

Digital product passports as enablers of the digital and green transition

Marta Santos Silva, Ph.D.
JusGov, University of Minho

2nd of October 2023
University of Bergen





Roadmap

1. Context
2. Concept
3. Features
4. Challenges
5. Opportunities

1. Context

1. Formally announced in 2019 and approved in 2020, EU Green Deal is a transformative roadmap to make the EU the first climate-neutral continent by 2050.
2. Categories targeted are the most polluting ones: batteries, textiles, electronics and furniture.

1. Context

Legislative timeline:

2022 - 2023	2022 - 2024	2024 - 2025	2025 - 2027
Publication of EU's legislative proposals	Review and adoption of the EU's final legislation	Final legislation	Implementation (mandatory compliance)

1. Context

1. The DPP is a key instrument of the Ecodesign for Sustainable Products Regulation (ESPR) that sets requirements on products (environmental standards).
2. Based on the concept that every product has a digital identity, the DPP is a repository of information on the product.

1. Context

1. Pillars: data, standards, architecture.
2. Data (up to 2020): raw material supply, production material supply, production, brand, retail; since then: sorting, second life, repair, dismantling, chemical recycling, mechanical recycling, composting (e-commercial data, sustainability data, life-cycle data, CSR, sorter data, recycling data, certificate data, selected transactions data).

The concrete & foreseeable data requirements of the new circular textile and fashion world.

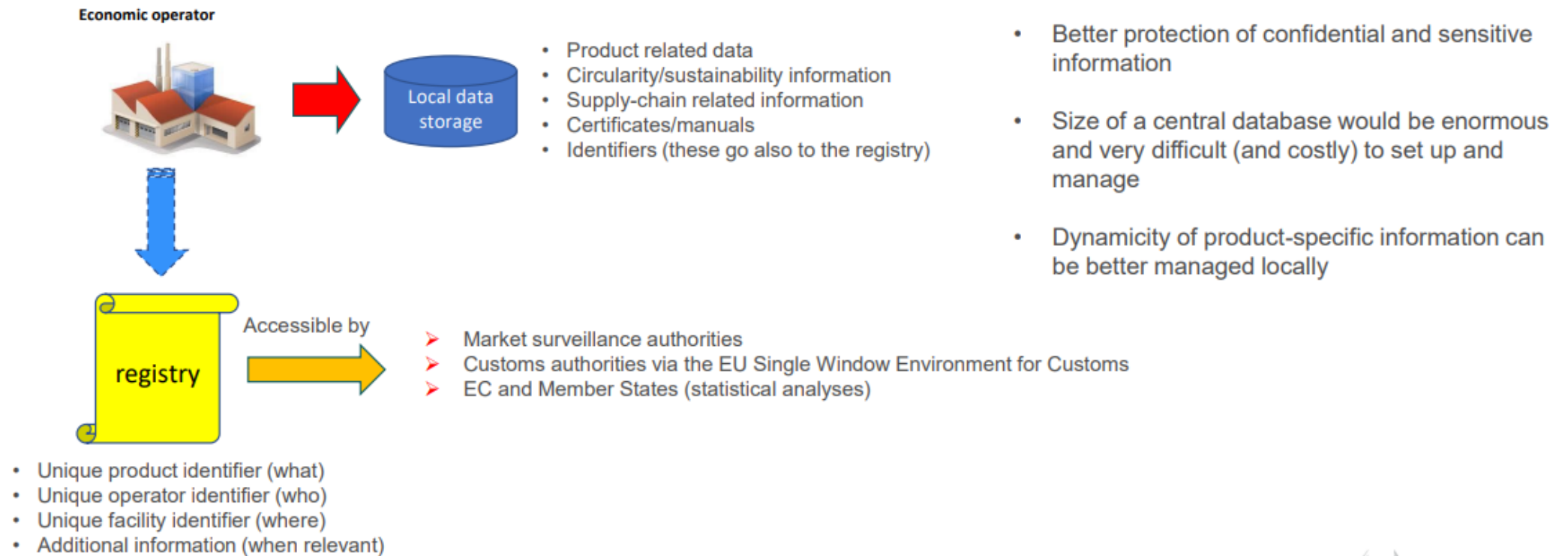
"Old world" until 2020	Raw-Material supplier	Production material supplier	Producer	Brand	Retailer	Sorting	Second life	Repair	Dismantling	Chemical Recycling	Mechanical Recycling	Composting
	Type of Information											
Master Data												
BOM Data												
Care label Data												
Customs Data												
E-Commerce Data												
Sustainability Data												
Life Cycle Data												
Corporate Social Responsibility Data												
Sorter Data												
Recycling Data												
Certificate Data												
Selected Transaction data (Chain of Custody)												

2. Concept

1. The DPP is “a structured collection of product-related data with predefined scope and agreed data ownership and access rights conveyed through an unique identifier”.
2. It consists of a decentralised system with a central registry focusing on sustainability, circularity, value-retention for reuse, remanufacturing, recycling.

DPP System architecture

Decentralised system (information stays where it belongs)



2. Concept

Distinction between DPP system and DPP data:

1. DPP *system*: all standards and protocols related to the IT architecture.
2. DPP *data*: potential attributes (description of content, technical parameters, etc.) and track&trace identifiers.

DPP design



- All **standards** and **protocols** related to the IT architecture, like standards on:
 - Data carriers and unique identifiers
 - Access rights management
 - Interoperability (technical, semantic, organisation), including data exchange protocols and formats
 - Data storage
 - Data processing (introduction, modification, update)
 - Data authentication, reliability, and integrity
 - Data security and privacy
- The DPP registry

Possible Track & Trace identifiers

- Economic operator's name, registered trade name
- Global Trade Identification Number or equivalent
- TARIC code
- Global location number
- Authorised representative
- Reference of the back-up data repository
- ...

Example of potential attributes

- Description of the material, component, or product
- Recycled content
- Substances of concern
- Environmental footprint profile
- Classes of performance
- Technical parameters
- ...



Examples of the data in a digital product passport





Source: Kezzler

2. Concept

1. Unique persistent ID for the product.
2. Persistent data carrier (RFID, QR Code, Bluetooth tag, digital watermark, etc.).
3. Digital connector between product and digital place of information on the product (ex. URI)
4. IT architecture to facilitate data exchange.

3. Features

- 1. No proprietary solutions:** All information included in the product passport shall be written in an open, standard, inter-operable format and shall be machine-readable, structured, and searchable (Art. 9).
- 2. Granularity:** The information included in the product passport shall refer to the product model, batch, or item (Art. 5, 1).

3. Features

- 1. Access rights** ('need-to-know'): the access to information included in the passport shall be regulated in accordance with the essential requirements included in Art. 9.
- 2. Liability:** The economic operator placing the product on the market is responsible for making available the EU DPP and for the information included therein.

3. Features

1. **Track & tracing:** Art. 11 specifies that unique operator identifiers and unique facility identifiers may be requested. These are key information component to allow the track & tracing of information along the supply chain.

4. Challenges

1. Standardisation of different passports in different product categories.
2. Need for those who introduce products in the market to introduce the DPP.
3. Focus on the main driver of DPPs: ensure the circularity of products and thus sustainability.

4. Challenges

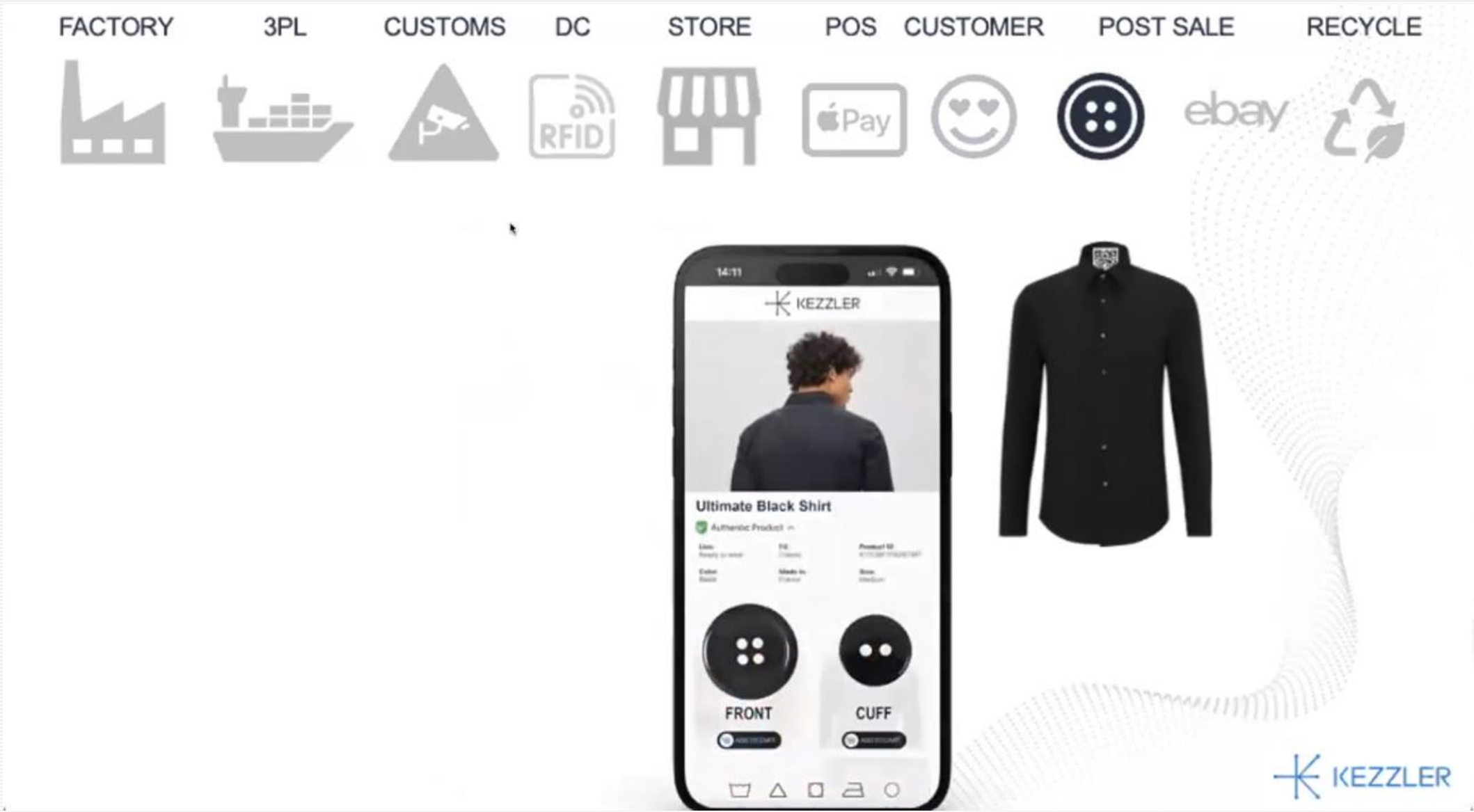
1. Quality information introduced in the DPPs.
2. Ambitious timing.
3. System: interfaces thought and across supply chains.
4. Contradiction between different fields of regulation (anti-trust law).
5. Data privacy and security concerns.

5. Opportunities

1. Increase the materials' and energy efficiency, by extending product lifetimes and by optimising product use.
2. Increase transparency (green claims).
3. Product liability.

5. Opportunities

1. Product safety.
2. Consumer empowerment: information equality; decisional autonomy; right to repair; decision for the most sustainable (lato sensu) products..
3. Industry gains & new opportunities.



FACTORY

3PL

CUSTOMS

DC

STORE

POS

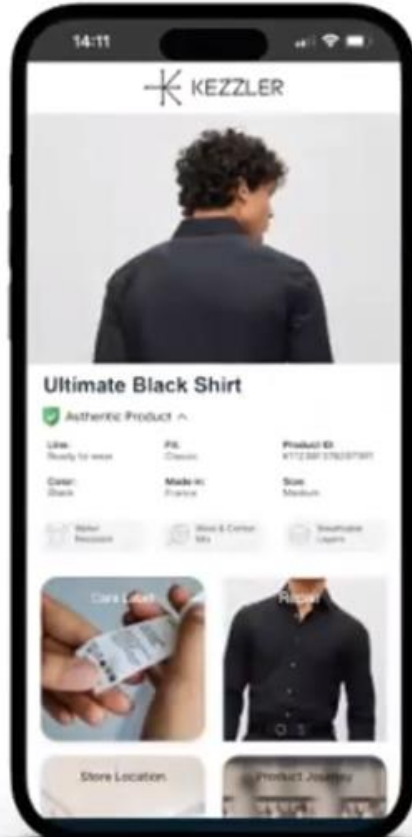
CUSTOMER

POST SALE

RECYCLE



ebay





Thank you.

marta.santossilva@direito.uminho.pt