ecolwise

The future for exchanging product data: Product Information Management Ecosystems for a Circular Economy

EcoWise, Rembrandt Koppelaar 08 / 05 /2025

CircThread Circular Economy Information Use Cases





This project has received funding from the European Union's H2020 programme under Grant Agreement No. 958448

The DPP definition in the global trade context from CAICT

The core of the product digital passport is to answer three important "customs questions" in the product trade process, namely,

Who are you (product identity information),

Where are you coming from and where are you going (product manufacturer, upstream and downstream and end users)

Whether you can pass customs (functions, performance and green sustainable information).



DPPs are at the core of future Product Information Management because of data Automation

Article 10



 (d) all data included in the digital product passport shall be based on open standards, developed with an interoperable format, and shall be, as appropriate, machine-readable, structured, searchable, and transferable through an open interoperable data exchange network without vender lock-in, in accordance with the essential requirements set out in this Article and Article 11;

DPPs are at the core of future Product Information Management thanks to All-Actors access

	Official Journal of the European Union	EN L series
	2024/1781	28.6.2024
	REGULATION (EU) 2024/1781 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL	
	of 13 June 2024	
Article 11	establishing a framework for the setting of ecodesign requirements for sustainable products, amending Directive (EU) 2020/1828 and Regulation (EU) 2023/1542 and repealing Directive 2009/125/EC	
	(Text with EEA relevance)	

- (a) the digital product passport shall be fully interoperable with other digital product passports required by delegated acts adopted pursuant to Article 4 in relation to the technical, semantic and organisational aspects of end-to-end communication and data transfer;
- (b) customers, manufacturers, importers, distributors, dealers, professional repairers, independent operators, refurbishers, remanufacturers, recyclers, market surveillance authorities and customs authorities, civil society organisations, trade unions and other relevant actors shall have free of charge and easy access to the digital product passport based on their respective access rights set out in the applicable delegated act adopted pursuant to Article 4;

Problems to solve for DPP data to flow

Supply chain data management

Globally, corporate sustainability officers still rely largely on spreadsheets + software



500+ global companies survey Cap Gemini, Sustainability in Action Study 2024

Product life cycle traceability

Less than 1% of companies are aware of Digital Product Passports and have a lifecycle traceability strategy

Fig. E5: Percentage of respondents reporting being in scope of specific ESG-related laws



Other ESG legislation affecting survey respondents:

- Modernization of Cosmetics Regulation Act (MoCRA)
- Australian Sustainability Reporting Standards (ASRS)
- EU Ecodesign for Sustainable Products Regulation / Digital Product Passport (ESPR / DPP)
- EU Waste Framework Directive / Extended Producer Responsibility scheme (WFD / EPR)

650 global companies survey QIMA, 2025

So that DPP Ecosystems can solve key problems

Regulatory Compliance

Governments are pushing for stricter sustainability regulations, and companies must adapt to comply. In the EU, the Ecodesign for Sustainable Products Regulation, will require nearly all products sold in the EU to feature a DPP. The global Digital Product Passport market is expected to grow from \$185.9 million in 2024 to \$1.78 billion by 2030, reflecting increasing regulatory pressure for compliance.

Consumer Demand for Transparency

A 2019 Nielsen report found that **73% of** global consumers are willing to pay more for products that are sustainably sourced and environmentally responsible. As consumers seek more information about the products they buy, Digital Product Passports provide detailed insights into the origin, materials, and lifecycle of products, meeting this growing demand for transparency.

Supply Chain Efficiency

88% of global supply chain executives believe that data transparency improves operational efficiency and decisionmaking, according to a 2020 McKinsey report. DPPs facilitate this by providing real-time, comprehensive information about a product's components, production processes, and environmental impact, enabling businesses to streamline operations, reduce costs.



Nielsen

McKinsey & Company

Through industry digitalisation & new rules

Digital Product Passports mark a revolutionary advancement in product information management. It achieves industry digitalization through three core mechanisms.

1. Deep release of data value

Breaking through traditional product instructions. The oneway information transmission mode is realised by integrating real-time data and interactive multimedia platforms

Product function descriptions are transformed from static text to visual, interactive, intelligence information carriers.

2. Credible construction of quality information

Relying on blockchain and other technologies to transform traditional enterprise selfcertification. It is a multi-party collaborative verification system to realise production quality inspection data, thirdparty test reports and user feedback.

3. Quantitative management of green and sustainable performance

产品数字护昭(DPP)

中国标准化研究院高新技术标准化研究

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The voluntary compliance is upgraded to a rigid constraint, achieving environmental protection such as carbon footprint tracking and material recycling.

The paradigm shift of environmental data is from qualitative description to quantitative management over the entire life cycle.

To provide supply chain stability and decarbonisation

Digital Product Passport is an important means to ensure the security of the industrial chain and supply chain

1. Real-time monitoring of the supply chain

Relying on real-time data collection and intelligence analysis systems, to establish fulllink dynamic perception capabilities from raw materials procurement to terminal delivery.

Improving the early warning response efficiency for supply interruption risks and logistics anomalies.

2. Encourage enterprises to establish a normalised mechanism for environmental compliance

Embedding sustainable development indicators such as Carbon and resource consumption into supply chain management.

Promotes the collaborative governance of the global industrial chain through the flow of trusted, safe and controllable data.



Towards global trade based on DPP data as promoted by CAICT

Digital Product Passport is a digital trade token for developing an export-oriented economy.



1. A core means to ensure regulatory governance

Key support for the security and stability of the industrial chain and supply chain in terms of crossborder trade supervision.

By building a globally unified product identification system and data verification rules, a system covering all regions of origin. 2. It enables efficient crossborder capital allocation and enhances the financial market with full life cycle data transparency

Opening a trusted data channel for financial services such as trade financing and green credit. 3. To promote the global flow of high-end talents and form a digital management system, based on the whole process of products

The skill demand map promotes the precise matching of multinational technical talents and industry needs.

The Chinese Government DPP system is designed with three layers by CAICT



And proposed is mutual recognition between the EU and Chinese DPP systems by CAICT

To break the green trade barriers, ensure cross-border data security, and reduce the compliance costs of Chinese export companies



China's government + industry is actively deploying DPP pilots **Chinese Consumer Electronics DPP Pilots in Action**





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Driven by the need for battery recycling + EU Exports The Chinese Battery Passport Ecosystem has been launched

...

The first batch of Chinese battery IDs were released, and power batteries now have an "identity card"

January 1, 2025 09:00 IT Home

 \bigcap Sina Finance APP \land \land \land \land \land \land \land \land \land

At the meeting, the China Battery ID Solution was officially released, covering three major parts: ID indicator system, China Battery ID platform and supporting document ecology.

At the same time, 16 companies in industries related to the entire battery industry chain, including mining, material production, battery production, automobile production, scrapped vehicle dismantling, and comprehensive utilization, received the first batch of China Battery ID digital identities.

According to official introduction, its indicator system covers six dimensions: battery information, disassembly and recycling, sustainability, manufacturers and suppliers, warning signs and dynamic information, covering the entire chain including general information, ecological design, carbon footprint and recycling.

Also released at the same time was the first "China Battery ID Index Manual" covering 6 dimensions, 93 result indicators and 132 process indicators, as well as the first batch of China Battery ID pilot results.

https://finance.sina.com.cn/jjxw/2025-03-27/docneqzwyw0989139.shtml?froms=ggmp

The Japanese government is actively working on industrial data Sharing Ecosystems





The Japanese Ouranos Use case for Circular Economy Data

Overview of Circular Economy Data Interoperable Platform



Target date pilot: end 2026

Ouranos Ecosystem White Paper

Provide transmission of contained chemical substance information that contributes to the venous system as the first phase.

Applications Scenarios of dataspace Information Disclosure (Registration) to DPP, Transmission of Environmental Information Other than Chemical Substances, Expansion of Transmission for Resource Circulation (Recycling, etc.), and Supply Chain Traceability for BCP (Business Continuity Planning)

THANK YOU

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TRACID has received funding from the H2020 programme under Grant Agreement No. 958448 & the Digital Europe programme under Grant Agreement No. 101158775 Connected to the EU/German Catena-X initiative for cross-border data exchange

Catena-X and Ouranos Ecosystem Successfully Demonstrate Data Space Interoperability

Ouranos Ecosystem Battery Traceability Platform

A groundbreaking step towards global data collaboration.

Berlin/Tokyo, March 31st, 2025 – A groundbreaking step towards global data collaboration: Catena-X Automotive Network e.V. and Information-technology Promotion Agency, Japan (IPA) have successfully completed a proof of concept (PoC) for interoperability between two independent data spaces. This PoC has

Interoperability in Action: PCF Data Exchange for Batteries

The first successful interoperability use case focused on Product Carbon Footprint (PCF) data exchange for batteries, aiming for compliance with EU Battery Regulation while allowing Japanese companies to participate using their existing Ouranos Ecosystem infrastructure, Battery Traceability Platform^{*2}.



Digital Product Passports Enabling At-Scale and Real-Life Circular Economy Use Cases in electronics, textiles, tires and construction value chains

Dónal O'Regan (Fujitsu)

CIRPASS-2 Pilot Coordinator

21/03/2025









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ESPR establishes a framework legislation

ESPR = framework legislation

It does not set specific measures. Rather, it enables their later adoption Framework legislation

Product-specific measures based on detailed impact assessment Regularly updated multiannual working plans setting out priorities



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It does not set specific measures. Rather, it enables their later adoption Framework legislation

Lex generalis

Product-specific measures based on detailed impact assessment Lex specialis: ESPR Delegated Acts Battery Regulation Construction Products Regulation Toys Regulation Detergents Regulation Critical Raw Materials Act

Commission

- DPP: A set of machine-readable data accessed through a (persistent) product unique identifier, embedded in a data carrier and relying on an online look-up mechanism.
- A sort of "e-label" or "e-datasheet" for products enabling long-term access to information

NOT a tracking and tracing tool
 Will NOT require revealing sensitive supply-chain information

unded by

he European Union







Key product aspects under ESPR Article 5 – Ecodesign requirements



DPP System vs. DPP Data





DPP System

- How?
- Defines technical architecture & protocols
- CEN/CENELEC has been tasked with translating the criteria into a technical standard
- CIRPASS 2 has 5 official liaisons to CEN/CENELEC



DPP Data

- What?
- Specifies mandatory product information for DPPs
- Defined by European Union Delegated Acts, which define sector-specific products standards and information
- Covers sustainability, repairability, materials, etc.





• How can all industries agree on a common DPP system that is compliant to the requirements of ESPR and that is capable of supporting the massive issuing of DPPs in 2027 ?









DPP Actors







When?



DPP Timeline









CIRPASS & CIRPASS-2



What are CIRPASS and CIRPASS-2?



- Funded by the European Commission under the **Digital Europe Programme**
- Duration: 18 months (from Oct 2022 to March 2024)
- Coordination and Support Action
- 2M euros funding
- 31 partners



Build consensus on a standards-based DPP system

- Funded by the European Commission under the Digital Europe Programme
- **Duration:** May 2024 April 2027
- Innovation Deployment Action
- 6M euros funding
- 50 partners



Deploy at scale Digital Product Passports in four target value chains and demonstrate data-enabled B2B activities that promote circularity





- The DPP System is an **information system** for the Circular Economy.
 - →Decentralised DPP service providers for maximum creativity (not a winner-takes-all approach)
 →Inclusive to accommodate ALL industry specificities
- Transitioning to a Circular Economy will require great flexibility.
- Need mature, state-of-the-art technologies with built-in interoperability.
- That can be deployed at low-cost.
- CIRPASS-2 is a deployment project with an objective of TRL8-9.
 - Research & Technology Organizations (RTOs) are present in the consortium for neutrality.
- The problem we are trying to solve is NOT a technology problem.
- It is a <u>data interoperability</u> problem.





- At scale and real-life deployments of Digital Product Passports:
 - All pilots must demonstrate B2B activities that promote circularity and provide quantitative proof of DPP 'value' (both economic and environmental).

- Propose a DPP system architecture that is simultaneously aligned and interoperable with:
 - 1 the requirements of the Ecodesign for Sustainable Product Regulations (ESPR)
 - $_{\odot}$ 2 the beyond-regulatory needs of industry, and
 - 3 international DPP initiatives.




- 1. CIRPASS-2 is an official liaison role to JTC-24
- 2. DG CONNECT's main objective in funding CIRPASS-2 is bringing proof of DPP value in B2B circular use cases.

→They expect that CIRPASS-2 will contribute to JTC-24 with feedback gathered from real-world pilots showing beyond-regulatory uses of the DPP.

3. CIRPASS-2 can support the dozens of other EU-funded DPP-related projects in bringing their contributions to JTC-24.





Each "pilot" comes with its own "**eco-system**" including:

- A pilot leader
- A number of up-stream partners who will create DPPs for their products
- A number of downstream B2B "R" partners, referring to 9R Framework for Circular Economy
- Circular economy business models and DPP use cases (necessarily including B2B data exchanges)



9R Framework for Circular Economy. Source: J. Kirchherr et al. (2017, page 5)

CIRPASS-2 DPP Pilot Ecosystems







Requirements for the DPP IT system – User stories





Download report



https://cirpass2.eu/project-results/



Why is the DPP System an incredible opportunity?



• Vision: The DPP links the EU internal market to the data economy.





• Vision: The DPP links the EU internal market to the data economy.



Structure - Multiple levels of required information





- Types of data:
 - Identifiers
 - Weights and measurements
 - Subcomponents
 - Material composition
 - CO2 footprint
 - Certifications

• ...

- Defined by regulations
- Possible additional requirements:
 - Sectoral agreements
 - Company-specific additions

Regulatory and beyond-regulatory requirements for the DPP system



Policy requirements

- No proprietary solutions
- Open standards and interoperable formats
- Decentralized data storage
- Both static and dynamic data
- Public and private access data

Business requirements

- Acceptability: Maximum reuse of legacy systems and legacy data
- Accommodate both regulatory and nonmandatory (business-model-specific) and evolving information requirements.
- Future-proof and easy to deploy: A DPP system with built-in flexibility based on state-of-the-art technologies but sufficiently mature to support DPPs in 2027



CIRPASS-2 Architecture process







The Future?



Potential for further burden reduction











- DPPs will have compliance requirements for products.
 - Now may be a good time to start
- DPPs will go beyond compliance.
 - Now may be a good time to start...





Thank you!

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Empower consumers and improve the market with DPP

Digital Circular Economy Solutions Conference Unlocking automated Product data exchange ecosystems using Digital Product Passports

Luisa Crisigiovanni - Head of European Fundraising and Projects development Euroconsumers - Altroconsumo

Bruxelles

08/05/2025



This project has received funding from the H2020 programme under Grant Agreement No. 958448

Our organization

About Euroconsumers

Gathering five national consumer organisations and giving voice to a total of more than 1,5 million people in Italy, Belgium, Spain, Portugal and Brazil, Euroconsumers is the world's leading consumer cluster in innovative information, personalised services and defence of consumer rights. Our European member organisations are part of the umbrella network of BEUC, the European Consumer Organisation. Together we advocate for EU policies that benefit consumers in their daily lives.

© 5 member organisations



people



NN

Euroconsumers Vision

To face the increasing speed of **change in consumer needs** and remain relevant, we need to stand closer to consumers – using an agile mindset that gives them the services and assistance they deserve. To do this, our organization needs to continue developing our **innovation potential** and invest our resources to gather consumers insights.

Mission

Euroconsumers' mission is to drive positive change for consumers by connecting all sides of the market.

✓ We open up constructive dialogues with stakeholders about consumer challenges, then work collaboratively to tackle them.

✓ We lead the way on critical issues like climate change, health care, access to trustworthy digitalisation and the energy revolution.

✓ We give voice to the people, and help the market deliver for people.

Our national members in Belgium, Italy, Portugal, Brazil and Spain help us gather the intelligence on markets and consumer experiences to shape our priorities for empowerment. We empower people through product testing, informing, advising, supporting and representing consumers. We make it easy for people to access and use the right tools to get the most from the market. We feed the learning from our work back to policy makers, business and other consumer organizations.

Activities

With our members we take an aligned stand based on our consumer intelligence and we co-ordinate enforcement actions, partnerships with market players, ground-breaking EU funded projects, unique market insight and international events.

We improve the market by harnessing the collective force of people, by collaborating and entering into dialogue with companies to do better and win consumer trust. We work with major global brands helping them to raise the bar especially in the digital economy, to design better products and services.

If it comes to it, and companies stall or won't listen, we'll commit all our legal expertise and powers to take them to court. Euroconsumers has strengthened its private enforcement work, and stands ready to intervene where things go wrong. We co-odinate actions across our members countries to have maximum impact in the courts.

The role consumers organizations played in Circthread project

First, **we study**, then **we inform**, in the end **people drive the change**.

- Surveying consumers' needs.
- Organzing pilots & test DPP process UX via collaborative platforms (AcMakers, Connecta).
- Analyses & reporting
- Webinars & panel discussions, articles to raise awareness and favor dialogue



The importance of consumers perspective



DPP AS ENABLING FACTOR ?

- The rich data coming from Digital Product Passports can help consumers who want to make more **sustainable choices** when they purchase and use household appliances.
- In the real-life use cases that OCU and Altroconsumo studied, over 50 consumers appreciated and valued the potential and gave us some useful tips on how to make Digital Product Passports more user friendly.
- Information and guidance is often seen as key to changing behaviours. However, we know, and consumers in the pilots confirmed, that it takes more than just making technical data available to shift patterns.

Why we do what we do Insights from consumers condition scoreboard 2025

- The share of European consumers reporting that environmental considerations influence their purchasing decisions reduced in 2024 compared to 2022. Perceived barriers to green consumption point to the impact of the increase in cost-of-living, but also the difficulty of knowing which products are environmentally friendly.
- When dealing with defective products, similar proportions of consumers replace them with a new one (40%) or repair them (35%). A smaller share opt for buying a second hand/ High repair costs and the effort required are key barriers. refurbished product as a replacement (9%).
- High costs and **confusion over which products are genuinely eco-friendly** are the biggest obstacles to sustainable consumption.



The Framework EU and global trends



- 70% of Europeans regularly buy products online (Eurostat 2023). According to EU surveillance data, 4.6 billion low value items (up to EUR 150) were imported in the EU in 2024. This is almost twice the number recorded in 2023 (2.4 billion), and more than tripled since 2022 (1.4 billion).
- In 2024, 91% of all low value e-commerce shipments entering the EU came from China and their volume more than doubled between 2023 and 2024 from 1.9 billion to 4.17 billion items.
- The surging volume of products that are unsafe, counterfeit or otherwise noncompliant leads to serious safety and health risks for consumers, has an unsustainable impact on the environment, and fuels unfair competition for legitimate businesses, with a significant impact on EU competitiveness in different sectors. EU issued a Communication, titled "A comprehensive EU toolbox for safe and sustainable e-commerce" and put forward a holistic approach to address the risks and distortions: coordinated enforcement actions, dialogue, training, dpp, target actions on imported products, customs reforms.

The challenges ESPR – WASTE FRAMEWORK – DSA - DMA

- More ambitious sustainability requirements for products placed on the EU market will be rolled out under the **Ecodesign for Sustainable Products Regulation**.
- The Commission will work closely with the Member States for a more effective enforcement of **Waste Framework Directive**, the Single Use Plastics Directive, the Waste Electric and Electronic Equipment Directive and the Regulations on Ecodesign for Sustainable Products, on Packaging and Packaging Waste and on Batteries vis-à-vis third country e-commerce retailers.
- The **Digital Services Act (DSA**) sets EU-wide rules for online intermediaries, including for online marketplaces that connect sellers with consumers. The rules seek to ensure that **traders can only sell products on online marketplaces that are compliant** with the relevant product safety and other requirements. Online marketplaces have an obligation to counter illegal goods offered through their service. This includes, for example, detailed **transparency obligations**, including how products are recommended to consumers.



The opportunities



The eco-design data provided in DPP could be a way to inform consumer about product repair or aftercare to ensure product life extension and thus reduction of environmental impact.

- Point of purchase information using the DPP as a credible system that all producers use to give consumers clear, credible ratings based on social and sustainability credentials to influence choice at the point of purchase (both online and in-store). The development of ratings that uses a similar method to that of the EU for the Repairability Index could make it easier for producers to use existing worldwide data held.
- Repair/reuse information using the DPP to provide data on the size and type of fittings, or availability of spare parts to facilitate a quick and affordable repair. Providing data on location of repair engineers or possible costs could help to overcome the assumptions that consumers have towards repair.

The recommendations

Consumers organizations as trusted partners to reach People, favor Compliance, promote Dialogue.

- It is relevant to get the right information, in the right format at the right time to encourage more sustainable choices and usage patterns.
- Digital Product Passports are enabling tools in their initial phase, learning exactly what consumers need and look for will be critical for their success.
- Consumers especially vulnerable consumers might need multiple access points to get product information.
- Consumers organizations contribute to market surveillance to achieve enforcement objectives based on evidence- based approach.
- Consumers organizations are committed work with market players to implement compliance by design and ensure transparency and avoid lower safety standards.





Thank you for your attention !

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This project has received funding from the H2020 programme under Grant Agreement No. 958448

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innovation for life

Legislation is forcing us into action







DPP Program

The opportunity of DPP is to accelerate sustainability, gain resilience in the value chain and to position in the circular economy

OPPORTUNITY FOR ORGANIZATIONS

ACCELERATE SUSTAINABILITY

• Redesign products and processes based on DPP data to spearhead sustainability in the sector

BUILD A RESILIENT VALUE CHAIN

• Collaborate along many axes, not just DPP, much more cheaply, at scale

BUSINESS MODELS AND CIRCULARITY STRATEGY

- Develop new business models and circularity strategies
- Benefit from early and trusted compliance compared to foreign competitors



The purpose of a product passport is to enable the shift to a circular economy



DPP Program

DPP potential is currently only *potential,* but even small shares of the impacts below would represent major benefits.

BENEFITS OF DPP COORDINATION

NATIONAL GOAL	RELEVANT NL FACT	H1: EFFECT DUE TO EUROPEAN LEGISLATION	H2: ADDITIONAL EFFECT OF NATIONAL COORDINATION	H3: POTENTIAL UPSIDE OF COORDINATION
Strong, Resilient Economy	Depreciation of capital assets of NL manufacturing in 2022 was just over 16,7 billion EUR. (source: CBS)	Better records to improve maintenance and extend asset lifetime	Make sure organizations of all sizes can benefit	2% lifetime extension of capital assets = 334 million annual depreciation reduction
A stable and	Manufacturing ICT service expenditures by the NL manufacturing sector in 2022 were just over 1.5 billion EUR. (source: CBS)	Increases IT costs and adminitrative burden	Manage IT cost increase, create level playing field, enable competition of value added DPP services	2% less IT costs = 30 million
Responsible material use, maximize material reuse Sustainable design, manufacture, repair,	Total capital asset investment in 2022 in the NL economy was 73,4 billion EUR, with 14,9 billion sold as second hand capital. (source: CBS)	More information available when making second-hand purchase	Effective monitoring of second-hand sales, boosting the circular economy	2% more second hand sales = 298 million EUR per annum
end-of-life	The global annual footprint of NL manufacturing was around 170 Mtons of CO2eq (source: PBL) and 82 Mtons of materials. (source: OECD)	Incentivize manufacturers to create more sustainable, longer lasting products	Incentivize further and make easier to take action	2% climate impact reduction = 3.4 billion kg of CO2eq for manufacturing and 1.64 billion kg of CO2eq for materials

Δ

DPP Program

DPP potential is currently only *potential,* but even small shares of the impacts below would represent major benefits.

BENEFITS OF DPP COORDINATION



A Product Passport consists of data and a system. The challenge is to make the *right* data available and make agreements about the system CHALLENGE



TNO innovation for life

A Product Passport consists of data and a system. The challenge is to make the right data available and make agreements about the system CHALLENGE



INO innovation for life

Things will not *just* work out.



If no action is taken, DPP will be another technology that ends in silos. To ensure interoperability cross-sector collaboration is a priority. FORK IN THE ROAD

CURRENT PATH: SILOED AND HIGH COST Technology decisions now will obstruct interoperability later High costs to Experimentation on adhere to Dutch cross-sector organization and Siloed solutions interoperability collaboration sector level requirement

DESIRED PATH: INTEROPERABLE AND LOW COST Dutch cross-sector collaboration is key to achieve interoperability



innovation

Organizations strategize and experiment at organizational and sectoral level, while there is a need to transition to cross-sector COLLECTIVE ACTION



innovation for life

Collaborate now to prevent the problems of tomorrow, and strengthen our position in the circular economy!



The DPP Programme consists of 3 thematic workpackages, with 11 activities defined to start in 2025.

DPP PROGRAMME


The DPP Programme consists of 3 thematic workpackages, with 11 activities defined to start in 2025.

DPP PROGRAMME





COE DPP COE DSC







The Global Language of Business

Product identification as a business strategy

Why it matters for the future

Rien van den Bosch – Business Development Strategist 08/05/2025



Imagine...



The Global Language of Business

There will be...

- No accountability
- No ownership or registration
- Security risks
- No traceability
- Chaos in systems the rely on identity



Imagine...



There will be...

- Chaos in retail
- **Risk in healthcare**
- Food safety collapses
- Sustainability becomes impossible
- Supply chains disintegrate



There was/is a need for....

Accurate product recognition globally

Interoperability across systems Consumer transparency and safety

Smarter, more sustainable business





The Global Language of Business

A strategic imperative for business success



Unlocking transparent and sustainable supply chains: DPP

A **digital record** containing comprehensive, standardised information about a product including its origin, materials, productions process and sustainable attributes.

Creation

The economic operator creates a DPP before placing it on the market

Holder

The DPP travels with the product through its lifecycle *Economic operator* \rightarrow *retailer/distributor/importer/...* \rightarrow *consumer* \rightarrow *post consumption*

Verifier

Regulators, consumers, 3^{rd} parties can access the DPP via different levels to verify claims







The DPP

Basic requirements

- DPPs for all specified products required for compliance
- DPP should be uniquely linked to a product
- Back up copy must be made available via third party
- DPP to be available for lifetime of product
- Should be interoperable with other DPPs

Data requirements

- Include all mandatory
 information
- Info to be authentic, reliable and verified
- Existence of DPP to be uploaded to the EU web portal

Access requirements

- Access through a unique product identifier embedded in a data carrier
- Differentiated access to data required: public and restricted data



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The <u>Global Trade Item Number</u>







Product level



A globally unique **identification number** (GTIN + batch or serial number or variant or ...)

Linked to harmonized and verifiable offline and online **data**

Accessible through standardized **data carriers** (barcode, QR, RFID,...)



Too many carriers...



elgium & Luxembourg

Next generation barcodes. One scan. Infinite possibilities.





QR code powered by GS1 Digital Link





To meet the needs of modern commerce...

...you need <u>one source of truth</u> for standardized product data.





Built with GS1 standards for global interoperability





IDENTIFY





GS1 Standards for Identification

COMPANY & LOCATION Global Location Number (GLN)

PRODUCT

Global Trade Item Number (GTIN) Serialised Global Trade Item Number (SGTIN)

LOGISTICS & SHIPPING

Serial Shipping Container Code (SSCC) Global Shipment Identification Number (GSIN) Global Identification Number for Consignment (GINC)

ASSETS

Global Individual Asset Identifier (GIAI) Global Returnable Asset Identifier (GRAI)

SERVICES & MORE

Global Service Relation Number (GSRN) Global Document Type Identifier (GDTI) Global Coupon Number (GCN)

GS1 Standards for Barcodes & EPC/RFID

GS1 BARCODES







GS1 EPC/RFID



GS1 Standards for Data Exchange

MASTER DATA Global Data Synchronisation Network (GDSN)

TRANSACTIONAL DATA eCom (EDI): EANCOM, GS1 XML

EVENT DATA EPC Information Services (EPCIS)







IDENTIFY: GS1 Standards for Identification

GLN Global Location Number GTIN Global Trade Item Number SSCC Serial Shipping Container Code GRAI Global Returnable Asset Identifier GIAI Global Individual Asset Identifier GSRN Global Service Relation Number





Beyond barcodes

- Accuracy
- Reliable data

Efficiency

- Tracking
- Verification
- Communication







The Global Language of Business



Main design features

DPP-system

HOW To be developed horizontally for all product groups and legislations

4.

- The DPP registry
- A searchable web portal
- All standards and protocols
 related to IT architecture:
 - 1. Unique identifiers
 - Data carriers and links between physical product and digital representation
 - Access rights management, information security, business confidentiality

- Data processing, data exchange protocols and data formats
- Data storage, archiving and data persistence
- Data authentication, reliability, integrity
- APIs for the DPP lifecycle management and searchability

DPP-system

To be developed through product-group specific dedicated legislation

Information to be included in the DPP will be product-group specific and identified in delegated act process.

It may include information/data on one or more of the following areas:

- Technical performance
- Environmental sustainability performance
- Circularity aspects (durability, repairability,...)
- Legal compliance

WHAT

• Product-related information (manuals, other labels,...)



The identification and verification



Product level



Entity level



Verification



The upcoming opportunities













Inclusive & collaborative



GS1 Circularity/DPP Mission Specific Work Group (MSWG)

This **open-to-all** mission specific work group is setting the foundation for the GS1 system to support industry's identification and data sharing needs related to Circularity/DPP. Sign up <u>here</u> or scan the QR code.

NEW! The provisional standard was approved in April '25.





The four co-chairs are members from industry and GS1 Member Organisations





GS1 white paper on circular economy

GS1 standards for identification, automatic identification and data capture (AIDC), and data sharing support ESPR requirements of the European Union and other jurisdictions as well.

To increase understanding of GS1 standards conformant systems, GS1 is providing_a White Paper explaining the_different aspect of **how GS1 standards**, widely implemented today or planned for implementation by 2027, **can support the evolving circular economy with little to no disruption to industry or consumers**.

The sections in the White Paper focus on Product Identification and AIDC carriers, on Facility and Economic Operator Identification, and on Data Sharing.





Our ambition is to protect and to create value for our members along the customer journey

Our objective is to enable the circular economy with trusted identifiers and trusted data

Thank you!



Rien van den Bosch rvandenbosch@gs1belu.org

LinkedIn:



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THE CE-RISE PROJECT

Circular Economy Resource Information System (Grant Agreement ID <u>#101092281</u>)

8 May 2025 | Pascal Leroy, Miguel Las Heras | WEEE Forum, NILU



Federal Department of Economic Affairs, Education and Research EAER State Secretariat for Education, **Research and Innovation SERI**

Swiss Confederation



UK Research and Innovatior









FOSSIL FUEL INTENSIVE ECONOMY

Powered by coal, oil, gas

RENEWABLE ENERGY & DIGITALIZED ECONOMY

Enabled by intensive use of raw materials






WHY?

HOW?

CIRCULAR ECONOMY ACTION PLAN (CEAP) & ECODESIGN FOR SUSTAINABLE PRODUCTS REGULATION (ESPR)







WHY?

HOW?

WHAT?

WHO?



Accelerate circular economy practices to enhance material efficiency, reduce environmental impacts, and foster new business opportunities, ultimately contributing to a more equitable, resilient, and sustainable society.



- Develop a Resource Information System
- Integrate DPP information into Circular Strategies and SEE-Impact Assessments
- Improve confidential information sharing
- Provide open-access software supporting sustainable and circular products





CE-RISE: CONCEPT WORK IN PROGRESS

Front end





archive product

History

(8)

-purposability

(N/A)

cyclability

RE-Criteria

product #23

consumer access

spare parts

Spare part price

Avaiability of spare parts

Delivery times commitment

Technical instruction manual

List of repair materials and tests

Advice on use and maintenance

S/N CE-2024-A1B2-C3D4

 \mapsto

6,8

9,5

10

10

8

2,7

5

3

0



WHY?

HOW?

WHAT?

CE-RISE: CONCEPT WORK IN PROGRESS



RE-module

Calculating the –ability of a product to undergo an R-strategy.

RE-manufacturability

EN 45554 (+ improvements from the French Repairability Index, JRC Repairability score and iFixit)

RE-cyclability

EN 45555 + REEECYC'LAB + PV recyclability index

RE-furbishability

Strongly based on Re-manufacturability

RE-manufacturability

Strongly based on Re-manufacturability

Circularity indicator

Assessment of SRM on product/component level





WHY?

HOW?

WHAT?

CE-RISE: CONCEPT WORK IN PROGRESS



SEE-module

Calculating the Socio-economic and environmental impacts of products, streamlining product specific data into the LCIs.

1. DPP service

Collection of product-specific data.

2. Open-access background LCI database

Matches DPP data to relevant categories and completes missing life cycle data fields.

3. Impact Calculation Software

Computes SEE impacts based on gathered data.





Users

å



WHO?



CE-RISE: CONCEPT WORK IN PROGRESS



Product Information module

Organizes and process product-specific information for enhanced decision making and implementation of Circular economy practices.

Overview of categories

- CE Strategies assessment
- Certification & Labels monitoring
- Collection Details
- CRM monitoring
- Disassembly information
- HSE & Handling guidelines
- Product History
- Product static info
- Restricted Substances monitoring
- SEE analysis
- Spare Parts monitoring
- SRM monitoring
- ...



Users

å

WHY? HOW? WHAT?

WHO?





Interoperability & Data integration

CE-RISE Information System Front end **Data processing** 6 **RE-Module** SEE-Module Data quality and uncertainty evaluation Product Information Module Conformity assessment Multi-criteria decision Product information display 0 0 \odot Data storage **RE-Module** Database User Information 0 Socio-economic & Environment (SEE) Module Background Database

A modular architecture and an internal ontology to enable the creation of connected, intelligent, and sustainable data ecosystems



Modular architecture

allows independent development and deployment of components, which must adhere to a shared ontology for data exchange.

Ontology for data integration

Ensures semantic consistency, facilitating effective data exchange and automated validation processes







WHY?

WHAT?











Contact details



Pascal Leroy

Director General WEEE Forum a.i.s.b.l. Brussels, Belgium pascal.leroy@weee-forum.org



Register as a stakeholder for updates and event invitations!

Thank you !

ce-rise.eu





Schweizerische Eidgenossenschaft O Confédération suisse Confederazione Svizzera Confederaziun svizra

Federal Department of Economic Affairs,

Swiss Confederation



EU Framework Programmes







Circular Intelligence Association Introduction

Circular Intelligence

Circular Intelligence

A competence centre and network for enhancing product information management for a circular economy

https://www.circularintel.org/

Circ Thread



Circular Intelligence Association

A Not-for-Profit Organization (A.S.B.L.)



Headquarters: Brussels-Belgium

Mission: To serve as a competence centre and network for enhancing product information management for a circular economy

https://www.circularintel.org/

Founding Members		ALTROCONS	имо В/	/S/H/	cecasa
	dfki butcha forskeganstan trätetiske beigen in die statetiske beigen	DOMUSA	dss*	ecos	🏩 ekodenge
Contailmenters		gorenje	IDP	tan Manufacturing Research	
	AGON Martin	<u>~</u>	orryzći 🔗 R	EYDESA	SABANCIDX
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Founded by Circ Thread



This project has received funding from the European Union's Horizon 2020 programme under grant agreement № 958448





Circular Intelligence Association

Meeting Date: 28.03.25 | Ecosystem Overview





Circular Intelligence Association

Meeting Date: 11.02.25 | Agenda Item: 6









A multistakeholder association – diverse and cross sectorial

Covering Europe and willing to comply with global exchanges

Competence on the future EU and Global regulatory and circularity needs

Able to support their members / network for technical compliance

Capability on Managing / Extracting consumer insights

Competence in software system integration and B-to-B exchanges



Circular Intelligence Association – Members and Stakeholders



Manufacturers – Economic Operators

- Enhanced Compliance
- Market Competitiveness
- Brand Reputation
- Cost Savings
- Networking & Business Opportunities

Technology Developers and Software Service Providers

- Market Access & Business Development
- Collaborative Innovation
- Proximity to Industry Trends and emerging demand
- Integration and Interoperability Advantages
- PoCs, Pilots and Feedback Loops
- Networking, Funding and Growth Opportunities

Consumer Organisations

- Consumer Awareness & Education
- Advocacy Support for Sustainability and Consumer rights
- Improved Transparency
- Enhanced Services to members
- Network Expansion

RTOs & Associations

- Collaborative Innovation
- Advocacy, Standardisation, Lobbying
- Support to Members
- Integration and Interoperability Flagship Pilots
- Proof of Concept and Impact Generation
- Networking and Collaboration Opportunities

Circular Intelligence Association – Core Services



Compliance and Support	 -Knowledge sharing on the CE regulatory and other standardised frameworks -Roadmaps, training and support for sectoral associations (training the trainers) -DPP Compliance Consultancy services -Consumer testing services, support and insight management
Verification	 - Verification of DPP Service compliance – with respect to ESPR - Verification to Sectoral DPP or Product data exchange standards / practices (ie. CPR-Steel) - User verification in a CE network
Certification	 Enabling certification bodies White-label consultancy for certifiers Product-oriented certification
Circular Data Orchestration	 - Circular Intelligence Platform - with User/role/credential management - Interoperability with other platforms/systems - Compliance verification scorecards/labels - Software service integration- SaaS Models
Pilots and Experimentation	 DPP linked data orchestration pilots for CE hubs Invitation to use the Circular Intelligence Hub4Circularity framework Quantified/verified Impacts/outcomes monitored and reported

Circular Intelligence Association



Circular Intelligence

About News Search In Ecosystem ~ Log in Register English 🛩



Networks / Clusters Collaborating organisations Managed / Exchanged Mariaged as Clusters Content Categorised for their types or region Organisations

Browse the ecosystem to find Circular Value Chain use cases for different sectors. You can access information about innovative technologies, digital services, and initiatives including existing and forming Hubs 4 Circularity.

Registration gives you the possibility to showcase what you have to offer to make the circular economy a reality.

Circular Intelligence is supported by the United Circles project.

https://circularintelligence.org

Hubs4Circularity Services :

- New Hubs 4 Circularity free registration
- Paid services such as DPP and Material flow accounting
- Act as a 3rd party verifier (informal at the moment) for CE Operations inside the Platform
- Provide dashboards to Hubs

WHAT THE ECOSYSTEM OFFERS



Clusters & Stakeholder Groups

Find an innovation cluster in your region/country



Technologies and Services

Explore and showcase innovative solutions for circular economy



support opportunities

Collaboration

Opportunities Discover and promote collaboration opportunities

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Circular Intelligence Association

A Not-for-Profit Organization (A.S.B.L.)

Circular Intelligence

To serve as a competence centre and network for enhancing product information management for a circular economy



About Contact

Objectives

A permanent network for digital circular economy innovations and hubs

Facilitate collaboration across the product lifecycle addressing regulatory and environmental requirements

Provide access to software services for

Join Us

- Join us by submitting the application form or write to us
- Membership pricing model will be announced soon

Thank You

Emre Yontem

Emre.yontem@eco-wise.co.uk

BEUC The European Consumer Organisation

The Consumer Voice in Europe

Ecodesign & Energy Labelling outlook BEUC policy recommendations

Silvia Barlassina 8 May 2025 – CircThread conference







WHAT'S NEXT FOR ECODESIGN?

Implementation of 1st ESPR working plan (2025–2030)



Horizontal measures – repairability, recycling & recycled content

Intermediate products – Iron & steel and aluminium

Energy-related products & ICT





ESPR Article 7: Information requirements – labelling and DPP ESPR Ch. III: Digital Product Passport Enhance traceability across value chain Improve information flow among actors Facilitate verification procedures by MSAs/customs

• Help consumers make informed choices

want more information on sustainability aspects, like durability, repairability, and circularity of products EC figures



BEUC The European OUR KEY RECOMMENDATIONS

Prompt implementation of ESPR Working Plan is essential to bring sustainable options to consumers & boost Europe's competitiveness with greener technologies

DPP to facilitate access to products' information for consumers over time, such as list of substances and repair instructions



DPP as a complementary tool to paper based information and labelling

Essential information must still be provided offline DPP to support enforcement activities, in turn ensuring consumers benefit from compliant products Focus on priority products that would strongly benefit from increased transparency in the supply chain, such as textiles



BEUC The Europea Consumer Organisation

The Consumer Voice in Europe

Thank you for your attention

www.beuc.eu @beuc





Circ Thread

Circular Economy Conference Consumer experiences in using Digital Product Passports

OCU. Amaya Apesteguía, Project Officer Sustainable Cosnumption ALTROCONSUMO. Stefano Casiraghi, Project Officer Products

Brussels - 08/05/2025



Spanish pilot - Overall



Scope

- A heating system combining a pellet boiler, photovoltaic glass, and lithium storage batteries.
- Testing focus on the **pellet boiler:** only component directly accessible to consumers post-installation.

Objectives

- Assess the platform's functionality with real users: 5 different scenarios
- Gather user feedback on the future of the tool and the Digital Product Passport.

Timeline and Scope

- January 2025.
- Two testing phases, in person & remote, with a total of 31 users.



Spanish pilot – Scenario 1 Access the Boiler Digital Product Passport (DPP)



Accessing the DPP

- 74% accessed via web link | 26% via QR code
- No access issues reported

Understanding the Information

• 96% correctly identified 5-year warranty and pellet fuel type

Navigation Experience

Information Organization

- Suggested improvements: better typography and clearer section division

Key Insight

Sustainability information is less prioritized than descriptive information



Usefulness of Sections (% of users finding them useful)

78% Product Name & Picture89% Descriptive Information60% Circularity & Sustainability82% Documents

Spanish pilot – Scenario 2 Download the Installation and Operating Instructions



Download Process

- 74% found the download icon directly | 26% clicked on the document name first
- 93% successfully downloaded without issues

Satisfaction

- High satisfaction: 🔶 4.41/5
- Opening issues: 5 users (4 on Android phones, 1 on Windows computer)
- In-person test: 2 iPhone users also experienced opening problems

Improvement Suggestions

- Make the download button larger and more visible
- Alternatively: **start download** when clicking the document name

Key Insight

Download process is generally smooth, but mobile compatibility and download triggers need optimization

Spanish pilot – Scenario 3 Boiler Satisfaction Survey





Survey Access

- 85% easily found the survey
- 85% successfully completed

Satisfaction

• Positive experience: 🔶 4.19/5

Issues

• **Submission errors:** Occurred when leaving the comment field blank; users suggested adding clearer instructions

Key Insight

While survey accessibility and completion rates are strong, better language handling and clearer guidance are needed to avoid user frustration.

Spanish pilot – Scenario 4 Download the Warranty Information



Condiciones de garantía - [Warranty Information.pdf]

Download Success

100% successfully downloaded the warranty conditions

Satisfaction

- Very high satisfaction: + 4.52/5
- 89% opened the document without issues

Improvement Suggestions

- Enlarge the download link area
- Use more **descriptive filenames** for easier document identification

Key Insight

Download reliability is excellent, but users suggested to improve mobile file accessibility and filename clarity

坐
Spanish pilot – Scenario 5 Requesting Repair from a Professional Technician



<u>م</u>	Product life cycle journey		
ے ا			Historial de ciclo de vida(13)
Ver recorrido del producto	(O	\bigcirc	0
	Uso	Reparación	Logística de recolección

Repair Status Tracking

• 15% did not find any relevant information

Navigation Issues

- Repair information placed at the bottom of the screen made it harder to find
- Only 30% found the magnifying glass icon intuitive for accessing detailed information

Satisfaction

Repair tracking process rated + 4.04/5

Key Insight

Need to improving section naming, placing repair information at the top, and making access to detailed info more intuitive



Spanish pilot – General considerations



Overall

• **Positive perception** of DPP's future usefulness, especially for product lifecycle tracking and sustainability benefits.

Information Priorities

- Users value repair contacts (30%), spare parts (25%), warranty details (20%), and product specifications (15%).
- Promotional offers should remain **optional**.

Privacy and Security

• 60% have no privacy concerns, but a minority worried about personal data collection and tracking.

Product Categories

- DPP seen as most useful for tech products, appliances, and vehicles.
- Limited relevance for clothing, with some exceptions (care and sustainability info).



The Digital Product Passport (DPP) shows strong potential to enhance product lifecycle management, consumer empowerment, and sustainability.

Italian pilot - Overall



Scope

• Testing focus on Digital information Platform of a dishwasher. It has been simulated a real purchasing and consequentelly use of the product at home. A cluster of consumer should in this way test the functionality deployed during the Project, in order to get the feedback of consumers in "real case" scenario.

Objectives

- Assess the platform's functionality with real users: 4 different activity + 1
- Gather user feedback on the future of the tool and the Digital Product Passport.

Timeline

• April 2024 to March 2025.

Two phases of testing: webinars to involve people and explain the project and then activities to be carried out as survey. All managed remotely.



Engage consumers

- Altroconsumo launch a search through a platform called ACMakers, with the aim of finding consumers willing to participate in the pilot by purchasing new dishwashers and returning the old ones. **27 families** were identified and involved.
- After the selection was finalized, **three workshops** were organized 15/03/24, 18/03/24, 24/03/24, dividing consumers into three different groups based on availability, to explain them what the project was about and what would be their role in it.

Bosch, their role in the pilot

- BSH provided **27 newly manufactured dishwashers** for the pilot activities.
- BSH provided/validated product information (model, description, product information sheet, energy label, user manual, installation and assembly instructions) and the manufacturing site.



Consumers selection

Consumers were selected trying to get a sample of different age groups and different provinces of residence (in the Lombardy region).

Age	N°
20-30	2
31-40	5
41-50	5
51-60	8
61-70	7

Province	N°	
Bergamo	3	
Brescia	2	
Cremona	1	
Lodi	1	
Milano	10	
Monza-Brianza	4	
Pavia	1	
Varese	5	

- During the **final selection**, Altroconsumo verified **3 conditions**:
- if consumers were concretely interested in the purchase of the product;
- if they were ready to purchase it (if products could be installed in their kitchen or if a technical barrier was present); if they engaged enough to support Altroconsumo in the pilot activity throughout the entire year.



First activity with consumers: May 7th 2024

Prerequisite: Ekodenge provided **QR codes**, water- and heat-resistant labels, that provided the physical support necessary to have access to the **Digital Product Passport** for each new dishwasher.

Altroconsumo distributed the QR codes to consumers, based on their choice of dishwasher.

Part 1 of the activity: Families collaborated in the creation of a **"identity card" of their old dishwashers**, by filling in a questionnaire developed by Altroconsumo and Erion (e.g. providing information on previous failures, age of the product, etc.)

Part 2 of the activity: Consumers were asked to attach the QR code label they received on their new dishwasher and to try to scan it. All consumers reported being successful with the scan or their respective QR codes and sent photographical proofs.



Second activity with consumers: June 26th 2024

Altroconsumo administered a questionnaire about the **first uses of the platform**: consumers were asked to search for some specific information within the DPP (such as life expectancy and the noise emission value) and to download some documents (such as the product instruction manual and the energy label).

The results of the questionnaire provided **useful input and ideas** for the refinement of the DPP.

•When asked to evaluate their **navigation experience** on the DPP, 'clarity of information and symbols' and 'usefulness of data' got positive votes from most consumers, while 'general browsing experience' got some more negative votes.

Some of the **suggestions** emerged from consumers:

•To include a 'zoom' feature that allows to increase/decrease characters size. •Spare parts finder.

•Direct contact with the manufacturer and helpline numbers.

•List of materials and packaging.

•A section dedicated to repair information.

•Information on warranty.



- Third activity with consumers: December 2024
- Prerequisite: definition of a **Privacy Policy** for consumers : joint efforts with Ecowise, Ekodenge and OCU.
- The activity will be divided as such:
- a)Consumers will be asked answer the questions in the new 'survey module' ("Sondaggi sul prodotto" in Italian) added in the Italian version of the DPP (User Experience survey), with the purpose to gather their feedback on their experience using the dishwasher.
- b) Questions on **sustainable uses of the dishwashers**, with the support of materials prepared and published by Altroconsumo. *The User Experience survey has been developed through a joint effort of AE, BSH, Ekodenge and EcoWise.*

About activity A, all 27 consumers confirmed that they would be willing to complete similar questionnaires if manufacturers implemented them regularly in the future.

Furthermore, every participant found it useful to provide feedback, recognizing its value in helping manufacturers improve their products. However, some felt that they should receive some form of reward for sharing their insights.

About activity B, consumers appeared to be fairly well-informed, though significant knowledge gaps were identified. We recommend that if similar usage tips are incorporated into a future version of the DPP, they could greatly benefit consumers.

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• Fourth activity with consumers: December 2024

• The repair activity has the objective to introduce consumers to potential new functionalities in future DPPs, which are still in the early stages of development. These features will guide users on the steps to take in case of a malfunction or breakdown.

Three key additions to the DPP had to be completed:

- **a.** Creation of a second survey within the "Survey Module" developed in the third activity, focusing on issues related to appliance malfunctions.
- **b.** Inclusion of a "repair event" in the Product Journey Map.
- c. Uploading a list of authorized repair centers in the Lombardy region, provided by BSH, to the Documents section of the DPP.

More in specific:

The Repair Simulation activity was launched, consisting of the following steps:

- 1. Repair Survey Completion
- Consumers were asked to complete the new Repair Survey, simulating an appliance breakdown. The survey will included a few initial diagnostic questions to help identify common issues and rule out minor errors.



2. Guided Troubleshooting

- Participants were then directed to the "Problem Resolutions" webpage on the Bosch website. By entering their dishwasher's
 model number, they could access troubleshooting tips for various issues. Consumers were asked to find solutions for two
 different problems and indicate whether they would attempt the repair themselves or seek professional assistance.
- 3. Locating an Authorized Repairer
- Consumers were instructed to consult the list of authorized repair centers and identify the closest repair service.
- 4. Exploring the Product Journey Map
- Participants were encouraged to review the Product Journey Map, where a repair event had been added, helping them understand how repair actions fit into their appliance's lifecycle.
- Repair Tips Accessibility: The repair tips were hosted on Bosch website rather than being integrated directly into the DPP. As a
 result, users had to leave the DPP to access them. AE suggests that in future iterations of the DPP, these tips should either be
 incorporated into the platform itself or, at the very least, be accessible through a dedicated section with a clear link to the
 manufacturer's repair tips page.
- **Repairer List Format**: Many participants highlighted that an interactive map would significantly improve usability by allowing consumers to quickly locate the nearest repair service

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Thank you for your attention :)

https://circthread.com/

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This project has received funding from the H2020 programme under Grant Agreement No. 958448



Global and EU Policy & Systems developments in automating product information management



EU ESPR – high-level timelines



Six EU product regulations include introducing DPPs

Discussion paper on 1st working plan

- Duration: 5 years (2025-2030) with revision after 3 years (2028)
- Final products: textile (apparel), furniture and tyres (end 2026, 2028, 2027 timeline for adoption*)
- Intermediate products: steel, aluminium (end 2026, end 2027 *)
- Energy-related products carried over from the Ecodesign and Energy Labelling working plan
- Horizontal requirements: reparability, recyclability and recycled content (2026, 2028, 2028**)
- Omitted products: footwear, detergents, paints, lubricants, chemicals, mattresses
- Next steps: finalisation of Working Plan, interservice consultation, adoption process; adoption by 19 April 2025

Europea Commis

Construction products

- (36 product groups)
 CPR (**DPP start 2028**)
- + Large batteries (EU battery directive)
- + Toys (revised toy safety Directive)
 - **Detergents & Surfactants** Revised REFIT regulation

Horizontal requirements Proposed to include ICT

 Vehicles circularity
 Passport (revised regulation On EOL vehicles)

*adoption \rightarrow 18 months before application

21

Ecodesign Forum, February 2025

**To only focus on Energy Related Products & ICT

EU Construction Products Regulation Digitalisation Timelines

Digitalisation



Digitalisation of DoPC

Global level DPP standards have been initiated



UNECE is working on the global UN Trade Protocol, to create a digital chain of data for global trade

UNTP is a digital standard, not a technology or platform

If you've got the product ID then you can get the data, readable by humans and machines



China is working on sector level DPP standards

- The China National Textile and Apparel Council and other organizations have taken the lead in launching the general rules and technical specifications for digital passports for textile products.
- China Electronics Technology Standardization Institute organized the drafting of the lithium-ion Battery Product identification industry standards, China Battery Industry Association around the data classification of battery digital passports.



China is leading the development of a global carbon product passport

Dr. Luo Xiang, Chairman of the United Nations Global Leadership and ESG Project Office and Chairman of the Preparatory Committee of the **International Carbon Code Registration Administration**, introduced **the preparations for the construction of the international carbon code system.**

http://www.i-oid.info/code/web/qt/qt!indexcontent.do?id=229

The **global unified carbon code registration system** has three identity values: carbon ID card, **carbon product passport**, and carbon credit rating. As a digital identity code that carrier information related to carbon footprint and traceability information.

http://www.i-oid.info/code/web/qt/qt!indexcontent.do?id=229

And actively promoting its establishment in bilateral agreements

On September 14, during the 2024 China International Fair for Trade in Services, the World Frontier Technology Conference and the 23rd Belt and Road Technology Transfer and International Innovation Cooperation Forum were held at the Beijing National Convention Center.

A signing ceremony for the implementation of the carbon code in Thailand was also held at the meeting. Ambassadors to China from the United Arab Emirates, Egypt, Jordan, Morocco and other countries, as well as nearly a thousand people from foreign governments, industries, investments and science and technology circles from 16 countries including China, the United Arab Emirates, Egypt, Morocco, Saudi Arabia, Jordan, Singapore and Thailand witnessed the signing.

Thank you for your attention



Dr. Rembrandt Koppelaar <u>Rembrandt.Koppelaar@eco-wise.co.uk</u> And actively promoting its establishment in bilateral agreements within the belt & road initiative

March 2025 - **General implementation Rules** for Product Carbon Footprint Labelling Certification (Trial)", referred to as the "Implementation Rules.

The rules clarify the scope, certification mode, certification process, labelling style and management requirements.

The Chinese Product Carbon Footprint label display: the footprint pattern, and presents the quantitative results in digital format, so that consumers can intuitively and conveniently obtain the carbon emissions information of the product.

https://www.gov.cn/zhengce/zhengceku/202503/content_7015292.htm

	Product Carbon Footprint Certification mark			
	Product Carbon Footprint Label Certification			
Certificate number: CFP-XXXX-XXXX-XXXX				
Name and ad	Idress of certification client: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX			
XXXXXXXXX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX			
XXXXXXXXX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX			
Product name	e/specification/model: XXXXXXXX (see attached page if necessary)			
Functional ur	it/declaration unit: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX			
XXXXXXXXX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX			
unit/declaration unit Product carbon footprint: XXX (kgCO2e) (See attached sheet if necessary)				
Certification r	node: initial inspection + product carbon footprint verification + post-			
	upervision Certification based on standards/technical requirements: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX			
	oducts comply with the "Special Implementation Rules for Product Carbon Footprint Labeling Certification (Trial)"			
	f "XXXXXX Special Implementation Rules".			
The validity of this	s certificate is maintained under the supervision of the issuing authority and the certificate information can be checked at XXXXX.			
	Issue date: XXXX-XX Date of			
QR code	renewal: XXXX-XX-XX Valid until:			
	XXXX-XX-XX			
Certificate Iss	suer:			
Name of the issuing certification body and related information				

Key product specific linked legislations

- Critical Raw Materials Act (2024) + Implementing Act (2026) requirement of CRM declarations for permanent magnet containing products – potential to for link to DPPs.
- **Directive for substantiating green claims (2025)** EU Parliament & EU Council made more explicit in trialogue that DPP will be a valid alternative for providing product green claim substantiation (based on the different verification schemes under the directive). (excludes Energy labelled (ErP) & construction products)
- Revised European Building Performance Directive (2024) requires embodied carbon to be calculated for all new buildings from 2030 (necessitates product carbon data – which is required under CPR to be included in ALL construction product DPPs).
- **EU Steel and aluminium action plan** (March 2025) announces the introduction- of recycled content obligations for construction products aluminium by Q4 2026, and the study of feasibility for steel and aluminium for end-of-life vehicles by Q4 2026.
- EU Common Data Platform on Chemicals (2025) to be setup 3 years after entry into force of legislation, to include linkages to DPP Substances of Concern Data among all other existing EU chemicals databases.

Circ Thread

DPP Policy recommendations from the CircThread project for chemicals, data spaces, circular economy targets & consumer information

Amba Concheso – dss+

 $8^{th}\,of$ May, 2025



Introduction Policy Recommendations for an effective DPP

CircThread findings to inform DPP policy developments

- 8 concise policy briefs to give EU legislators clear, evidence-based guidance for designing and implementing the Digital Product Passport.
- Each brief integrates project findings into recommendations that tackle a specific obstacle or opportunity along the DPP's path—from system architecture to consumer impact.

Wave 1 (published 2024)

- 1. Success Factors for the DPP System
- 2. Eco-design in the Context of the DPP
- 3. <u>DPP & Recycling</u>
- 4. Repair & Reuse through the DPP

Wave 2 (published 2025)

- 5. <u>DPP & Science-Based Circular-Economy Targets</u>
- 6. Ensuring Chemical Traceability with the DPP
- 7. Product Lifecycle Information for Consumers
- 8. Circular Applications Data Space



How DPPs Can Contribute to Science-Based Circular-Economy Targets – Policy Brief #1



Why we need a science-based Circular Economy

- Need a more holistic approach tackling all 4 pillars
- Few measures for Narrow (reduction) → textiles & chemicals cases
- Need binding science-based targets, not aspirational goals
- Quantitative targets are the north star for effective policy the new Circular Economy Act and future circular economy policies must set binding, overarching material footprint reduction targets to reach five tonnes of raw material consumption per capita by 2050.



How DPPs Can Contribute to Science-Based Circular-Economy Targets – Policy Brief #1

The DPP as a tool to build the data foundation of a science-based circular economy policy

- Current CE indicators lack granularity & timelines
- DPP can support monitoring framework, giving **primary data** allowing for real-time material flow accounts
- Companies must be supported with clear methods and standards on how to collect data in a standardized manner

Policy recommendations

1. Ensure every CE laws tackle **all four pillars**

Enshrine binding material-footprint & 1.5 °C-aligned GHG targets in the Circular Economy Act
 Revamp CE monitoring: pillar-based indicators + sector/product granularity using DPP data
 Explore how DPP data can improve current EU databases on material-flow statistics
 Issue clear, harmonised methods for collecting primary data; reward it over secondary
 Enforce robust DPP oversight: guidance, audits, penalties for poor data

Ensuring Chemical Traceability with the Digital Product Passport – Policy Brief #2

- EU produced 271 Mt & consumes 289 Mt chemicals in 2020
- Blind spots in imports & online sales: Investigation conducted by ECHA and EU enforcement authorities in 2021 found that the majority of products sold online are in breach of EU chemical regulations.
- SVHCs still common in consumer goods → carcinogens, endocrine disruptor, persistent organic pollutants
- Data gap on "what + where + how much" esp. in imports, online sales & recycled material flows
- REACH/CLP → Safety Data Sheets only for top-risk substances, not whole products

Current situation: chemical overload, microplastics, hazardous substances in toys

Chemical

traceability

must enable



DPP potential:

traceability, phase-out of harmful substances, circularity

1. Phase-out hazardous substances

2. Stop legacy substances of concern in circular loops

3. Encourage safe-&-sustainable alternatives

4. Use chemicals efficiently

Ensuring Chemical Traceability with the Digital Product Passport – Policy Brief #2

ESPR opens the door to improved traceability

- Mandatory information requirements in every delegated act → fed through **DPP to help address the missing infrastructure**
- Confidentiality must not hide health-/eco-critical data

Policy recommendations

1. Enable identification of chemicals in products

2. Accessible data through life-cycle; DPP must travel with product/waste stream

3. Link DPPs to other chemical databases to facilitate reporting and sharing (e.g. SCIP, EPREL).

4. Equip workers, recyclers & consumers with usable DPP tools

5. Ensure access to data for agencies and experts carrying out environmental and human safety studies and screening of chemicals in products

6. Use DPP analytics to monitor and improve chemicals regulation REACH restrictions. Missing data = non-compliant product. Traceability complements, not replace bans



no data = no market

Digital Product Passport and Consumers Use-Phase – Policy Brief #3

- Hidden phase of product's life: After sale, maker-user link breaks → data void
- Consumers *take* specs, repair & disposal info—often scattered
- Producers rarely receive usage/repair feedback \rightarrow design blind spots
- Premature disposal -> replacement often chosen over repair

Findings from Consumer Survey

85% willing to register products on a platform - anonymously

Will share faults, EoL choice, repairs - not daily usage

40 % attempt DIY repair for minor faults

Economic feasibility rules repair decisions

Information gaps: realistic repair cost, spare-part price/availability, warranty coverage.

Barriers: privacy & spam fears

Using the Digital Product Passport to Empower Consumers During the Use-Phase – Policy Brief #3

Turning DPP into a two-way channel:

 For users (TAKE): warranty countdown, repair availability maps, DIY videos, repair cost estimator, etc.<-> For makers (GIVE): user ticks few fields (fault type, usage cost, reason for disposal).



• Needs anonymised approach to information giving

Policy recommendations

1. Independently defined set of Repair Standards which repairers must comply with in order to be listed on the DPP

- 2. ESPR delegated acts: enable maker-to-user feedback surveys via DPP (GDPR-safe, no marketing)
- 3. Register **product**, **not person**; consumer anonymity by default
- 4. Producers should *pro-actively* invite use-phase data (opt-out allowed)
- 5. Plain-language terms in consumer view of DPP; avoid technical jargon
- 6. Integrate DPP metrics with Repairability & Durability Indexes to ground indexes in real-world data

Circular Application Dataspaces – Policy Brief #4

EU CEAP calls for a **"European data space for smart** circular applications"

Key applications and concrete benefits

- Lifecycle transparency better decisions for efficient recycling & CRM recovery
- Targeted refurbishment & reuse marketplaces
- Predictive maintenance & eco-design feedback loops
- Consumer guidance & repair networks
- Policy monitoring: material-flow KPIs in near-real time



ESPR	Makes DPP mandatory information for product groups, supplies the raw data	
Data Governance Act	Neutral <i>data intermediaries</i> , sets trust & usage-control principles, encourages "data altruism"	
Data Act	Gives users default access to IoT/industrial data; prevents vendors from locking datasets	
Competitiveness Compass / "Data Union Strategy"	Pledges to simplify data-sharing rules and accelerate common data spaces	

Circular Application Dataspaces – Policy Brief #4

Key requirements for effective Circular Applications Data Spaces:

- Interoperability: common taxonomies, machine-readable DPP
- **Governance**: data contracts, clearing house logging transactions and dispute resolution
- Trust: decentralised storage + role-based access; privacy-by-design (GDPR)
- Intermediaries: neutral "data brokers" (Data Governance Act) & open middleware like *Simpl*

Policy recommendations

- 1. Standardisation and interoperability
- 2. Clear data governance models with defined ownership, access rights, and responsibilities of different stakeholders in data space + multilayered oversight
- 3. Financial and technical support particularly for SMEs
- 4. Innovation exploitation
- 5. Adaptability through implementation: work closely with industry and technology experts for modifying data spaces as needed



Digital Product Passports: Building-Blocks for an EU Circular Economy



• Use DPP data to set & track binding material-footprint + 1.5 °C GHG goals across Narrow-Slow-Cycle-Regenerate pillars.



• **Chemical traceability** – Embed full, non-confidential substance lists in every DPP; link to EU chemicals platform to **phase-out SVHCs & legacy toxics**.

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• **Consumer use-phase loop** – Turn DPP into a 2-way channel; anonymised fault/usage feedback for makers.



• **Circular Applications Data Space** – Ensure EU data space with strong governance **common standards**, **usage contracts & SME support** to ensure trust amongst stakeholders and unlock circularity hubs.

Circ Thread

Thank you for your attention

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in company/ circthread-project/



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Raising standards for consumers

Digital Product Passport for consumers

Digital Circular Economy Solutions Conference | 8 May 2025

Isabel Lopez-Neira ilo@anec.eu




Consumer need reliable information for sustainable choices Potential of Digital Product Passport

- Transparency about product environmental impacts
- Guidance during product lifecycle e.g. repair, maintenance, disposal
- Enabling informed choices to compare products, yet as a complementary tool



Digital Product Passport

Ecodesign for Sustainable Products Regulation (ESPR)

- DPP as a tool to enable the circular economy, providing information about products and their value chain.
- Consumers will be able to scan products and search for and compare sustainability information in the DPP
- Need to know basis: public vs restricted data







Digital Product Passport



Ecodesign for Sustainable Products Regulation (ESPR) & other EU legislation

Consumer information

- Durability, repairability, spare parts
- Recycled content
- Hazardous substances
- Energy efficiency
- Carbon and environmental footprints

• .

Applying first to (EV) batteries from 2027.



Link with Batteries, Construction Products, Toys Regulations



DPP that works for consumers ANEC/BEUC recommendations for ESPR

ANEC/BEUC views:

- A DPP can bring
 - ✓ Traceability
 - ✓ valuable consumer information
 - ✓ enforcement support

Essential information must be provided offline



DPP that works for consumers ANEC/BEUC on Toy Safety Regulation: DPP for toys

- Free access for consumers; no app installation or personal data registration
- Data processing based on consumer consent, opt-in required
- Toy Safety Regulation: We ensured DPP & EU Safety Gate link. Same access rights for consumers and authorities.
- Despite our call for obligation to report on substances of concern, this was disregarded in the final text







Digital Product Passport

Standardisation request

THE FRAMEWORK, "HOW"

- Making DPP operational
- Establish an interoperable framework
- Encompasses IT standards and protocols
- Facilitate information sharing across the value chain

CEN-CENELEC JTC 24 'Digital Product Passport'



Digital Product Passport Standardisation request

THE FRAMEWORK, "HOW"

8 standards to be drafted by Dec 2025

Unique identifiers, access rights management, interoperability, data processing and formats, storage, authentication, reliability, APIs and searchability...

The content, "WHAT", to be set through product-specific legislation





Standards: 'HOW' Product legislation: 'WHAT'

Digital Product Passport Standards

ANEC recommendations

- Accessibility by design: Easy access to userfriendly information (web accessibility, ISO EN 301549)
- Data protection & Privacy by design standards
- Shall not replace offline essential information
- Need for transparency in chemicals supply chain
- Permanently available, trust in information and updates
- Supporting consumers in making sustainable choices



CEN-CENELEC JTC 24 'Digital Product Passport'



Digital Circular Economy Conference – CircThread project | 8 May 2025

• To be used by SMEs, economic operators, DPP

designers in companies, wider economic actors

CircThread

Standardisation input – CEN Workshop Agreement

- Guidance document to design DPPs
 - Information exchange framework
 - Types of passport
 - Adding DPP to product label
 - Traceability, longevity, availability of data
 - Security of DPP
 - ...





ANEC recommendations to circThread

Standardisation: CEN Workshop Agreement

- We welcome the initiative
- Accessibility and privacy by design e.g. clarify consent language
- DPP design based on dedicated consumer research & testing
- Allow third-party updates to product history (repair, upgrades)





VEARS VEARS ANECC Raising standards for consumers

Wrapping up...

The 'HOW' and 'WHAT'

Both product-specific legislation & standards must work in tandem with consumer protection built in.

DPPs provide potential of transparency and valuable consumer information for consumers yet the transition must be accessible - essential info offline – and consumer privacy must be ensured.





Raising standards for consumers

Thank you!

