Act for Unique Identifiers



IDENTIFICATION

The right information with the right product

A product passport starts with unambiguous identification. Products, economic operators and locations must be recognizable using the same principles.

5 ID schemes for Products

- Web-enabled Structured Paths (e.g., GS1 Digital Link URIs)
- Self-issued Identification Links (IEC 61406)
- Decentralized Identifiers (W3C DIDs)
- RAIN RFID ID
- Digital Object Identifiers (DOIs)

4 ID schemes for Economic Operators and Locations

- ISO 6523 – ex. LEI, peppol-ID, ASC MH 8.2.1. GS1 AI's
- ISO 418/ISO 15459 – ex. GS1 Global Location Numbers (GLN)
- W3C DIDs
- Decentralized Operator Identities



DATA CARRIERS

Access to the passport

A data carrier is required to provide access to a DPP. Scannability and machine readability must be in order.

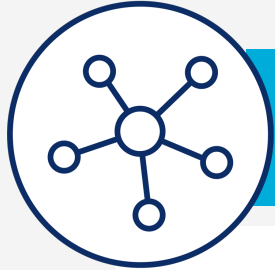
Standard: EN 18220 (Data carriers)

Key Elements:

- Physical attachment requirements to bridge the physical item to its digital twin.
- Mandates at least one free-to-use carrier format readable by ordinary smartphones (e.g. QR codes).
- Durability, printing quality, and lifecycle placement constraints

Allowed Data carriers

- 2D symbols: QR code, DataMatrix
- RFID: HF, NFC, RAIN UHF



INTEROPERABILITY

Systems that can find and understand each other

A product passport only has value if different parties can find, exchange and use the information.

Standard: EN 18223 (Interoperability) and EN 18216 (Data exchange protocols)

Key Elements: Covers cross-border technical alignment and uniform semantic definitions:

- the semantic description of a product
- a common (instead of proprietary) information model allowing implementation of data dictionary systems
- metadata models and formats
- rules on how systematically use those metadata models
- technical and operational interoperability
- Ensures data is structured, searchable, and both human- and machine-readable to prevent vendor lock-in
- Builds on established web protocols

Data storage, archiving, persistence and access control

- **Data storage, archiving, and data persistence (EN 18221)**

Outlines exchange payloads (JSON-LD), decentralized operator storage, and continuity backup guidelines (persistence).

- **Application Programming Interfaces (EN 18222)**

Specifies REST/HTTPS interactions linking local registries to the central EU DPP Registry and end-of-life handovers.

- **Access control and business confidentiality (EN 18239)**

Focuses on role-based access control, safeguarding proprietary data, and establishing trusted cross-party credential verifications.

- **Data authentication and reliability (EN 18246)**

Implements cryptographic rules for origin authenticity, tampering resistance, and surveillance audit verifications.



The EU DPP Registry - a lookup directory

stores unique product identifiers and points to where each passport is hosted - the passport data stays with the manufacturer or their provider

- **Service Provider Linking:** references and links to the specific decentralized DPP service providers hosting the actual product passports.
- **Customs Verification:** customs commodity codes to assist customs authorities in verifying that imported goods match registered documentation.
- **Market Surveillance Support:** a verification platform for national market surveillance authorities to check compliance and inspect product tracking data.
- **Access & User Management:** provides secure user authentication, role-based authorization schemes, and a registration API for economic operators.



The EU DPP Registry - Semantic Interoperability

When an economic operator registers a product, the registry's automated system checks the data against its built-in semantic repository (a catalog of standardized data models, vocabulary, and schemas). It verifies:

- **Semantic Conformity:** checks that the required metadata, vocabularies, and data strings strictly follow the exact data models outlined in the sector-specific legislation.
- **Completeness:** checks for the existence of all mandatory data fields required for that specific product group.
- **Structural & Formal Consistency:** verifies that data formats (like string types, numeric boundaries, and dates) match the expected technical framework.
- **Granularity:** checks if the data matches the required level—whether the identifier applies to a specific model, batch, or individual item.



What's next?

- Maintenance of JTC24 standards (first meeting October 2026)
- Semantic interoperability → talking the same language
- European Product Act / Circular Economy Act
- JTC 5 from CEN to ISO

New ISO/IEC JTC 5 Digital Product Passport Bridges European Development and Global Standardization