Cross-Border E-commerce to Consumers, Digital Product Passports (DPP), and the Role of Authorities

Collaborative White Paper

developed in collaboration with PARSEC, CIRPASS-2, BORDERLINK EU Funded Projects

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As this white paper brought together different authors with different areas of expertise, their contribution to this white paper is limited to their areas of expertise and related parts in the paper where the respective topic is addressed.

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Executive Summary

The ever-growing volumes of e-commerce trade from outside the EU directly to consumers is an increasing challenge globally for customs and market surveillance authorities. In 2024, "4.6 billion of such low value consignments [up to EUR 150] were imported in the EU, almost twice the number recorded in 2023 (2.4 billion), and more than tripled since 2022 (1.4 billion)" (COM, 2025a, p.2). This steep increase in volumes makes it very hard for authorities to monitor and control these flows. However, difficulties to efficiently and effectively manage compliance of these flows, is arguably resulting in unsafe or unsustainable products entering the EU market or unfair competition as products that do not comply to stringent EU requirements are able to enter the market. For example, a recent investigation carried out by 27 customs authorities and 108 market surveillance authorities as part of a EU-wide large-scale operation[1] where around 20 000 pieces of toys and small electronics were checked, indicate that many of the products checked had issues with following EU product standards. Having in mind the growing volumes of e-commerce flows, there is an urgent need for authorities to get a better grip to address the cross-border e-commerce compliance monitoring challenges.

Legislative changes that concern both customs and market surveillance authorities are under way. Concerning customs, the ambitious *EU Customs Reform* was approved on 26 March 2026 by EU Member States and the European Parliament (EU, 2026). The three pillars to the Customs Reform are (1) Smart data-driven approach to customs checks, which will include the establishment of an E*U Customs Authority* and an *EU Customs Data Hub*, (2) a strong partnership with businesses, and (3) a modern approach to e-commerce. At the same time, new legislative changes under the Product Act will also affect the way of working of the EU market surveillance authorities. Addressing the issue of authorities in monitoring the steep increase of cross-border e-commerce flows needs to be seen in view of these recent developments.

In the meantime, in 2025, the European Commission published a communication on *A Comprehensive EU Toolbox for Safe and Sustainable E-commerce (COM, 2025a)*, where digital tools, including Digital Product Passports are seen as a potential part of the solution. In the European Union, Digital Product Passports (DPP) were initially seen only as an instrument to foster ecodesign and circularity and to improve market surveillance. The latter has acquired new importance also to solve e-commerce compliance challenges and the DPP concept is increasingly also seen as a tool to address wider concerns including administrative burden reduction. The upcoming *EU Product Act (Q3 2026)* of the is anticipated to further strengthen this role of DPPs. The Digital Product Passports are still under development and while they are considered as an element for the solution to address cross-border e-commerce monitoring challenges, what role they can play in this context needs to be further understood.

[1] https://taxation-customs.ec.europa.eu/document/download/42c872b9-a4ce-455b-8b5f-91cd76bd11bb_en?filename=PCA.pdf

The publication of this white paper serves to foster discussions on these new potential capabilities of Digital Product Passports for enabling cross-border e-commerce compliance monitoring. To this end, this white paper aims to make cross-border e-commerce processes, compliance monitoring processes and their interaction with DPPs explicit for non-experts. We particularly focus on the cross-border processes directly to consumers, as they are particularly challenging as due to the high speed of e-commerce flows and the large volumes there are limited possibilities for checks of these products between the arrival of the goods and delivery to the homes of the consumers. These challenges also bring opportunities for innovation, where digital tools, collaboration between authorities, and business-government partnership may offer new avenues to explore.

The goal of this white paper is to rapidly bring up to speed all actors involved in the context of cross-border e-commerce, including authorities and businesses, on the potential of DPPs , how authorities may benefit from DPP-provided product information, and opportunities that may arise for business-government collaboration when businesses are able to ensure high-levels of transparency and control over their cross-border e-commerce operations. This paper brings to the attention the issue of verifiability of DPP data and outlines the potential for the development of a machine-verifiable compliance system which, if integrated into the DPP system, could serve as the backbone for automated data verification. This white paper also serves to provide insights into key open points that need to be discussed and answered as part of the legislative evolution under the EU Product Act and other DPP-related legislation and their further operationalisation, as follows:

Before placing a product on the EU market:

- What process should be put in place for responsible economic operators and authorised representatives of non-EU manufacturers (and also to EU producers), to show that the compliance-relevant information in the DPP is accurate and valid?
- Which checks should be carried out linked to product compliance before allowing placing a product on the EU market, at what point of the process (e.g. before or after registering a DPP in the EU DPP product registry, before or after customs processing/import), and which checks will rely on periodic audit?
- How do Notified Bodies or other authorized organisations, that certify that specific products meet legal requirements before these are allowed to be placed on the market, provide their certifications, ideally in machine-readable formats, for DPP-based compliance check purposes?

When a product is sold and/or imported into the EU:

- If and what responsibilities should e-commerce platform operators have in validating compliance information maintained in DPPs, for products sold on their platform (i.e. also without their direct involvement)?
- How can product identity management with DPPs benefit e-commerce platforms, given that different product groups will have model, batch or item level identity variations, and the need for secure identification across many sellers of the same product?

- How should customs collaborate with market surveillance authorities in evaluating product compliance information in Digital Product Passports, when an import declaration is filed, what would be the workflow and information flow?
- How should DPPs work with different market surveillance procedures across the EU member states, and link into existing market surveillance IT portals, for sharing product compliance check information (to avoid multiple checks on same product model)?

As an overall need across the entire product compliance life cycle:

- If and how should non-compliant findings be logged into DPPs by market surveillance authorities?
- How can DPPs serve to support not only the access to compliance-relevant data itself, but also improve the reliability of compliance information itself by creating a new trusted system, through improved systematic compliance validation, notified body product certification & issued product certificates, and market surveillance feedback, within the EU and through cross-border systems?
- What are opportunities of DPP and business-government partnership and burden reduction in the context of cross-border e-commerce for the flows where high-levels of transparency and verifiability are in place.

This paper is written in collaboration with the PARSEC[2] and BORDERLINK[3] EU-funded projects, which explore, among others, the potential of Digital Passports for Customs Risk Management including cross-border e-commerce, as well as in collaboration with the CIRPASS-2[4] EU-funded project which focussed on Digital Product Passports. Through this collaborative white paper, different pieces related to the understanding of cross-border e-commerce, the role of authorities and opportunities and challenges of DPP in this context are brought together. The authors hope that this white paper will serve as a conversation starter. It is meant to set the scene and lay a common basis of understanding of the many technical and procedural aspects, for follow-up research and wider engagement on the topic of DPPs and the role of authorities in the context of cross-border e-commerce compliance monitoring.

[2] https://www.parsec-project.eu/

[3] https://www.borderlink.eu/

[4] https://cirpass2.eu/

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1 Introduction

This white paper addresses the topic of compliance monitoring of cross-border e-commerce, and the potential of Digital Product Passports. In February 2025, the European Commission published a Communication to the European Parliament, the Council and the European Economic and Social Committee and the Committee of the Regions: *A Comprehensive EU Toolbox for Safe and Sustainable E-commerce (COM, 2025)*. Two aspects of this Communication were particularly important and a major motivation for this study: (1) the scale of the cross-border e-commerce directly delivered to consumers as well as major challenges it brings for compliance monitoring, and (2) the opportunities seen in digital tools, including Digital Product Passports.

> "E-commerce goods directly imported by consumers in the EU have surged in recent years and are expected to continue growing in volume at a rapid pace benefiting from the current duty exemption for low value consignments (up to EUR 150). According to EU surveillance data, 4.6 billion of such low value items were imported in the EU in 2024. … The rapid increase of imports shipped directly to consumers raises significant challenges that require urgent attention, in particular where imported products may be non-compliant with EU law…. …The surging volume of products that are unsafe, counterfeit or otherwise non-compliant 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. The sheer number of products imported directly by consumers in the EU also puts an unsustainable strain on authorities" (COM, 2025, p.2)

In the Communication of the European Commission on the e-commerce toolbox, digital solutions and Digital Product Passports are seen as elements of the solution.

> "Digital solutions can be key enablers for the supervision of the e-commerce landscape, supporting authorities and legitimate market players ensuring compliance with EU law" (COM, 2025, p.18)
>
> "the Commission is prioritising the effective implementation of the Digital Product Passport (DPP) (COM, 2025, p.18)".

While the Communication does make the links between cross-border e-commerce to consumers, compliance monitoring challenges, and the potential role of DPP, the exact role that DPPs could play in this context still needs to be better understood. This is a major motivation for this white paper, namely, to bring some further understanding on this topic to serve as a basis for further discussions.

1.1 Digital Product Passport legislative context

Digital Product Passports are emerging as a new instrument in several legislations related to the European Green Deal and beyond. Under the Ecodesign for Sustainable Products Regulation (ESPR) EU/2024/1781 (EU, 2024a), Construction Products Regulation (CPR) EU 2024/3110 (EU, 2024b), the

Battery Regulation EU/2023/1542 (EU, 2023a) and several other product-specific legislations, the Digital Product Passport (DPP) will be mandatory for specific product groups to be placed on the EU market. These EU legislations will require DPPs for a range of product groups during the 2027-2030 period, such as textiles, batteries, construction products, detergents, steel, aluminium, and toys. Further product groups that will be required to have a DPP for EU market placement are expected to be covered after 2030; priority lists are already published (COM, 2025b). While initially introduced as a tool to enable circularity and environmental performance, DPPs are increasingly seen by European Commission as an instrument that can serve wider economic goals by contributing to EU competitiveness, administrative burden reduction (COM, 2025c), and ensuring the integrity of the EU single market.

DPPs are intended to enable several user groups, including businesses in advancing their circularity strategies such promotion of durability, as reuse, remanufacturing and recycling, consumers in making informed purchase decisions, as well as market authorities with better monitoring and enforcing compliance of products placed on the EU market subject to these new legislations. Yet how DPPs will be operationalised as a system and used in the future by the different user groups, still needs to be better understood.

In this paper, we are focusing specifically on examining the potential of DPP for compliance monitoring of cross-border e-commerce, with specific focus on direct delivery to consumers. An OECD definition of an e-commerce transaction is "the sale or purchase of goods or services, conducted over computer networks by methods specifically designed for the purpose of receiving or placing of orders. The goods or services are ordered by those methods, but the payment and the ultimate delivery of the goods or services do not have to be conducted online. An e-commerce transaction can be between enterprises, households, individuals, governments, and other public or private organisations." (OECD, 2025, p.15). In this white paper we will focus on e-commerce transactions that concerns goods imported to the EU directly to consumers, because these flows have been identified as very challenging for compliance monitoring. In this context, DPP can play an important role, however how exactly DPP can help to address these e-commerce compliance monitoring challenges needs to be better understood.

A very early exploration on the potential of DPPs in the context of cross-border e-commerce risk management and links to customs was performed as a part of the PARSEC project (Rukanova et al., 2025). In the current white paper we further expand and elaborate on that topic, by bringing additional experts on Digital Product Passports and taking the market surveillance perspective as well.

In this white paper we focus on two specific aspects:

- First, understanding the potential of DPPs for public authorities, including market surveillance authorities and customs administrations.
- Second, in regards to the authorities, zooming in on the specific context of cross-border e-commerce directly to consumers, where goods are bought from outside the EU and subsequently delivered to the consumer's home in the EU.

1.2 Legislative changes affecting the future way of working of authorities

The focus on authorities and e-commerce is particularly opportune at this moment in time, as e-commerce is a key topic for both customs and market surveillance authorities. Next to the legislation related to Digital Product Passports that we discussed above it is important to highlight legislative changes that are on-going which will affect how authorities will work in the future.

In the Customs world, the EU Customs Reform (EU, 2026) is being introduced, which seeks to address, among other issues, the challenges posed by e-commerce. Important aspects include developments such as EU Customs Authority, EU Customs Data Hub and business-government collaboration models such as Trust-and-check. We will discuss these further in Section 2.

In parallel, when it comes to market surveillance authorities, legislative changes will take place under the upcoming Product Act (expected to be proposed by the European Commission in Q3 2026) (see Commission's work program (EC, 2026)).The upcoming revisions that will be part of the European Product Act, are foreseen to cover: The New Legislative Framework (Regulation (EC) No 765/2008 (EC, 2008a) and Decision No 768/2008/EC (EC, 2008b))); The Market Surveillance Regulation (Regulation (EU) 2019/1020 (EU, 2019)), which replaced the chapter on market surveillance first in the New Legislative Framework; and the Standardisation Regulation (Regulation (EU) 1025/2012) (EU, 2012). The EU Product Act will impact the role, responsibilities, capabilities and operations of market surveillance authorities. The EU Product Act is expected to include mechanisms for making restricted product compliance information accessible to market surveillance authorities in the EU using Digital Product Passports. Given these legislative developments, providing an in-depth understanding of the potential of using DPPs within the context of e-commerce, customs and market surveillance, will make it possible to bring possible connections, despite different regulatory timelines and dynamics.

1.3 What questions should be addressed in relation to e-commerce, DPPs, and market compliance?

The overriding key questions are how the DPP can play a role in addressing the e-commerce challenge, what role authorities will play, and how authorities may benefit from DPP-provided product compliance information. To provide for a common basis of understanding to start answering these questions, we aim to cover in this paper the following:

- How does a cross-border e-commerce process look like, and how does it form part of the broader picture of circular economy processes?
- Which authorities are involved in the cross-border e-commerce processes, and what is their role?
- What is the potential role of DPP in the e-commerce process?
- What are opportunities and challenges for use of DPP for authorities in the context of cross-border e-commerce, and what are open questions to be addressed?

Addressing these questions in depth will be a significant and challenging task that will require dedicated efforts, and arriving to detailed answers will go way beyond this white paper.

1.4 Why is this white paper needed?

The purpose of this white paper is to serve as a conversation starter, set the scene and lay a common basis of understanding for follow-up empirical research and wider engagement on the topic.

The challenges related to e-commerce are substantial, the potential of digitally provided, machine-readable product information including compliance data in the e-commerce context is underexplored, and the pathway to leverage DPPs is not yet defined. We have also witnessed that the topic of e-commerce and the potential of DPPs for authorities is gaining attention in different settings and among people with different expertise with their own and unique perspectives on the problems and opportunities. As timeframes are short, and in order to make fast steps, EU-wide and effective cross-authority collaboration will be therefore essential. Note that cross-authority collaboration has long been a key concern for customs under the label of Single Window[5] and Coordinated Border Management[6]. In this white paper we bring together experts from different domains to try to combine their perspectives as a basis for a broader conversation.

1.5 Why are the authors suited to write this white paper?

For this white paper, we brought different projects and expertise together, based on expert knowledge and expertise, to map what we know and connections we see on how the DPP can offer opportunities for authorities in cross-border e-commerce. Across the projects that collaborate on issues related to this white paper, there is a rich knowledge on individual topics in isolation. For example, the CIRPASS-2 project partners have a rich knowledge on DPPs, and the PARSEC[7] and BORDERLINK[8] project partners have deep insights into customs processes and detection technologies including roles of customs in e-commerce. Other experts who joined have also expertise related to DPP or the role of the market surveillance authorities. However, how these elements come together to form a more comprehensive picture of the potential of DPP for authorities in the context of cross-border e-commerce remains insufficiently explored. This white paper aims to address that gap. In bringing all these topics together, this paper also aims to make the processes clearer for non-experts. Therefore, we do not strive for completeness but rather aim to provide some common grounds for parties from different backgrounds to better understand each other's activities and processes in search for a better mutual understanding as basis to work out solutions.

While many experts specialise in a specific area, such as customs, market surveillance, e-commerce platforms, or Digital Product Passports (DPP), bringing these worlds together provides a better

[5] https://taxation-customs.ec.europa.eu/eu-single-window-environment-customs_en

[6] https://www.wcoomd.org/en/topics/facilitation/activities-and-programmes/coordinated-border-management.aspx

[7] https://www.parsec-project.eu/

[8] https://www.borderlink.eu/

understanding of each other's domains as necessary basis to move towards comprehensive, real-world solutions. Acknowledging that some simplification is inevitable, this paper seeks to connect these perspectives, place them in a broader international context, and provide a starting point for further discussion.

1.6 What is the EU market scope of this white paper?

For the scope of this white paper, we will zoom in on cross-border e-commerce directly to the consumer, where goods are bought from outside the EU and subsequently delivered to the consumer's home in the EU. While cross-border e-commerce also includes business-to-business e-commerce, where the goods come and are cleared via traditional channels (e.g. transported via sea containers), stored in warehouses, and subsequently sold via e-commerce channels to customers in the EU, these cases are out of scope of this white paper, as we assume more stringent controls are possible for these flows. For example, in business-to-business e-commerce, information about Authorised Economic Operators (AEO[9]) status can be used about the seller company and the buyer company to de-risk the transaction, but this is difficult to do when goods are sent directly to consumers. Therefore, in this white paper, we focus on understanding the cross-border e-commerce flows involving on-line platforms, where the goods come from outside the EU into the EU and are sold directly to end-consumers in the EU. Additionally, we also assume air freight is the main means of transport as airfreight is used for shipment of many small e-commerce packages destined directly to consumers. These require very fast handling time which makes it very challenging for compliance monitoring by authorities.

While this scoping is important for keeping the analysis more manageable, follow-up studies can expand the scope to focus on business-to-business processes and other means of transport as well.

1.7 How is the white paper structured?

This white paper is structured as follows:

- Section 2 focuses on understanding the high-level legislative process and the role of authorities.
- Section 3 zooms in further detail on cross-border transaction processes and how they form part of the circular economy flows.
- Section 4 goes into further details on the role of authorities.
- Section 5 explores issues related to verifiability of DPP, upcoming technologies and data granularity.
- In Section 6 we discuss challenges and opportunities of DPP for authorities in the context of cross-border e-commerce and we outline ideas for further exploration.
- We end the paper with Conclusions.

[9] https://taxation-customs.ec.europa.eu/customs/authorised-economic-operator_en

2 High-level understanding of the legislative context, DPP, the role of customs and market surveillance authorities

2.1 Digital Product Passports and the role of authorities

DPPs are being introduced in the EU as a tool for mandatory sharing of product-related information for specific product groups, at the point when products are placed on the market, but in projects such as CIRPASS-2 the potential of DPP is explored beyond the mandatory EU DPP context[10]. The legal basis for DPPs can be found in the EU ESPR (EU, 2024a), as well as product-specific legislations such the upcoming ESPR product specific Delegated Act (e.g. for Steel in 2026 and for Textiles in 2027), as the Battery regulation (EU, 2023a), the Construction Products Regulation (EU, 2024b), and the Toy Safety Regulation (EU, 2025a).

The concept of Digital Product Passports is to provide product information ultimately supplied by the manufacturer in an easily accessible, digital format to consumers, companies and authorities. This information can be retrieved online, during an online purchase - or directly from a data carrier on the product itself, such as a QR code, a Radio-Identification (RFID) tag, or a Near-Field Communication (NFC) tag. Under the ESPR, the responsibility for issuing a DPP and registering it in the centralized DPP registry will lie with a responsible economic operator (rEO) placing the product on the EU market. Several identifiers forming the 'Passport' part of the DPP will be stored in the centralised EU DPP registry, such as the economic operator identity, the product identity, and the manufacturing facility identity wherein the final product was produced. The exact details may vary by product group and relevant legislation.

A key distinction is made between the *DPP system*, e.g. the IT system that enables registration, sharing and exchange of data contained within the DPP, and the *DPP data*, i.e. the actual data and information that is made publicly available, and the restricted data and information that is available only to specific parties such as market surveillance authorities, or repairers. The idea is that while the DPP data will differ per product group, and the exact data requirements per product groups will be specified via delegating acts of ESPR or other product-specific legislations, the DPP system will ideally stay the same regardless of the product group, such that DPP data will be shared in a very similar way for any DPP. The Commission has issued a standardisation request (C, 2024) as regards digital product passports in support of Union policy on ecodesign requirements for sustainable products and on batteries and waste batteries. These standards are developed by CEN/ CENELEC JTC 24[11].

Explorations of specific aspects of how DPPs will technically work in practice are still on-going in pilots. Also some aspects may still need to undergo further formalisation when concerning specific technical choices or further definition of responsibilities. We will therefore not go here into in-depth technical or legal discussions here. Instead, our goal is to provide some high-level contours and current discussions.

[10] https://cirpass2.eu/wp-content/uploads/2024/07/CIRPASS2-Standard-Presentation.pdf, see slide 7 Why is DPP system an incredible opportunity? Outlining the vision of CIRPASS-2 to address both mandatory and non-mandatory DPPs.

[11] https://standards.cencenelec.eu/ords/f?p=205:7:::::FSP_ORG_ID:3342699&cs=152A83699C987EFA564209B7AC7311C86

In a general sense, the technical approach is that the DPP data resides with the economic operator. It can be with the economic operator that is responsible for placing the product for which DPP is required on the EU market or the data can be provided via e.g. DPP service providers, being third parties providing a DPP service for them.

In ESPR Article 2(32) 'digital product passport service provider' means a natural or legal person that is an independent third-party authorised by the economic operator which places the product on the market or puts it into service and that processes the digital product passport data for that product for the purpose of making such data available to economic operators and other relevant actors with a right to access those data under this Regulation or other Union law'. The Commission is working on a delegated act setting out the requirements for DPP service providers and the Commission has already engaged in public consultation on that topic[12]. These Digital Product Passport service providers will play an important role providing assurances about the quality of the data.

A limited number of DPP data (mostly identifiers) will need to be made available in a Centralized EU DPP registry. It is foreseen that one way of accessing DPP data could be through an EU DPP web portal that can be used by consumers, businesses and authorities to access parts of the DPP data in addition to access through a data carrier such as a QR-code or an NFC or RFID-tag. QR codes are now accessible by practically any smartphone, NFC by many/most (as also used for e-payments via smart phones). RFID tags can currently be read using specialized reader technology, and are used e.g. for warehouse inventories etc., but in the future, it is expected that they may be accessible via smartphones as well. How exactly the DPP web portal would look like and which functionalities it will support is still under development at Commission.

From the point of view of authorities, customs and market surveillance will be key users of DPPs to support their daily work. While customs is concerned with product flows that cross the outer EU border, market surveillance authorities have main responsibilities of monitoring the products when they are placed on the EU market. For goods imported from outside the EU for which DPPs will be mandatory, it is foreseen that the import declaration would also include a reference to the DPP number to show that the product has been registered in the centralized EU DPP registry. This will be based on a reference number provided by the EU when registering the product in the centralised EU DPP registry, that will need to be included in the import declaration for goods imported into the EU.

It is foreseen that for products for which DPPs are mandatory, customs would be able to perform an automatic check whether the DPP reference identifier on the import declaration has indeed been registered in the centralized EU DPP registry. To perform this check, customs will use also the existing Customs Single Window (CSW)-CERTEX[13] system, which will be connected to the centralized EU DPP registry, likely in the year 2028. The ESPR also foresees that for risk management, customs may need

[12] https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/14382-Digital-product-passport-rules-for-service-providers_en

[13] https://taxation-customs.ec.europa.eu/eu-single-window-environment-customs_en

to access more data from the DPP than data stored in the centralized DPP registry. Customs may not have access to the physical product as the goods may be in boxes or containers making the data carrier such as QR code difficult to access. However, other data carriers such as RFID offer more possibilities, as allow reading from distance in the range of several meters and through packaging layers. Which specific data carriers will be permitted or uniquely required per product group (or subgroup) is still to be clarified in the upcoming Delegated Acts. The system is technology-neutral, and RFID is explicitly foreseen as one possible data carrier for DPP. While customs may not unpack sealed cartons to scan unit-level QR codes, RFID does not require line of sight and can be read through packaging in bulk. So different possibilities exist, depending on whether a QR-only (or NFC-only) model is applied, or in addition RFIDs, which allow for more possibilities. It is important to mention that the Customs Reform has just been adopted and itis still to be seen whether or not the EU Customs Data Hub will play a role when it comes to customs accessing DPP data. And whether this link could be via the CERTEX system, the DPP Web portal or in some other way. How this technical landscape will evolve will play an important role in future. Also, given that DPPs will likely include restricted data, differentiated data access rights for authorities are foreseen:

When it comes to product data in the DPP, market surveillance authorities will be able to utilize the data in the DPP to support carrying out checks whether a product complies with the applicable EU legislation. The main benefit is that data required for market surveillance could be made readily available in a DPP and that this data can be readily accessed without requiring to contact the economic operator responsible for maintaining the DPP. In contrast to the current system where such technical documentation does not need to be provided in a digital and moreover machine-readable format, but only stored on the economic operator's server (or even in paper form) to be made available upon request. It is foreseen that the market surveillance authorities will receive specific access credentials to access more detailed compliance data than publicly available, so-called restricted data, either by accessing the DPP data via a data carrier on the product that contains links to the DPP data or using the EU DPP portal to access DPP data. How exactly this will work and will support the processes of the market surveillance is still to be further elaborated by the Commission.

The management of product compliance data in the DPP therefore makes it possible for market surveillance to use the DPP to monitor whether the product fulfils legislative requirements. Both lowering the costs of market surveillance and enabling a screening of a far greater number of products, due to the potential to automate part of the work, using digital machine-readable formats for data. Noting that the approach for this has not yet been determined, and is under evaluation for the upcoming EU Product Act (Q3 2026) (EC, 2026).

Aspects that can be monitored per specific product category would depend on the legislation that will define mandatory data requirements per product category. DPPs can potentially cover a wide range of product characteristics, including safety, technical documentation, declarations of conformity, as well as environmental performance. For example, carbon footprint, recycled content of individual materials,

reporting on the presence of dangerous substances in goods, disassembly information, as well as dynamic data such as battery State-of-Health data to check the product condition during use, etc.

The DPP therefore provides a powerful vehicle with a simplified access route for providing data about products to market surveillance authorities. Importantly, the DPP does not, however, ensure that the data contained in it can be trusted or even to be fully accurate: This is both due to the possibility of human error, due to the possibility of company negligence in ensuring the data is as accurate as possible, and the possibility of wilful intent to provide false claims about the product to improve sales. Whilst solving one part of the problem, improving the ready access for market surveillance authorities to product information, it does not solve the issue whether the data can be trusted, i.e. does it come from the right source, has it been verified by the right parties (where that is required), and how to ensure that the data has not been tampered with. As to the last-named aspect, by the potential use of digital fingerprints (hashes) it could however be ensured that the DPP content that has been reported when registering the DPP in the EU central registry was the same as being made available to the consumer when accessing the DPP. Such technical options may allow in the future for embedding more controls to improve the trustworthy of the data. Other options to introduce additional mechanisms to improve trustworthiness of the data could to some extent be also via DPP service providers but it will depend on whether they will need to be EU certified, or not. If certified they may act similarly to the current customs brokers, that are supposed to verify the goods data their clients provide them to prepare a customs declaration for their goods.

DPP provides a lot of opportunities for authorities, however, how the trustworthiness of the DPP data will be addressed will be one of the instrumental aspects in determining to what extent DPP will be fit for purpose.

2.2 Customs and market surveillance authorities – Way of working, legislative reform, and e-commerce

For understanding the potential of DPP for customs and market surveillance authorities, it will be important to gain a better understanding on how these authorities are organized and how they work.

2.2.1 Customs

Customs is concerned with the activities related to the external border of the EU Customs Union and processes such as import, export, and transit. Customs is responsible for controlling the goods flow but also for facilitation legitimate trade, meaning not disturbing the economic activities and legitimate trade flows. So, customs is balancing and combining compliance checks and trade facilitation.

The customs activities of all customs administrations in the EU are defined by EU legislation - the Union Customs Code (UCC)[14] that is applicable directly to all customs in all EU Member states. Over the last decades, due to the substantial increase of the of trade and the potential of digitalisation, customs has

[14] https://taxation-customs.ec.europa.eu/union-customs-code-ucc-introduction_en

been modernising its operations under the UCC and has different IT systems in place to handle electronic declarations. Among others, most of these systems were a result of a multi-annual strategic plan and related follow-up activities to bring modernisation to customs over a 10-year period of time. An important improvement was introduced recently with the Import Control System 2.0 (ICS2)[15] handling advance declarations (Entry Summary Declaration, ENS)[16] in implementing the safety and security procedures. A dedicated module is also focused on e-commerce.

A system that is relevant in the DPP context is the Customs Single Window (SW) environment, also known as the CERTEX system[17], which allows customs to check certificates and other documents that are needed for checks that concern other border control authorities as well. In the future, as mentioned before, it is foreseen that customs can check the existence of a DPP via the SW CERTEX system that will be linked to the centralised DPP registry.

Customs was originally concerned with collection of duties and taxes, i.e. the fiscal aspects of revenue collection. After 9/11 2001, a lot of focus was additionally put on safety and security aspects. Customs-trade partnership and Authorised Economic Operator (AEO)[18] concepts have also emerged to support trade facilitation. In the Customs Reform, the concept of Trust & Check is aimed at strengthening the already existing Authorised Economic Operators (AEO) programme for trusted traders[19].

Customs has also been involved in processes related to prohibitions and restrictions (e.g. import of products from endangered species). In the recent years, customs is gaining more responsibilities also about environmental or sustainability aspects, which are being referred to as “green customs”. The topic has received attention internationally with the World Customs Organisation organizing an international conference on Green Customs[20] in 2022, bringing experts together, and has taken follow-up actions in the form of the Green Customs Action (WCO, 2023) plan and related member surveys and engagement on that topic (WCO, 2025).

For controlling for circularity and sustainability, it would be necessary to look deeper into the supply chain. For example, information about CO_2 footprint, labour conditions, etc. cannot be obtained by simply examining the goods at the border. For many such checks related to sustainability and circularity, reliance on data from the supply chain will be necessary.

Over the last years, customs have been also exploring more business-customs partnership, and customs aligning with supply chain and information management. Concepts such as trusted trade lanes build upon the idea of sharing voluntary data by businesses with customs to enable faster risk assessment processes for customs, with trade facilitation in return (Heijmann et al., 2020). Such concepts may be

[15] https://taxation-customs.ec.europa.eu/customs/customs-security/import-control-system-2_en

[16] https://taxation-customs.ec.europa.eu/customs/customs-security/security_en

[17] https://taxation-customs.ec.europa.eu/eu-single-window-environment-customs_en

[18] https://taxation-customs.ec.europa.eu/customs/authorised-economic-operator/programme_en

[19] https://taxation-customs.ec.europa.eu/customs/eu-customs-reform_en

[20] https://na.eventscloud.com/website/35881/

relevant in the future in the context of circular economy and sustainability monitoring, as well (Männistö et al., 2024).

Over the years and the increased availability of data, customs has developed data-driven risk management, where they use data to assess the risk in an automated way. Customs is also exploring the potential of data analytics and AI for further enhancing the quality and speed of their operations and projects such as PROFILE (Tan et al., 2021), PARSEC and BORDERLINK also examine such aspects.

The EU Customs Reform (EU, 2026) which was adopted in March 2026 has three pillars: (1) Smart data-driven approach to customs checks, which will include the establishment of an E*U Customs Authority* and an *EU Customs Data Hub*, (2) a strong partnership with businesses, and (3) a modern approach to e-commerce. The EU Customs Data Hub will be developed in phases and will need to have functionalities related to e-commerce in its first phase.

The EU Customs Reform was developed in parallel to ESPR and DPP developments: While ESPR makes links to customs, there is still limited mentioning of the DPP in the EU Customs Reform context. And it is not known whether and how a connection between the DPP and the EU Customs Data Hub will be made. How these decisions will shape in the future will also be crucial to define the extent to which DPP will play a role in the future customs operations.

When it comes to e-commerce, there are several challenges and recent large scale EU customs control actions show that many third-country e-commerce goods do not follow standards such as EU product and safety standards[21].

First, the number of data elements that customs gets for e-commerce under the simplified "H7" declarations is limited. For standard low-value consignments customs receives a very limited data set (H7). Only for consignments above 150 euros and selected goods (e.g. excise goods[22]) there was a requirement for import declaration with full data requirements, the so-called H1 declaration.

Also, there are issues with the quality of the description of the goods in the e-commerce packages which makes automated risk assessment challenging. Additional data from DPP may offer opportunities for automated cross-validation of the customs declaration. In addition, there may be some potential to combine DPP data with scanned images, for improved, automated plausibility and risk checks. However, for DPP to bring benefits in this context customs would require in the first instance automated access to machine-readable DPP data, which would be needed in an operational environment with millions of packages crossing the border on a daily basis. Second, research and development would be needed on the analytics side to evaluate whether DPP data could be used for cross-validating the customs declarations and identification of mismatches or be used in an alternative way for derisking of Trust-and-check flows. Also, as scanning of packages is already extensively taking place for air transport

[21] https://taxation-customs.ec.europa.eu/news/large-scale-eu-customs-control-action-shows-most-third-country-e-commerce-goods-do-not-follow-2026-01-07_en

[22] Products subject to excise duties such as tobacco and alcohol

security purposes at export, in the future the potential may be explored to combine DPP data and these scanned images data. But this is also in early stage of research.

While these are developments that can potentially improve the capabilities on the customs side, there are actions that can also help to increase compliance by parties selling products on-line including small sellers who want to comply. Increasing education and compliance resources can help these parties to be better prepared and ensure that their products comply with EU legislation. In this context, international developments related to trade facilitation which we will discuss in Section 2.3.1 may be interesting to further explore.

While customs is the main party responsible for controlling the flows when it comes to the external border of the EU Customs Union, for some sectors of legislations, other border authorities may need to take a more active part in the 'release' part of the clearance process. For example, when it comes to prohibitions and restrictions, also other authorities play a role by applying specific procedures in controlling and deciding on the release of the goods. While DPP data may be useful for these checks, as other authorities may have access to more detailed DPP data, whether DPP can add value to this process would depend among others on the timeliness when the DPP data will be available to customs and whether the DPP data is available (and authorities can access and use it), and if the data is machine-readable and interpretable, at the time when these procedures take place. This question deserves further attention. While the DPP data that is available in the centralized DPP registry is foreseen to be accessible via the CERTEX system, how the remaining DPP data that is available in the distributed systems of the economic operators will be available to the authorities still needs to be further elaborated. The EU DPP web portal is foreseen to have functionalities for accessing DPP data but how this will be developed and embedded to support authorities' processes will still need to be specified by Commission.

2.2.2 Market surveillance authorities

"*Market surveillance ensures that non-food products on the EU market do not endanger European consumers and workers. It also ensures the protection of other public interests such as the environment, security and fairness in trade*."[23]

Market surveillance includes actions such as: (a) product withdrawals; (b) recalls and (c) the application of sanctions to stop the circulation of non-compliant products and/or bring them into compliance. Market surveillance authorities operate at national level and within the national level some activities may be further assigned to a regional level. Market surveillance authorities also collaborate at EU level. At EU level, the market surveillance authorities collaborate via the EU Product Compliance Network (EUPCN)[24], and there is an EU system Information and Communication System for Market Surveillance

[23] https://single-market-economy.ec.europa.eu/single-market/goods/building-blocks/market-surveillance_en, last visited 17-9-2025

[24] https://single-market-economy.ec.europa.eu/single-market/goods/building-blocks/market-surveillance/organisation/eu-product-compliance-network_en

(ICSMS)[25] which is used to share results, access to information etc. There is also a system called Safety Gate[26], which is the EU rapid alert system for dangerous non-food products that were identified by market surveillance.

There is a list of market surveillance authorities in the EU per country[27]. In this list, the market surveillance authorities in each country are listed along categories of products which they control. Currently there are 37 categories of products along which the responsible market authorities are listed. These categories include product categories such as medical devices, cosmetics, toys, motor vehicles, construction products, tyres, textiles and footwear labelling, batteries and waste batteries, to mention only a few prominent ones.

There are relevant differences in how the market surveillance authorities work: In some cases, they may perform document checks only. In other cases, they may perform physical tests and tests on samples. They may rely on random or planned inspections or may perform inspections by triggers from the market or alerts by other Member States.

The level of availability and use of digitalisation and IT system to support the activities of the market surveillance authorities varies substantially. While some authorities in some Member States may have more advanced systems in place to be able to process machine-readable data and data-driven risk analysis, in other cases they may have more limited IT capabilities and may rely on more traditional document checks and physical inspections. In this environment introducing DPP requirements alone may not address the challenges in e-commerce today.

At the moment, there are legislative changes that will affect the work of the market surveillance authorities in view of the New Product Act, where DPPs may play a role as well. These legislative changes also include the ongoing revision of the New Legislative Framework (NLF). The NLF, which was established in 2008 (EC, 2008 a,b), is the EU's horizontal framework for product harmonisation legislation and provides the common legal architecture across around 30 EU product laws. It standardises key elements such as economic operator obligations, CE marking, conformity assessment and market surveillance. The framework is currently being revised because it is seen to no longer fully reflect today's digital and circular economy realities. The Commission is looking at how to better integrate digital compliance tools, including the Digital Product Passport, into this horizontal structure, while also addressing enforcement gaps, challenges linked to e-commerce, and weaknesses in notified body oversight. How and what role exactly the DPP will take in view of these new developments is still to be seen. However, DPPs as foreseen under the ESPR and various other Union law. The standards by JTC 24 allow including all kinds of product data and information into DPPs. Then, the EU DPP is geared for use by a wide range of public and private actors across the economy, with state-of-the art machine-

[25] https://webgate.ec.europa.eu/icsms/

[26] https://ec.europa.eu/safety-gate-alerts/screen/search

[27] https://webgate.ec.europa.eu/circabc-ewpp/d/d/workspace/SpacesStore/92cd1259-6115-40fa-8d19-2259f28d1a42/download

readable data. Therefore, to use the DPP as vehicle for any product data under the revised NLF/Product Act appears to be a logical next step, rather than setting up a second, distinct system of basically the same type and nature and largely overlapping content. When it comes to e-commerce and the role of market surveillance authorities, and the potential role of DPP, a key issue is what can be done when there is a very limited time frame to check the compliance of the products before they are delivered to the home of the consumer. We will come back and reflect on this question at the end of this paper, after we go deeper into the e-commerce processes and when we discuss the opportunities and challenges.

2.2.3 The function of conformity assessment when placing a product on the EU market

Conformity assessment is the structured set of activities by which manufacturers demonstrate that a product meets all applicable requirements of EU harmonisation legislation before it is placed on the market. It underpins the free movement of goods, informs CE marking, and interfaces with accreditation, notification of conformity assessment bodies, and market surveillance within the New Legislative Framework (NLF).

Placing on the market is defined in the EU's *Blue Guide (EC, 2022)* as the first time a product is made available on the Union market, whereas making available covers any subsequent supply for distribution, consumption, or use in the course of a commercial activity. Conformity assessment is the bridge between essential legal requirements and the manufacturer's attestation (including CE marking where required) that those requirements have been met prior to the first supply, including in distance and online sales.

Within the New Legislative Framework (NLF), conformity assessment forms part of a coherent regulatory system that aligns essential requirements, harmonised standards, accreditation, notification of conformity assessment bodies, market surveillance, and CE marking. Decision No768/2008/EC supplies the reference provisions and modular procedures used across sectoral product legislation, while Regulation (EC) No765/2008 provides the horizontal rules for accreditation and market surveillance that reinforce trust in conformity assessment outcomes. For manufacturers, the function of conformity assessment is twofold: to generate objective evidence (technical documentation, test and inspection results, quality-system records) that the product meets applicable essential requirements, and to translate that evidence into legally recognised declarations and markings that support free movement and facilitate ex-post market surveillance. Products designed and manufactured in accordance with relevant harmonised standards benefit from a presumption of conformity, which can simplify the chosen assessment route and reduce administrative burden without lowering protection levels.

Conformity assessment procedures of the NLF

The NLF adopts a modular system (Modules A to H and variants) allowing Union legislation to tailor assessment stringency to product risk and complexity, covering design and/or production phases. These

modules can be combined as one- or two-step procedures and may be based on product testing, type examination, production quality assurance, or full quality assurance, depending on the sectoral act.

- *Module A – Internal production control.* The manufacturer performs and documents internal design and production control, typically used for lower-risk products where harmonised standards sufficiently cover essential requirements.
- *Module B – EU-type examination* (design stage) *followed by Module C/D/E/F* (production stage). Under Module B, a notified body examines the representative design ("type") and issues an EU-type examination certificate; production conformity is then ensured by Module C (conformity to type), D (production quality assurance), E (product quality assurance), or F (product verification).
- *Module G-Unit verification and Module H/H1- Full quality assurance.* These provide product-specific or system-wide assurance pathways with high notified-body involvement for higher-risk or bespoke products, integrating both design and production control.

Legislators select the applicable modules in each sectoral instrument- often offering options- so that higher risks trigger greater third-party oversight, while lower risks allow self-assessment, preserving proportionality and innovation incentives. The outcome of any selected pathway is anchored in technical documentation (design, manufacturing, operation, risk assessment, standards used) retained typically for 10 years, an EU Declaration of Conformity (DoC) signed by the manufacturer or authorised representative, and, where required, CE marking affixed in accordance with the common rules.

Notified Bodies

Where third-party involvement is mandated, Notified Bodies (NBs) are conformity assessment bodies designated by Member States to perform specified modules, operating under strict competence, impartiality, and independence criteria set in Decision No768/2008/EC (EC, 2008b). Their roles include EU-type examination, product verification, unit verification, and assessment and surveillance of manufacturers' quality systems, depending on the module and sector. All NBs are listed in the NANDO[28] database. Notification is carried out by national notifying authorities that assess a body's competence -often relying on accreditation- and communicate successful notifications to the Commission for publication, ensuring transparency of scope. While accreditation is not legally mandatory in every case, Regulation (EC) No765/2008 establishes a single national accreditation system and peer-evaluation framework that underpins confidence in competence and supports notification decisions across the EU. Coordination mechanisms among NBs (e.g., NB groups) foster consistent application of technical requirements and assessment practices across Member States.

NBs may subcontract certain tasks under controlled conditions, but they retain full responsibility for the conformity assessment they perform and must act proportionately, avoiding unnecessary burden while ensuring rigorous evaluation of essential requirements. Where CE marking requires an NB's

[28] https://webgate.ec.europa.eu/single-market-compliance-space/notified-bodies

ongoing production-phase involvement, the NB's identification number accompanies the CE marking, making the involvement visible to authorities and users.

Manufacturers located outside of the EU

Manufacturers are duty-holders regardless of establishment, meaning non-EU manufacturers placing products on the EU market carry the same legal obligations to perform or arrange the appropriate conformity assessment, compile and retain technical documentation, draw up the DoC, and (where applicable) affix CE marking. Such manufacturers may mandate an authorised representative established in the Union to perform specified tasks, but this does not shift the overall responsibility for product conformity away from the manufacturer. Because non-EU products typically reach the EU via import, importers must verify that the appropriate conformity assessment has been carried out, that the product bears CE marking where required, and that the necessary documentation and traceability information accompany the product before making it available. A responsible economic operator (such as an authorised representative, importer, or fulfilment service provider) serves as a compliance interlocutor for authorities for certain product categories offered via distance sales, strengthening enforcement for goods entering from third countries.

Interaction with market surveillance

Conformity assessment is complemented by market surveillance, the system by which national authorities monitor products made available on the market and take action against non-compliance, with Regulation (EC) No765/2008 providing the horizontal framework. These authorities plan, conduct, and coordinate surveillance activities, including document checks, product testing, on-site inspections, and cooperation mechanisms among Member States and with the Commission.

This interaction is bidirectional: on the one hand, robust pre-market conformity assessment and documentation (including the DoC and technical file) facilitate efficient ex-post controls; on the other, surveillance findings inform standardisation priorities, guidance updates, and -where necessary - revisions to module selection in sectoral legislation. At the external border, customs and market surveillance authorities control products from third countries, preventing release for free circulation if serious non-compliance or risk is detected, and using risk-based targeting consistent with the regulation. When serious risks are identified, authorities can deploy corrective measures (restriction, withdrawal, recall), trigger safeguard procedures, and share information via EU cooperation tools to ensure consistent action across the Single Market. The visible outcome of this ecosystem -CE marking backed by appropriate conformity assessment and effective surveillance -aims to sustain public confidence and the free movement of compliant products while enabling rapid responses to emerging risks, including those arising in online sales channels.

In this context, the Digital Product Passport (DPP) could improve access to relevant technical documentation and traceability data, thereby enabling more effective enforcement across the internal market.

2.3 International initiatives related to trade facilitation and DPP

While we look at the cross-border e-commerce challenges and the potential of DPP for authorities mostly from an EU perspective, as the e-commerce and supply chains are global, it is important to see how these developments fit into the wider international context. With developments of DPPs in other regions like China, questions arise how the EU solutions will be interoperable with these other DPP developments and also how authentication will work. While we will not go in depth here it is important to introduce some key pointers to international developments that may be of relevance.

2.3.1 WCO, WTO and ICC

First of all, when it comes to customs, the World Customs Organisation (WCO) plays an important role in developing frameworks and standards for customs organisations globally (see e.g. WCO, 2022). E-commerce has been an area of interest to WCO, as well. In addition, there is a strong collaboration on topics such as Single Window between WCO, the International Chamber of Commerce (ICC) and the World Trade Organisation (WTO)[29]. This collaboration is in the context of the Trade Facilitation Agreement[30] and WCO developments related to the Single Window[31]. The basic idea behind Single Window developments is to facilitate businesses to submitting data to authorities (customs and other agencies) only once. Especially, ICC has been working with countries in different regions around the world to help businesses digitise their processes. ICC has been also developing standards via the Digital Standards initiative[32] to help businesses in advancing trade facilitation. These international organisations hold potential to play an important role in the future when it comes to DPP. In the context of DPP, where a lot of the data about the product will be collected outside the EU, where the product is produced, helping companies to advance their digitisation efforts and improve the data quality may be an important step in ensuring better DPP data quality. While DPP is a new area for WCO, ICC, and WTO, some of these earlier developments related to trade facilitation and Single Window may still be fully relevant in the DPP context as well.

2.3.2 JTC 24, UNTP, ISO/IEC JTC5

When it comes to DPP, standards related to the European DPP system are developed under JTC 24 of CEN/ CENELEC[33]. In the context of DPP, UN CEFACT is working on the UN Transparency protocol (UNTP)[34], a voluntary DPP initiative that is also working towards full alignment to the set of JTC-24 standards is also worth mentioning, that these norms are on their way to become core references to

[29] E.g. links WCO, TWO, ICC were discussed during the WCO session of the WTO public forum 2024, https://www.wcoomd.org/en/media/newsroom/2024/september/wco-organizes-a-session-at-the-wto-public-forum-2024.aspx

[30] https://www.wto.org/english/tratop_e/tradfa_e/tradfa_e.htm

[31] https://www.wcoomd.org/en/topics/facilitation/activities-and-programmes/national-single-window.aspx

[32] https://dsi.iccwbo.org/

[33]https://standards.cencenelec.eu/ords/f?p=205:7:::::FSP_ORG_ID:3342699&cs=152A83699C987EFA564209B7AC7311C86

[34] https://untp.unece.org/

be used in ISO standards with global relevance. Internationally, ISO/IEC JTC5[35] focuses on the development of deliverables which enable deployment of DPP with cross-sectoral and cross-system interoperability. Efforts are on-going to exchange information and align these global DPP developments, such as the EU–China Standardization Roundtable on Digital Product Passport Developments[36]. EU projects like CIRPASS and CIRPASS-2 track and align with these efforts to ensure that European DPP implementation remains compatible with global initiatives and emerging international standards.

2.3.3 EUIPO

Another interesting development where additional insights may be gained for e-commerce, is the work of European Union Intellectual Property Office (EUIPO)[37] related to anti-counterfeiting efforts. Issues with authenticity of the product, which have been a major area of concern in the context of anti-counterfeiting and e-commerce platforms, may be relevant also in the DPP context and e-commerce platforms, and the role of authorities.

2.3.4 OECD and Extended Producer Responsibility (EPR)

Other developments that may be relevant are developments of the Organisation for Economic Co-operation and Development (OECD)[38] related to Extended Producer Responsibility (EPR). “The OECD defined EPR as an environmental policy approach in which a producer’s responsibility for a product is extended to the post-consumer stage of a product’s life cycle. In practice, EPR involves producers taking responsibility for collecting end-of-life products, and for sorting them before their final treatment, ideally, recycling. EPR schemes can allow producers to exercise their responsibility either by providing the financial resources required and/or by taking over the operational and organisational aspects of the process from municipalities. They can do so individually or collectively.” (OECD, 2016, p. 21). Many textiles that come into EU, partly via e-commerce, also leave the EU again at some point in time. While some EU countries are introducing EPR schemes for textiles, what happens with these EPR schemes in the case of e-commerce goods and how are these EPR safeguarded when these textiles leave the EU for second use or end-of-life is still a big challenge. Developments related to EPR examined by international organisations like OECD potentially examining the links between EPR and DPP in the future may also be interesting to explore in an international context.

[35] https://www.iso.org/committee/11760382.html

[36] https://www.cencenelec.eu/news-events/news/2026/brief-news/2026-02-16-sesec-dpp/

[37] https://www.euipo.europa.eu/nl

[38] https://www.oecd.org/

3 High-level overview of the cross-border e-commerce processes in view of the life cycle of products, links to authorities, and DPP

The European Commission's communication on e-commerce toolbox (COM, 2025a) highlights the challenges posed by the rapid growth of e-commerce flows e-commerce and the increasing difficulties the authorities face in effective monitoring and controlling them. What makes cross-border e-commerce to consumers challenging for monitoring and enforcement is the direct shipment to the end-consumers, what makes it, based on the current framework and enforcement fundamentally difficult for market surveillance authorities to check the goods, especially if they are below the 150 EUR threshold when shipped individually and pass customs with high volumes and limited possibilities for control.

To understand the potential role of DPP in helping authorities address the many cross-border e-commerce challenges, it is first necessary to gain a better understanding of the e-commerce flows and their role in product flows. In general, we can split the processes in three parts, namely:

(1) *The e-commerce transaction process:* here we refer to it as the heart of e-commerce. This process relates to the economic exchange of goods for payment in return. We will focus on direct sales via e-commerce platforms, where the seller is outside the EU. For these goods to enter the EU and be placed on the EU market, customs but also market surveillance authorities play a role. The act of 'placing [a product] on the [EU] market' can be a trigger for the associated legal responsibilities – including in future to prepare and register a DPP - discussed in more depth below.

(2) *The production process:* here we refer to the processes such as material sourcing, parts and products manufacturing, which results in the product that is being sold via e-commerce. DPPs will carry some information that refers to aspects of these processes. For example, elements such as material composition and production facility identifier could be examples of such elements.

(3) *The use and end-of-life phase:* this is the process which concerns the lifecycle of use and end-of-life of a product that was brought on the EU market via e-commerce. End-of-life of a product may be in the EU, or the product may leave the EU for further use or end-of-life treatment. During use of the product, market surveillance authorities may also play a role. For example, if there is a consumer signal of unsafe products the authorities can initiate recalls and ask the party placing the product on the market to take corrective actions. In the case these leave the EU, customs processes at export may be relevant.

Below we further zoom into each of these processes and the potential role authorities play. In our case, we focus more extensively on the role of authorities in the EU during the cross-border processes for placing the product on the EU market. We only briefly touch upon the end-of-life processes in the EU and we discuss in a more general manner the possible role of authorities in the other product life-cycle phases that take part outside of the EU.

3.1 E-commerce transaction processes, placing the product on the market, and the role of e-commerce platforms

3.1.1 E-commerce transactions

A business transaction can be generally seen as an economic exchange between a buyer and a seller, where there is an exchange of goods or services for some form of compensation. For our analysis we focus on exchange of goods and not services, as DPPs are currently affecting exclusively goods. In a transaction, the seller typically would transfer the goods to the buyer, and the buyer would transfer funds in return. When such transactions happen in a physical shop, the exchange of goods and payment can happen on the spot. However, in the case of cross-border direct e-commerce such an exchange happens over distance and across EU borders and is mediated by various actors.

In the first instance, there is the e-commerce platform that brings the buyer and the seller together and mediates the transaction. Sellers use the e-commerce platform to offer products, the interested buyer can then express interest in the product. If interested to buy the product the buyer can confirm the interest in a given product by placing an order and committing to pay and the seller confirms that they will sell the product.

Figure 1. e-commerce platform as intermediary in an e-commerce transaction

In a distant sales transaction, there are two processes that need to take place: On the one hand, the seller needs to ensure that the buyer gets the product. On the other hand, the buyer needs to ensure that the seller receives the payment for the goods. Unlike in a physical shop where the exchange of products against payment can happen in the shop by the seller handing the product and the buyer paying, in the case of e-commerce the processes of product delivery and the payment processes are always intermediated. Therefore, beyond the e-commerce platform that plays an intermediating role in allowing the buyer to discover the product and place an order, and the seller to make commitment to provide the product, there are other actors like the payment service providers that will intermediate the transfer of funds from the buyer to the seller. There are also other actors such as logistics service providers that will facilitate the physical delivery of the product to the buyer. These processes, including the intermediating roles of the platform, as well as the intermediating roles of the payment and logistics service providers are illustrated in Figure 2. The figure is a simplified representation.

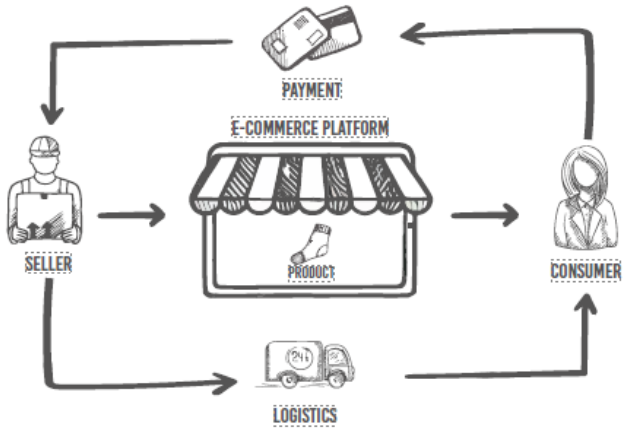

Figure 2. Payment and logistics service providers as additional intermediaries in the e-commerce transaction

Now, while there are different processes taking place and platforms, payment and logistics service providers can assume different roles, what is important is to clarify is:

- what is the responsibility of the e-commerce platform when it comes to DPP information provisioning; and
- when is the platform and when is somebody else (including the seller, the importer, but possibly also the logistics company, or an intermediary who may be involved by storing the product in a warehouse inside the EU, to ensure faster delivery) responsible that a product being placed on the EU market.

Answering these questions is not straightforward, as there are multiple legislations that play a role and affect obligations about information provisioning, as well as responsibilities about the product itself: On the one hand there are the Digital Marketing Act (EU, 2022a), Digital Service Act (EU, 2022b), and Data Act (EU, 2023c), and the largest e-commerce platforms are likely to be subject to these regulations, which already now or once DPPs are mandatory will affect how they should display information. Next to that there is the ESPR, which also includes information about DPPs and the role of platforms. And in addition, there is also the customs legislation that affects cross-border transactions and the responsibilities of parties such as importers and deemed importers (explained later in Section 3.1.3). And finally, there are legislations that affect Extended Producer Responsibility for the end-of-life treatment of products put on the EU market and regulations that require conformity assessments before products can be placed on the EU market, such as the General Product Safety Regulation (EU 2023/988) (EU, 2023b) that requires assessment of the safety of relevant products. Product-specific regulations such as the Toys safety regulations also have their own specific requirements.

Below, we will, to the best of our ability and expertise, try to bring some of these aspects together. However, due to the complexity of the matter, also this input - same as the entire white paper - shall

not be seen as providing legal answers, but as a basis of informed understanding, which can serve to inform further engagement and discussions.

3.1.2 Insights on obligations based on ESPR and information provisioning

Which obligations are applicable to an online marketplace under the ESPR, depends on what functions they perform and, correspondingly, which 'definition' of a role applies to them. For instance, the ESPR provides guidance for obligations regarding DPPs for *'providers of an online marketplace'* and *'distance selling'***,** both of which may apply to e-commerce platforms. Looking first to the obligations that directly refer to *online marketplaces*, under Art. 10(3)(a), economic operators 'placing a product on the EU market' are required to provide such 'providers of online marketplaces' with a digital copy of the data carrier or UPI, allowing them to make this available to potential customers. Art. 35 also provides obligations directly for 'online marketplaces', reiterating specific obligations from the Digital Services Act (EU, 2022), on points of contact and traceability of traders, but also requiring them to cooperate with market surveillance authorities. E-commerce platforms may additionally fall under the definitions of *'dealer'*, *'distributor'* or *'fulfilment service provider'* as well, depending on the services they provide, and correspondingly fall under the categorisation of *'economic operator'***,** which includes these sub-categories. Regulation 2019/1020 can be relevant in determining whether an actor in a supply chain is an 'economic operator', but it is important to distinguish this from the 'responsible Economic Operator' (rEO) who is legally charged with registering the digital product passport under Art. 9(2)(g), as that is to be determined in the Delegated acts. Art. 30, 31 and 33 provide the obligations for distributors, dealers and fulfilment service providers, respectively, while Art. 36 provides information obligations of economic operators in general. Under Art. 30 '*distributors'* have obligations to ensure that the products they put on the market meet the ESPR's compliance requirements and cooperate with market surveillance authorities, Art. 31 asks '*dealers'* to ensure consumers have access to relevant information, including labels, and not provide misleading labels, marks or symbols, and to ensure that a DPP is easily accessible. Art. 33 asks '*fulfilment service providers'* to not jeopardise product compliance with appropriate Delegated acts (e.g., removing/damaging the data carrier). Finally, Art. 36 discusses the information obligations of *economic operators*, which may include online marketplaces as well especially as Art. 36(1) focuses on products made available through distance selling, requiring them to make identifying information regarding the economic operator and product available and cooperate with economic surveillance authorities.

3.1.3 Responsibilities following from 'placing the product on the EU market'

While the above-mentioned text covers a variety of responsibilities, a key issue remains: who is (deemed to be) responsible for the product being 'placed on the EU market' for the first time, and this act can be a trigger for significant legal obligations for the entity that is deemed to be doing so. For instance, Art. 27 of the ESPR obligates manufacturers 'placing products covered by [the ESPR framework] .... on the market or putting them into service' to ensure that 'a [DPP] is available', and Art. 29 asks importers to 'only put on the [EU] market' products that have a DPP available. Similarly, the

Packaging and Packaging Waste Regulation (EU, 2025b) notes in Recital 12 that "*the definition of 'producer' should ensure that the natural or legal person making that kind of packaging available for the first time* [in the EU market] *is considered to be the producer under this Regulation and not the primary sector businesses, such as farmers, using that kind of packaging*", and implements this in Art. 3(15), explicitly noting that this may be the manufacturer, importer, or distributor. Art. 4b of the Waste Framework Directive (EC, 2008c) employs a similar definition for 'producers of textiles, textile, textile-related or footwear products', and so does Art. 47 of the Battery Regulation (EU, 2023a) though it uses the framing of 'supplies for the first time'. Article 8a of the Waste Framework Directive (EC, 2008c), which sets out the 'General minimum requirements for extended producer responsibility schemes', also implies that extended producer responsibility obligations are to be executed by '*producers of products placing products on the market of the Member State*', or on their behalf. In parallel, under the proposed Union Customs Code (COM, 2023), with 'deemed importer' is defined as 'any person involved in the distance sales of goods to be imported from third countries into the customs territory' who is also authorised to use the special schemes laid down in the EU VAT Directive (EC, 2006) under Title XII, Chapter 6. The application of this definition therefore also relies on the actor in question 'importing ... into the customs territory', in the context of a 'distance sale of goods to be imported' which the VAT Directive defines as 'goods dispatched by or on behalf of the supplier ... to a customer in a Member State'. This definition does not explicitly use 'placing the product on the market' to assign responsibility, but uses a similar construction that covers the first non-consumer taxable entity importing the product into the EU market. The General Product Safety Regulation (EU, 2023b) provides further obligations for roles such as 'manufacturer', 'importer', 'distributor', 'fulfilment service provider', 'economic operator' and 'trader' as well.

While there are different legislations, definitions, and obligations for a variety of actors and roles, it therefore seems that a possible way to make sense when it comes to cross-border e-commerce is to first and foremost look into which is the party that is responsible of placing the product on the EU market for the first time and clarifying the question: Is the on-line platform the one placing the product on the EU market (e.g. acting as a deemed importer) or some other party, and if so which one?

If the on-line platform is responsible, and in case it is not also the manufacturer of the product, the platform itself will not be able to change the product. But what the platform can, is to ensure that the products that it offers to the EU market meet compliance requirements. And in view of this responsibility, this can act as one of the mechanisms to affect non-compliant products being placed on the EU market.

About the information provisioning, the platform would in that case also provide the information as required by legislation.

When the platform, however, is not responsible for placing the product on the market, there will be another party that will take this legal responsibility for the product placing on the EU market. In such a case, this party will provide the platform with the information about the product and the platform, when legally required for specific products, will need to make the information available as required by

legislation. In this case, the platform will be making information available, but will not be the responsible economic operator placing the product on the EU market.

And while there are different definitions and concepts and market roles, which makes things harder to understand, by focusing on the party placing the product on the market for the first time as a starting point and based on that deriving also the information provisioning responsibilities may be a way to untangle the complex responsibility mix and define a starting point.

3.2 Production process, links to DPP, and e-commerce processes

Regarding DPP, the e-commerce platform will have the obligation to give access to the link (e.g. by showing a QR code) that enables the potential buyer to access the public DPP information. The product itself may often be produced by another party, and the platform will need to rely on information from this other party, unless the platform is at the same time placing the product on the EU market.

This provision of DPP information access about the product would typically concern the process that precedes the sale of the product.

Figure 3 below shows a simplified version of a production process, where materials are used to produce parts which are then used by product manufacturers to produce the final product for the customers. Delegating acts will define the specific data requirements that will be mandatory for the DPP for specific product groups or sub-groups. DPP-relevant information that links to the production process may contain information about the material composition, carbon footprint and/or environmental footprint, other sustainability concerns (e.g. that no child labour was used in the production), and identifiers, such as product and production facility identifiers.

Figure 3. Production process that will contribute DPP-relevant information

When this product is sold on an e-commerce platform, there may be different scenarios ranging from the manufacturer placing the product on the e-commerce platform directly, or an independent seller that buys the products and sells them on the e-commerce platforms (possibly under their own brand), or there may be more complex situations with more intermediary actors between the product manufacturer and the party selling the product via the e-commerce platforms. In any case, some of the DPP-relevant information would be available to parties directly involved in the production process. And subsequently this information needs to be made available to the party that will be formally the one 'placing the product on the EU market', as this party will be legally responsible and needs to arrange related processes for to registering the DPP for this product in the Centralized EU DPP registry, before

this product effectively can be placed on the EU market. The creation of the DPP still needs to be clarified in the delegated acts, but the manufacturer or importer have to make sure a DPP is available, and the 'economic operator placing the product on the market' shall also upload the relevant data to the registry (under Art. 13(5)).

As the data may travel through different parties and the party making the DPP data available may not be the party directly involved in the processes where this data is collected, the issue of verifiability of DPP becomes of key importance. As next to knowing who is legally responsible for placing the product on the EU market, a key other aspect that will be of importance for authorities for compliance monitoring is whether the DPP data can be trusted. As it can make a difference between DPP acting as a valuable and reliable source of verified information, or DPP as yet another data source, the value of which is unclear. For DPPs to have more value for authorities, the issue of verifiability of DPP data is a major issue to be addressed. DPP service providers may play an important role in the future if there is a certification system for DPP service providers and or DPP issuing parties.

3.3 E-commerce and DPP in view of use and end-of-life phase

Once the product sold via cross-border e-commerce is in the EU, there are several processes of interest where DPP plays or may play a role with respect to the authorities related to the use and end-of-life of a product.

Figure 4. Life of a product from purchase to including end-of-life

First of all, for some products like textiles in some EU countries, Extended Producer Responsibilities need to be covered by the producer or party representing it in the EU. In the case of e-commerce, and depending on responsibilities of the e-commerce platform, there may be scenarios where e-commerce platform may need to cover the EPR aspects as well. This will come back to the definitions that we discussed earlier on placing the product on the market. When the product is with the consumer, the product will formally and typically also factually be in its use phase. The consumer may decide to further sell the product on the second-hand market and at its end of life, the product can go to a collection centre and be sorted for further use, recycling and/or landfilling. These use and end-of-life phases and the role that DPP could play in these are potentially interesting for the authorities, as well.

Textiles EPR schemes will also apply eco-modulation, meaning that producer fees will be adjusted based on the environmental performance of products, for example recycled content, durability or the presence of substances of concern. Much of this information is expected to be available through the

Digital Product Passport. As additional point, one of the structural weaknesses of current EPR systems in the EU is the issue of free riding. This is particularly the case for e-commerce products entering the EU, where these products eventually become waste, but the producers are not contributing to the waste handling financing. This is partly because authorities often cannot clearly identify the responsible operator behind a product imported from third countries. DPP could help linking a product to a responsible economic operator.

When products enter their end-of-life phase, they become again of interest to customs in view of what happens with this waste in the context of the Waste Shipment and Waste Framework regulations. Especially, as it may become more difficult in the future to export waste to countries outside of the EU, having better view what products enter the EU market via cross-border e-commerce channels and how it affects the waste stream and the speed with which products become waste, may bring additional insights.

Another aspect of interest is when these products that enter the EU and for which EPRs are covered in the EU, what happens with these EPR assurances when the products are exported from the EU as second-hand products, for which it is not clear how the EPR and the end-of-life treatment of these products will take place. E-commerce is mostly focused on the cross-border transaction and bringing goods to the EU. The use and end-of-life processes of what happens with these products brought via e-commerce is usually not considered. In the future, when DPPs are available, it may be insightful to take this broader view of e-commerce including the use and end-of-life of these products into account, where especially the case of end-of-life outside the EU becomes interesting as to transfer of responsibility and from circularity perspective. Several aspects may be interesting to further explore:

First of all, if the DPPs are available for products that enter the collection centres and it is known which products with specific DPPs entered via e-commerce, it may be possible to generate policy insights about waste flows and monitor how quickly these waste flows accumulate. This may be particularly interesting with respect to fast fashion and in view of waste generation. Several aspects, however, deserve further consideration:

- A first aspect to consider, is whether the DPP will still be accessible for these products (e.g. textiles) during the second-life and end-of-life phase. While the intention is that the data carrier will remain attached to the product and will provide access to the DPP information during the product lifecycle, in practice it may happen that data carriers of some of the products are removed or damaged during use which may hinder access to DPP data. In such cases, reliance on DPP data will be limited. However, in cases when the DPP data is accessible, this may be interesting to explore whether and how it may provide additional insights about the e-commerce flows. And in case DPP data is not available, advancement of scanning technologies still offer opportunities to identify some aspects such as material composition that may be useful for monitoring purposes as well.

- While it may be insightful to follow the e-commerce flows and their DPPs and when and how these products entering via e-commerce appear as end-of-life products and how fast, insights into that aspects would require not only that the DPP is available at the end-of-life of the product, but that some trace exists whether this product entered the EU market via cross-border e-commerce. And there is also the issue of model, batch and item-level DPPs and what information is passed on for compliance monitoring. While it may be interesting to have insights into e-commerce flows and how they accumulate and what happens with them at the end-of-life, making such insights possible would require overcoming issues such as possibility to link DPP to e-commerce transactions, as well as the availability of the granularity level needed to make such traceability possible. For the moment it is difficult to evaluate how realistic such scenario may be in the future and what additional value and insights it may bring.

Second, looking at the legislation related to the end-of-life treatment of products, the legislation on Extended Producer Responsibility (EPR) schemes is more scattered than the regulation on the DPPs, but we provide a broad summary of its current state below:

There are different regulations that set out EPR requirements at the EU level and at the national level. At the EU level, the recent updates to the Waste Framework Directive (WFD) (Directive 2008/98/EC) (EC, 2008c) includes, *inter alia*, an updated Article 8 that adds an EU-level framework for EPR schemes with Article 8a providing minimum requirements for the same, though these must still be operationalised through national-level regulation. References to and implementation of EPR schemes is also increasingly being addressed at the 'product-group' level, with for instance the Battery Regulation (EU, 2023a), the Packaging Waste Directive (now Regulation) (Regulation (EU) 2025/40) (EU, 2025c), the Plastics Regulation and the Waste Electrical and Electronic Equipment Directive (Directive 2012/19/EU) (EU, 2012) each containing Extended Producer Responsibility requirements. Extended Producer Responsibility requirements for textile, textile-related, and footwear products are also provided in the Waste Framework Directive (EC, 2008c). In parallel, different Member states further have policy histories and policy norms, with France for instance has an explicit general EPR policy and associated standards.

While it is difficult to make general statements for such a breadth of regulation, we provide here a summary of some of the specific 'roles' that are identified in these regulations and the responsibilities they are tasked with: The most crucial role to understand is perhaps that of the 'producer', which is typically defined as being the entity 'putting the product on' or 'making it available on' the EU market. Such a 'producer' is often tasked with the core EPR obligations, and may be defined as included by the manufacturer, importer or distributor depending on the circumstances. This is separate from the definition of a 'dealer' or a 'fulfilment service provider'; 'dealer' in the WFD is a rather narrow definition, whereas a 'fulfilment service provider' is defined in alignment with the Market Surveillance regulation (Regulation (EU) 2019/1020) (EU, 2019).

An ‘online platform’ is likely to be required to meet, of course, the obligations that apply directly to an ‘online platform’, but crucially it may also be required to meet the obligations that apply to a dealer, distributor, or importer, as well. This leads us back to the issue of responsibility and the discussion we had earlier on the parties responsible for placing a product on the EU market (see the discussion on responsibilities related to placing the product on the EU market as discussed in section 3.1). If a platform has responsibility of placing a product on the EU market it may also inherit responsibilities of producers and related EPR obligations.

3.4 The challenge of cross-border returns (reverse logistics)

While much focus is placed on the initial import of goods into the EU, a critical component of the e-commerce lifecycle is the return phase. In sectors such as fashion, return rates may reach 20–30% of orders. When goods are returned to non-EU sellers, customs procedures like Returned Goods Relief (RGR)[39] are intended to avoid duplicate duty payment upon re-importation by the same person who originally exported the goods. The goods generally must return in the same state as exported and be re-imported within a defined period for relief to apply[40].

For low-value, high-volume parcels typical of fashion and small electronics, the documentation required to support Returned Goods Relief (e.g., (*INF3*) export proof) is administratively burdensome and not currently digital, manual, or scalable at the scale of millions of parcels.[41]

This creates a "Granularity Paradox" where the cost of proving that a returned item is the *same* item that was imported exceeds the recoverable duty value. Consequently, duties are often paid twice if returned goods are subsequently imported again (double taxation), or goods are destroyed rather than returned, contradicting circular economy goals. DPPs offer a potential solution by acting as a digital "proof of export" and "proof of integrity," potentially allowing for the *automated invalidation* of the original customs declaration and duty of remission without manual intervention. Whether always item level DPPs would be required or less granular ones are considered sufficient, is to be decided by the legislator, if DPPs would be employed in this context.

[39] https://www.gov.uk/guidance/eu-business-eu-returned-goods-relief

[40] https://www.revenue.ie/en/customs/businesses/relief-duty-vat/reimported-into-eu/index.aspx?utm_source=chatgpt.com

[41] https://www.gov.uk/guidance/eu-business-eu-returned-goods-relief

4 Zooming-in on the cross-border e-commerce transaction processes, DPP and the role of the authorities

Now that we have covered on a high-level the cross-border e-commerce processes from a circularity perspective, let us go back and zoom in further on the e-commerce transaction process and the role of the authorities and DPP in the process of bringing the product purchased by a customer in the EU via an e-commerce platform outside the EU.

While we can go into great detail in some of the authorities' processes, for the purpose of this white paper we will focus on some key processes and interactions that are needed to enable cross-border e-commerce flows and bringing these products to consumers based in the EU. The processes which we will cover are listed below:

(A) Registering DPP for the product to be imported to the EU in the centralized DPP registry.
(B) Processes with authorities for entry and import in the EU
(C) Market surveillance checks when the goods are in the EU market, including second-hand market.

In the earlier chapter, we already touched upon the product's end-of-life phase and the Extended Producer Responsibility. This topic is very important and the link of e-commerce and EPR with relation to international EPR deserves a separate attention in line with the discussion in section 3.3. For the detailing of the authorities' processes, for this white paper, however, we will focus predominantly on the customs entry and import processes and the related roles of the MSA. The further zoom-in on the EPR beyond what was presented in section 3.3 will be subject for further investigation that is beyond the scope of this white paper.

4.1 Registering DPP for the product to be imported to the EU in the centralized DPP registry.

According to ESPR, for products for which DPP is mandatory, the economic operator placing the product on the EU market needs to register a DPP for this product at the centralized EU DPP registry (Art. 13(5)). In the case of cross-border e-commerce transaction via an e-commerce platform, the DPP registration to the Centralized EU DPP Registry may be done by the e-commerce platform under the definitions of 'importer', 'distributor', 'dealer' or 'fulfilment service provider'. To be able to do that, the e-commerce platform would need to have a legal representative registered in the EU. The registration of the product that is sold via the e-commerce platform and to be imported and placed at the EU market needs to happen before the goods are imported via customs, as the DPP number needs to be placed at the import declaration that will be made available to Customs. Art. 27 and 29 of the ESPR do distinguish that a manufacturer is obligated to ensure 'designing and manufacture' in alignment with the performance requirements under the ESPR, while importers are obligated to ensure that the manufacturer has implemented a conformity assessment procedure. Both are obligated to ensure the product is accompanied by the appropriate information and that a DPP is available.

4.2 Processes with authorities for entry and import in the EU

For transporting the goods that are sold via the e-commerce platform to the customer in the EU, we take the scenario that this process is handled by a Logistics Service Provider who also does the customs clearance processes. Several processes are related to safety and security. The processes with the authorities related to entry and import in the EU are schematically represented below.

Figure 5. Processes with authorities for entry and import

There are five steps in the entry-import process:

1. Entry Summary Declaration (ENS) which is a safety and security declaration sent in advance. As a result of the risk analysis customs attributes a score, which can lead to a 'Do Not Load' message or to instructions to inspect at the first port of entry in the EU Customs territory or a subsequent port where goods are intended for unloading.
2. Arrival notification of the means of transport (vessel, plane, etc.)
3. Presentation notification (list of goods to be unloaded)
4. Temporary Storage Declaration (for storage at port or airport)
5. Import declaration (e.g. full declaration H1 or simplified declaration H7.

Before goods are allowed to enter and be imported into the European Union, Customs entry procedures - including customs safety and security procedures followed by the import procedure - must be carried out on the EU side.

First, the (air) carrier or another responsible party must submit an Entry Summary Declaration (ENS), which is the EU's safety and security declaration for incoming goods. For air cargo, key ENS data are provided in advance. For Customs Entry Summary Declaration (ENS) in air transport, the time limits are determined by the duration of the flight. This ENS information is used to identify immediate security threats to aviation, such as explosive or incendiary devices (often referred to as a "bomb in a box"). Based on this pre-loading risk assessment, authorities may issue a *Do Not Load* instruction, request additional information, or require enhanced security screening before the cargo is loaded onto the aircraft. A "Do Not Load" (DNL) message/notification has been formally introduced for air cargo in the EU as part of the *Import Control System 2 (ICS2) Release 2*, which came into force on March 1, 2023.This measure is part of the Pre-Loading Advance Cargo Information (PLACI) requirements designed to

identify and mitigate immediate security risks (such as bombs) before they are loaded onto an aircraft traveling to or through the EU.[42]

Second, EU customs authorities perform a further safety and security risk analysis based on the ENS before the goods arrive in the EU. This pre-arrival risk analysis considers a broader range of risks beyond aviation security, including public health threats, the spread of diseases, and dangers associated with hazardous or radioactive materials. For the safety and security checks data (ENS) is submitted by the economic operators via the Import Control System 2 (ICS2)[43].

"All Economic Operators (EOs) that bring goods to or transiting through the EU, have to declare safety and security data to ICS2, through the Entry Summary Declaration (ENS). Based on the ENS, all goods are subject to safety and security risk analysis and better targeted controls."[44]

Subsequently a notification of arrival needs to be issued to customs when the means of transport arrives at the EU external customs border. This is to ensure customs is aware of goods crossing the border. As a next step, a presentation notification needs to be submitted to customs, which indicates which goods are going to be unloaded. As a fourth step, goods unloaded are declared for Temporary Storage at the port or airport. In this way customs is aware which non-cleared goods are present in the port/airport in dedicated locations.

Finally, goods are entered into free circulation in the EU (= imported) via a customs import declaration. Alternatively, goods can be declared for transit or customs warehousing, etc. Custom declarations can be made in different formats according to the case, where the full import declaration (H1) and the simplified declaration for e-commerce (H7) are the most commonly known. The formats are defined in the EU Customs Data Model[45].

There is also an important interface between customs authorities and market surveillance authorities in the area of prohibitions and restrictions. Both authorities have responsibilities for controlling certain aspects of goods entering the EU, based on different pieces of legislation, and their actions may complement each other during risk analysis and controls.

In case of suspicious goods, customs may stop the package at any stage of the entry-import procedures and perform further inspection and if needed open the package. If further issues are identified that concern risk under the responsibility of other market surveillance authorities (such as health or product safety risks), the customs may notify these other authorities, and the market surveillance authorities may decide to perform further checks.

[42] https://op.europa.eu/en/publication-detail/-/publication/eea662ea-e53d-11ec-a534-01aa75ed71a1/language-en

[43] https://taxation-customs.ec.europa.eu/customs/customs-security/import-control-system-2_en

[44] Import Control System 2 - Taxation and Customs Union - European Commission

[45] https://taxation-customs.ec.europa.eu/online-services/online-services-and-databases-customs/eu-customs-data-model-eucdm_en

However, if no obvious risks are identified when the border is crossed, the goods are cleared to enter the EU.

In the past, there were issues with the data accuracy of the ENS data. With the new ICS2, stricter requirements are introduced. Depending on the mode of transport (including air cargo), there are detailed instructions for filing accurate and complete data[46]. This includes strict requirements for goods item classification and better identification of economic operators linked to the transaction. Collaboration between the carrier and supply chain actors is also highlighted to ensure the accuracy of the information and carrier may be held responsible for inaccuracy of information. The ICS2 also allows for multiple filing, which allows different actors in the supply chain to submit different data elements completing the ENS using the ICS2 system for this.

The import process concerns fiscal aspects ensuring proper taxes and duties are paid for the imported goods. Until 2021, a big e-commerce concern was the non-payment of VAT for the cross-border e-commerce goods with a value up to 20€. Progress in that area was made by Customs for the VAT collection and facilities such as Import One Stop Shop (IOSS)[47] were introduced.

The remaining issue with low value consignments of e-commerce goods is that below a certain threshold (150 euros), no duties need to be paid and in most cases only a reduced data set (H7) is needed to be submitted by a customs import declaration to customs. This reduced data set contained very limited information and is of limited value for risk assessment. For the goods above 150 euro full import declaration is required with full data (H1).

With new changes to the UCC Customs legislation, this will be partially adjusted, so also for low value consignments import duties will need to be paid upon approval of the Customs Reform legislation (possibly to happen only after a transition period where a tax of 3 € will need to be paid for each parcel cleared).

However, as things stand now, the use of the H7 data set will be continued for parcel with standard goods (no prohibitions, restrictions or excise goods) up to an agreed value. For determining the value of the goods and the duties that need to be collected, accurate HS product classification are essential to determine the tariffs that apply, both for the full (H1) and reduced data set (H7).

We need to highlight the Granularity Paradox in H7 Declarations: The removal of the de minimis threshold exposes a systemic issue we term the "Granularity Paradox." Customs authorities are flooded with high-frequency, low-value declarations (H7) that lack the data granularity required for effective risk management (e.g., vague descriptions like "spare parts" or generic HS codes).

[46] https://taxation-customs.ec.europa.eu/document/download/03e9d613-d537-443a-9f38-1e802b7cb3f0_en?filename=Air%20cargo%20information%20-%20Filing%20accurate%20and%20complete%20ENS%20data.pdf

[47] https://vat-one-stop-shop.ec.europa.eu/index_en

Looking at the DPP developments and the entry and import processes, a question is where DPP would play a role. For the moment it is envisaged that the DPP will play a role at the import process, as this is the process when the product is placed on the EU market. As foreseen in ESPR, on the customs declaration in the future, for products for which DPP is mandatory, customs will have on the import declaration also the DPP number of the product as registered in the centralized DPP registry. The party responsible for filing the import declaration to customs will need to include the DPP number on the import declaration. Customs during risk assessment would then check automatically whether the DPP number on the import declaration matches with the number that is registered in the EU DPP registry. This is foreseen to be an automated process, where customs would access the EU DPP registry via the Single Window CERTEX system.

In principle, ESPR also envisages that customs may, if needed for customs risk analysis, also access the DPP data that is a larger data set beyond what is available in the EU DPP registry. Such DPP data, beyond what is in the EU DPP registry, would normally reside in the systems of the economic operators. It is envisaged by the European Commission that there will be an EU DPP portal, which would allow to access more DPP data, while it is not scheduled to carry all data and information of the DPPs.

Access to DPP data may in the future be beneficial for customs as an additional data source for risk analysis during the different customs procedures. Such data, if available, may be potentially useful both for the safety and security risk analysis, as well as for the import risk analysis. However, timing of availability of data will be an issue, as the DPP reference, and potentially the access to the data is in principle available to customs only at the time of the import process, and in principle not available at the time of safety and security risk analysis. If, however, DPP data is made available earlier in advance, for example on voluntary basis, it may potentially be an interesting data source also for safety and security risk analysis. If such voluntary arrangements are of interest to businesses and authorities (e.g. in the context of a trust-and-check concept), then DPP data may potentially be useful for an even broader set of authorities' processes.

At the same time, looking at the importers' perspective, one issue that importers have been facing continuously over the years is the issue of data quality. Issues of data quality with the safety and security declaration (ENS) or the customs import declarations bring extra burden to importers as they are usually asked by customs to provide additional documents and information. The availability of DPPs provide opportunities to importers to improve the data quality of the data that they provide for customs clearance.

When discussing the responsibilities for placing the product on the market, e-commerce platforms may take the role of a deemed importer. But other actors may also be able or required to take that role. The question is what would be the responsibility of these parties with respect to DPP in the future, what is their role in the import process and how they can use DPP to gain better grip on the process. These parties may be important parties that can further innovate in the future together with the authorities and explore new ways of using DPP data to enhance data quality, streamline the clearance processes, and explore new business-government collaboration models in line with the trust-and-check concept.

Traditional customs controls (physical checks) are too resource-intensive for item-level e-commerce volumes. In an ideal situation, the DPP could potentially serve as a "Golden Record," augmenting the limited H7 dataset with verified product attributes (brand, composition, safety certs, etc.) accessible in machine-readable form via the DPP ID. This may allow Customs to shift from transaction-based controls to system-based audits, relying on the DPP data anchored by the deemed importer. However, whether this would be practically possible, depends very much on what data will be in the DPP, and also whether this data is verifiable (or prior verification may even be required, at least for some data), how is this data available to customs (especially whether in truly machine-readable form and with semantic meaning) and that it hence can effectively be used for automated risk analysis. Therefore, while DPPs do hold a huge promise, these other questions and conditions play a key role in defining the actual value of DPPs in this context. As such DPP alone cannot be seen as an ideal solution to today's challenges but as an important instrument which needs to be further shaped and embedded in the emerging legislative and operational context.

4.3 Processes of market surveillance authorities once the goods enter the EU market

The role of market surveillance authorities and collaboration with customs at the border were discussed briefly in the previous section. Here we only zoom in further into responsibilities of the market surveillance authorities after the goods have been released for free circulation on the EU market after the import procedure of customs. After the goods are imported to the EU, the work of customs has largely been completed and the monitoring of the goods on the internal market falls under the responsibility of the market surveillance authorities. In traditional flows, when goods are cleared by customs they can enter the EU market and market surveillance authorities have mechanisms to intervene. They can check warehouses and shops and conduct further inspections when the goods are on the market. Based on consumer signals they can initiate recalls. They can use the EU-wide networks and systems to share information and alert market surveillance authorities in other Member States as well. But in the case of cross-border e-commerce directly to consumers, where the goods are delivered directly to the homes of consumers after they are imported, it is very difficult for market surveillance authorities to perform these checks. Therefore, in the e-commerce case, in order to get more grip on these flows before they reach the consumer, an opportunity is to risk assess these goods more thoroughly enabled by DPP data and information. And that may require also more collaboration between customs and market surveillance authorities, and also more advanced data-driven risk analysis for more risks that are of concern of the market surveillance authorities.

Looking at the customs controls, the touching point between customs and market surveillance authorities is when it comes to the prohibitions and restrictions. This may be one area where DPP may hold further potential, however issues of timing and availability of DPP data may need to be resolved first. This issue refers to the issues discussed before about whether authorities will be able to access the DPP data in an automated way, and use it in their established work processes, taking into account the conveyor belt speed with which e-commerce packages pass when unloaded from a plane and destined towards the consumer’s home.

Observations from market surveillance authorities' discussions on DPP

This section is based on expert knowledge of co-authors of this white paper and their interactions with market surveillance authorities as part of their daily work. Dedicated interviews with market surveillance authorities are planned to take place as part of the future CIRPASS-2 work and findings from these dedicated interviews will be reported in future CIRPASS-2 deliverables and white papers. The observations presented here can therefore be understood as the authors' best understanding of the topic based on their own experience, and as a starting point for future dialogue and more in-depth analysis and empirical engagement in further dedicated interviews with market surveillance authorities.

One ongoing enforcement gap in e-commerce is the absence of legally accountable economic operator established in EU for products sold by suppliers from third countries. In this context market surveillance authorities could use the DPP to verify the identity of the responsible operator and their legal accountability[48] .

It is often argued (although there is no consensus on this position) that online platform should take much greater responsibility for ensuring products compliance, particularly by checking the products compliance information, cooperating with market surveillance authorities, and removing from their marketplace's products that market surveillance authorities have identified as non-complained.

Another advantage of the DPP from an enforcement perspective is its potential to make formal compliance checks more efficient. The DPP appears particularly promising in this respect, as it could provide structured, harmonized, and machine-readable product and conformity information suitable for automated processing and plausibility checks. This, in turn, could enable market surveillance authorities to allocate more resources to additional physical testing

Another key issue is the integration of the DPP into existing Market Surveillance and customs systems, such as Information and Communication System on Market Surveillance (ICSMS)[49], Safety Gate and customs risk-assessment tools. A future EU Customs Data Hub[50] is often considered crucial for improving information exchange, supporting risk-based controls. However, what role the future EU Customs Data Hub will play in the future and whether and how it will be linked to DPP developments is still to be seen.

[48] https://circabc.europa.eu/ui/group/418195ae-4919-45fa-a959-3b695c9aab28/library/90591c85-ea58-4fa0-b27a-2ab25cf3ac1f/details

[49] https://single-market-economy.ec.europa.eu/single-market/goods/building-blocks/information-and-communication-system-market-surveillance_en

[50] https://www.consilium.europa.eu/en/policies/modernising-the-eu-customs-union/

5 DPP and issues of verifiability, available technologies, and data granularity

5.1 Verifiability of DPPs

For both customs and market surveillance authorities, it is crucial that the data contained in the DPP originates from a reliable source and is verifiable and trustworthy, so that it can be used confidently for control purposes. Only when the underlying data is authenticated, the issuing organisations are legitimate, and the information is traceable, consumers, and market actors place genuine trust in the DPP. This underscores the central role of Quality Infrastructure (QI).

5.1.1 Quality infrastructures

QI[51] is understood as the system of organisations together with the relevant policies, legal and regulatory framework, and practices needed to support and enhance the quality, safety, and environmental soundness of goods, services, and processes. Yet, today's quality assurance systems remain largely document- and paper-based, relying on substantial manual and bureaucratic effort. Although this system is internationally well established, neither paper nor PDFs enable automated controls because they are not machine-readable. Therefor a key challenge is to move from paper-based to machine-readable digital certificates at global level. Initial concepts for such digitalisation of QI processes and documentation have already been developed within the QI-Digital Initiative[52] QI documents, such as smart, machine-readable standards[53], Digital Calibration Certificates (DCC)[54], Digital Reference Material Documents (DCRM)[55] and Digital Certificates of Conformity (DCoC)[56] support the shift from Document driven to Data driven Quality Assurance. For food, digitalisation efforts of phytosanitary certificates among countries certificates have been also taking place at international level when it comes to issuing digital ePhyto certificates. [57]. While food products are not subject of ESPR, experiences from such digitalisation developments of certificates may be interesting to consider as well.

5.1.2 Verifiability of DPP data

A second development concerns the verifiability of DPP data: For business users and authorities, it is not sufficient that data is merely available. There is growing interest in verifying where a claim comes from, who issued or provided the information, who has potentially externally and independently

[51] https://www.inetqi.net/documentation/quality-infrastructure-definition/

[52] https://www.qi-digital.de/en/

[53] https://experts.cen.eu/key-initiatives/smart-standards/

[54] https://www.ptb.de/cms/en/metrological-services/dkd/dkd-dcc.html

[55] https://opus4.kobv.de/opus4-bam/frontdoor/index/index/docId/64269

[56] https://circabc.europa.eu/ui/group/5eaf2706-b5f1-48cc-8b1e-ecde6e4b68fe/information?filterId=5ba7ba0a-bf8b-4421-8078-2f757d68a80b

[57] Recently the global International Plant Protection Convention (IPPC) developed an IT system ePhyto for issuing and exchanging digital phytosanitary certificates among countries. Various countries have already adopted this system. In Europe it is linked to the EU-wide TRACES system. See https://food.ec.europa.eu/horizontal-topics/international-affairs/international-standards/international-plant-protection-convention-ippc_en

verified the claim, and whether it has been altered after publication and DPP registration. This becomes especially important when DPP data is used for compliance checks, customs clearance, product safety, market surveillance, or refurbishment and recycling documentation. In this context, actors from the *Testing, Inspection and Certification* (TIC) domain are becoming increasingly relevant. One emerging option is to document not only economic operators related to production and trade of the products, but also to qualified actors in the TIC domain, including conformity assessment bodies, and refer to their credentials/IDs. This would make it easier to link a specific product claim or document in the DPP to the competent body behind it, and to show whether that body holds a valid accreditation or mandate. This is relevant, for example, for product safety evidence, homologation, technical conformity, carbon or environmental footprint-related claims, or chemical compliance documents. Note that TIC actors can be (semi-)public institutions or commercial parties, e.g. DPP service providers.

As an example, to ensure trust and authenticity the German Accreditation Body (DAkkS)[58] has introduced a digital accreditation symbol that can be embedded in certificates as a machine-readable electronic seal and given to the Conformity Assessment Bodies (CAB) which are accredited to verify their accreditation status. This allows real-time validation of accreditation status, integrity, and authenticity. These approaches are still evolving, but they illustrate a broader business requirement: companies and authorities increasingly expect DPP information to be not only accessible, but also verifiable in terms of provenance, authenticity, and the status of the issuing party. To strengthen DPP data authenticity, first economic operators are also experimenting with business wallet approaches, including in the context of the European Business Wallet[59], for issuing verifiable credentials[60] for DPP.

It is to be expected that not all parties providing DPPs will be able to provide the same level of assurances. However, this does not mean that parties should not strive to have these assurances and raise them to a next level. As for authorities, having the DPP alone will often not be sufficient but for them to rely on the DPP data for their procedures and use it is important for the data to be trustworthy, and verifiable.

5.1.3 Levels of verifiability of DPP

To address the issue of trust, several levels of further data management and processing for economic operators and market surveillance authorities can be envisioned. In this paper we propose several analytical levels, based on our current understanding. These levels can enable us to structure our thinking about verifiability of DPP data. The levels that we identify are as follows:

[58] https://www.dakks.de/de/digitales-akkreditierungssymbol.html

[59] https://digital-strategy.ec.europa.eu/en/policies/business-wallets

[60] https://www.w3.org/TR/vc-overview/

Table 1. Levels of verifiability of DPP

Levels of verifiability of DPP	Comments
Level 0. Product authentication Is the product in your hand the one that was sold and supposed to be, or is it a fraudulent product?	To assess if it is an original product made by the manufacturer, or a forgery made to look like the original product.
Layer 1. Public compliance data points & declarations visibility The public product compliance data, such as performance data points, self-signed declaration of performance, digital labelling information, and CE-mark, is provided in the DPP via the DPP to market surveillance authorities.	To make available the public compliance data and declarations via the DPP to market surveillance. Not whether the compliance data is accurate.
Layer 2. Technical compliance testing documentation accessibility The technical compliance information needs to be provided *based on European standards* to provide *common ways of testing performance.* The technical compliance data is made available either in the DPP service or made accessible via the DPP through a referenced differentiated access point to market surveillance linked to an economic operator server. Documentation of the tests, drawings and the overall technical documentation is made available as part of compliance data.	To provide insights in whether the product is actually compliant according to the responsible economic operator to the required regulations and standards, by making the test documentation, drawings and other reporting drawn up by the responsible economic operator accessible through DPP mechanisms, either directly, or through differentiated access via the DPP to the server of the economic operator. Differentiated access can be managed via credentials and wallet infrastructures for security purposes, as opposed to login systems.
Layer 3. Third party certificates visibility Standards based compliance data in particular cases needs to be certified by third parties. Certificates to this are now stored on a certifier portal. These can be linked as certifier declarations for particular compliance data points and directly referenced to the DPP, as part of the compliance data in the DPP. Thereby certificates for particular compliance data points in the DPP for products can be more easily checked and the value of third-party certification strengthens the market surveillance.	To provide direct insights as to whether third parties have validated the compliance data, in contrast to self-certification, and link this in a standardised manner in DPPs as a process.

Layer 4. Third party certification reports access Certification reports from third parties such as EU notified bodies or conformity assessment bodies, linked to issued certificates (layer 3) are made available with access orchestrated through the DPP. This can be done by providing differentiated access to access certification reports linked to certificates published in the DPP, for example for market surveillance authorities for certification checks or National Accreditation Bodies (NABs) for accreditation checks. The need for certification report access can be for cases where these need to be checked for verification by authorities.	To provide direct insights in third party certification reports to market surveillance from notified bodies or conformity assessment bodies, to carry out spot checks on the quality of these bodies for peer-review purposes to enhance quality, and spot gaps. Notified bodies are Conformity Assessment Bodies that are accredited by National Accreditation Bodies for issuing product compliance certification.
Layer 5. Laboratory testing by certified authorities Market surveillance authorities through laboratories carry out spot checks for performance of products, to corroborate information from manufacturers and certifiers, and publish validations to provide for positive feedback loops. The information for these tests can potentially also be logged or linked to DPP systems, such that when carried out and validated the information is visible. Here differentiated access could be provided to the certified authorities test reports to the economic operators via the DPP system, for purposes of improvement management.	To provide evaluations where none have been carried out (e.g. products placed on the market without proper testing) and cross-check analyses for products where testing was carried out, to validate that testing results were accurate.
Layer 6. System level analytics The evaluations carried out from layer 2 to layer 5 can be linked based on time-stamped compliance information management, such that organisation level assessments become possible for economic operators, conformity assessment bodies, notified bodies, and market surveillance organisations. The main usage context would be for National Accreditation Bodies (NABs) as part of the peer review process under the EU Accreditation Multi Level Agreement (EU MLA). A closed evaluation system can be setup on top that provides performance and scoring information, for improvement management and issuing or revoking notified body status.	To provide an overall system evaluation for National Accreditation Bodies to enhance performance in provisioning of compliance information at all levels, to create a system level incentivisation in a positive manner for step-by-step improvement. Based on secure transparency and restricted access to performance insights. The overall benefits link to the need to steer policy and assess at system level if additional mechanisms are needed, which can be uncovered through data-mining at each level to understand aggregate statistics of compliance and non-compliance.

These levels should not be seen as absolute but as a progression to create analytical clarity and understanding and to delineate progression of increased control and verifiability of data that parties could strive towards. Depending on the situation, parties may decide to pursue one level instead of the other depending on costs and resources (e.g. human resources, time, training) that are acceptable for them, as well as how critical is the risk, which will depend on specific product groups. But having idea at which level a company operates may offer opportunities to discuss different partnership arrangements with authorities and degree of facilitation and burden reduction.

A complementary route to provide trust can also be envisioned by providing economic operators with the opportunity to carry out self-certification of compliance information on a voluntary basis, linked to European standards. To this end, an automated EU standards-based screening process for product compliance could be setup, that can be linked to the point when a product is registered to obtain its passport. This, to provide insights in both performance and technical test information behind the performance. Such a solution- due to the need for automation- is fairly complex, and further evaluations and test cases are needed to assess the potential and benefits.

5.2 Upcoming technology capabilities and business developments towheads more verifiable DPP data

Current developments around DPPs, driven by the broader value chain ecosystem, are moving from basic data publication towards the operational use of DPP data across public authority processes, use-stage optimisation, and end-of-life processes. A key business objective of these developments is to justify DPP investments by unlocking value beyond compliance. These developments can also be read as a layered progression: from access control, to verifiability, to dynamic lifecycle data, and finally to business logic and system integration. These developments are also influenced by EU and global standardisation efforts and alignments. The implementation of DPP data flows for e-commerce is supported by the 8 new European EN standards developed under JTC24 for the DPP system, which provide for common standardised ways to manage DPP data governance and provisioning of DPP data via IT services. In the e-commerce context this is needed to standardise the provisioning of data from manufacturers to e-commerce platforms. Global developments to create ISO level versions of these standards, under the new ISO/IEC JTC5 will enable the setup of globally interoperable DPP systems to enable global standardised data flows for e-commerce.

When it comes to verifiability of DPP data, it becomes also a responsibility for trade, because companies benefit from it to improve the efficiency of their recycling business processes. So, in the end DPP data verifiability becomes a public-private partnership.

As battery passport requirements under the EU Battery Regulation start to apply from February 2027, companies in the EV battery sector are focusing on the basic Digital Battery Passport (DBP) compliance layer by implementing a DBP for static and dynamic data as a basic “data container”. First movers are already exploring more advanced approaches to access control, data authenticity and beyond-

compliance value propositions. Insights and practical experience from the battery passport domain are now increasingly disseminating into adjacent Digital Product Passport domains, including e-commerce.

5.2.1 Access-controlled DPPs

A first development is the move towards DPP data that is selectively accessible depending on the role of the requesting party. The ESPR provides for access to DPP data according to the user's respective access rights. This type of access control is particularly relevant for Persons of Legitimate Interest (PLI) in an open European circular value chain of authorised participants. Such a solution is technically feasible today, but a PLI role governance framework is still missing to authenticate participating legal entities, issue PLI credentials, verify PLI status, and monitor role changes over time.

CIRPASS-2 and related initiatives have started to work with defined organisational roles and processes in which users retrieve only the data they are authorised to see. This matters because many DPP use cases involve commercially sensitive data, not only public product information, and in some cases also include data write permissions. For example, authorities may need to declare a product or DPP as "not compliant", or update a compliance status during enforcement procedures. In e-commerce and online marketplace settings, role-based access is particularly relevant for market surveillance authorities, customs, repair providers, refurbishing companies, remanufacturers and recyclers.

5.2.2 Access-controlled, verifiable DPPs with dynamic data

A second development is the move from mainly static DPP data to more dynamic lifecycle data. To meet compliance requirements and deliver business value, DPP data and documents may need to exist at model, batch or item level, with the most detailed level being made available to other actors depending on the product owner/ user's authorisation. In business terms, this opens the way for DPPs that do not only describe what a product is, but also reflect relevant events or states over time, such as shipment, maintenance, repair, refurbishment or IoT-enabled condition monitoring. This is particularly relevant where compliance or service decisions (e.g. repair, predictive maintenance etc) depend on updated information rather than on a one-time data set.

5.2.3 Access-controlled, verifiable DPPs with dynamic data and business logic / APIs

A third development is the use of APIs and business logic around the DPP. Here, the DPP does not only make data available. It also supports interaction with other systems and processes. Current industry work discusses interfaces for warranty checks, product safety, predictive maintenance and customs checks. More advanced concepts also point to the use of DPPs in take-back, sorting, remanufacturing and recycling. The EU implementation path also points in this direction, as the DPP system is being developed together with the EU DPP Registry and DPP web application functions and with customs integration.

This makes DPPs increasingly relevant for process automation over the product life cycle. In this sense, a DPP can be seen as complementing ERPs, containing also selected business logic and lifecycle events

that are relevant for circular economy processes and accessible to supply chain actors in line with their market role or access rights. For market surveillance authorities, this also has practical consequences. DPP access may take place through the data carrier, the EU DPP registry or the DPP web portal. However, from an operational perspective it is equally important that DPP data can be transferred into internal enforcement and case management processes and be linked to existing authority systems such as customs and market surveillance authority systems.

5.2.4 Roadmap: long-term solution, short-term pragmatism and phased migration

A phased approach appears consistent with the current state of development. In the near term, the main focus is likely to remain on making the core DPP system work reliably: DPP registration, web access and authority access, including customs connectivity. Market surveillance access is also a near-term need, especially where DPP data should support compliance checks and fit into existing authority systems. A next step is likely to be broader role-based access for supply chain actors with legitimate interest. This depends on a common set of roles being defined at European level, alignment with sector-specific governance, and further clarification in delegated acts.

In the longer term, stronger provenance mechanisms and more advanced identity features may be added so that roles, permissions and selected DPP claims can be verified across organisations. Industry and government policy-related work already point to verifiable credentials as one possible option for authentication, authorisation and verification of DPP data. At the same time, these features go beyond the current compliance baseline. For that reason, a pragmatic migration path may start with core registry and authority use cases, then add role governance and data authenticity, and later introduce more advanced DPPs with integrated business logic, APIs and lifecycle interaction features where there is a clear business case.

5.3 Granularity of DPP data and challenges for e-commerce

How DPP data may be of value for different stakeholders depends also on the granularity of the DPP data. The table below indicates requirements for granularity for stakeholders, and related challenges (see Table 2). It should be noted that delegated acts defining mandatory granularity per product group are in development (expected 2025-2026). The requirements above reflect current regulatory guidance (ESPR 2024/1781) and industry implementation positions.

There are considerations about efficiency vs. utility when it comes to data granularity, as follows: Model-level DPPs are efficient for manufacturers (minimal overhead, one product = one DPP); Item-level DPPs may be useful for returns, logistics, and consumers, and for higher valued products with a dedicated use stage where aging, repairs etc. need to be documented. But one DPP cannot simultaneously satisfy both needs without flexible architecture. A core issue is that ESPR mandates DPP for products placed on EU market but does not yet specify granularity; this specification will follow in the delegated acts released under the ESPR, similar in other legislations e.g. under the CPR. Different use cases (new products, returns, second-hand market, customs clearance) require different

granularity levels. New products need model-level data; returned items may need item-level tracking (for warranty verification); second-hand products may need item-level identification; customs clearance may need model or item level identification, as set in legislation.

Table 2. DPP granularity challenges

Stakeholder	Required Granularity[61]	Why They Need It	The Challenge
Manufacturers	Model-level	Efficient: one DPP per product model (e.g., iPhone 15)	One model-level DPP must serve all contexts
e-commerce Platforms	Mixed	New products → model-level, Used/Second-hand → item-level	Must support both model and item granularities and switch between them appropriately, at least for products above a certain price/value, where this would be economically viable
Returns & Reverse Logistics	Item-level	Returned item needs unique identifier (e.g., "iPhone 15, serial X12345") for warranty processing	Must create item-level DPPs for each Stock keeping Unit (SKU), which is resource-intensive
Consumers	Model or Item-level	"This specific item I bought" - wants direct access to specific product data	QR codes should resolve to appropriate granularity level based on use case, or may need yet-to-be-developed additional differentiating means
Customs (H7)	Model level or item level	Depending on product group, as set in legislation	Authenticating DPP at border without access to full supply chain data

This creates operational complexity for e-commerce platforms that must support all contexts. Different approaches may be considered to address this identity fragmentation without imposing disproportionate administrative burden. One option is to consider a layered DPP architecture: A hierarchical DPP structure may be used following model, batch and item-level hierarchy. Model-Level DPP (root) - Optional Batch-Level References (logistics) - Optional Item-Level Identifiers (serialized units). In this structure, (a) the model-level DPP could contain mandatory ESPR compliance data and

[61] The required granularity levels in this table are inspired and derived by several sources, https://eur-lex.europa.eu/eli/reg/2024/1781/oj ; https://www.eurocommerce.eu/app/uploads/2025/10/20102025-nf-pp-eurocommerce-dpp-position-final.pdf; https://www.europarl.europa.eu/RegData/etudes/STUD/2024/757808/EPRS_STU(2024)757808_EN.pdf. Delegated acts specifying exact granularity per product group are in development (expected late 2025-2026). The table reflects current guidance from JRC methodology and industry consultations.

core product attributes; (b) item-level identifiers, where available, would rather just reference the model-level DPP rather than duplicating data; and (c) batch references may support logistics traceability without requiring separate full passports. This preserves regulatory efficiency while enabling higher granularity where operationally required. A single DPP endpoint can support multiple contexts without altering mandatory data as follows: (a) Regulatory context → full compliance dataset; (b) Consumer context → usability-focused view of the same dataset; (c) Reverse logistics context → serial validation linked to model-level passport (as/if supported and affordable); (d) Potential customs interoperability context → verification of identifier consistency. Model-level information remains invariant. Context only determines presentation layer and access to supplementary data. To avoid regulatory confusion, mandatory ESPR data must remain consistently accessible. Voluntary extensions may include warranty status, sustainability scoring, repair history, or resale validation data. Visual and structural separation enhance transparency and reduce greenwashing risk. This allows innovation without compromising compliance with integrity. Manufacturers would maintain control over core product-type data. Economic operators placing goods on the EU market remain legally responsible for compliance. Resellers and platforms may: Reference manufacturer model-level DPPs; Attach transaction-level or item-level metadata; Create event records (e.g., resale, return, refurbishment). This creates a federated yet traceable identity model aligned with emerging EU data space principles[62].

The approach described above is one possible solution. Other solutions may be possible. However, what is important to highlight that the e-commerce context is likely to require handling of data at different granularity level. DPPs to be useful for the different users and use cases need to consider this complexity related to granularity of data, as well as possibility to extend from mandatory to voluntary data to add extra value.

5.4 Issues of SMEs for data sharing and verification

During the course of implementation of CIRPASS-2, it has become clear that some EU-based textile SMEs fear deeper data sharing with large international e-commerce platforms. This appears to have two key reasons. Firstly, the SMEs fear that by further data exposure, they increase the risk of having their products and data used for fraudulent action by third parties, especially outside the EU. Secondly, there is an ongoing fear that large e-commerce platforms will not handle the SMEs data with enough care, thus leaks may occur.

The fraud potential issue raised above also brings the question of verification. While QR codes seem to have a simpler implementation methodology for the beginning of the product's lifecycle, also offering single-scan-consumption features, a certain level of anti-counterfeiting (by serialisation, for example), their key disadvantage is that these are often printed on labels that get cut off the garments soon after purchase, rendering the QR code unusable for e.g. recycling. It would appear that RFID tags are more suitable for these use cases, as they are also more difficult to copy than simple QR codes, but their

[62] https://tracextech.com/espr-dpp-regulation/

purchase costs are also considerably higher. Therefore, these tags would be logically used for more expensive products. Two open questions are relevant to address the issues above: (1) How best to engage with SMEs to increase their trust in the DPP/e-commerce platforms collaboration? (2) What is the way of preventing data abuse by third parties?

6 Discussion on DPP, and e-commerce and authorities- opportunities and challenges

The cross-border e-commerce and the ever-growing volumes of e-commerce trade directly to consumers is a big challenge for customs and market surveillance authorities. Failure to efficiently and effectively control these increasing trade flows, could lead to issues such as unsafe or unsustainable products entering the EU market, could affect EU competitiveness and lead to unfair competition, as products that do not comply to the stringent EU requirements are able to enter the market at possibly lower costs and largely bypassing market surveillance.

Digital product passports were initially seen as an instrument to foster circularity but are increasingly also seen as an instrument that can play a role to address much wider policy goals such as EU competitiveness, burden reduction and addressing the e-commerce compliance monitoring challenges.

But what can DPP contribute in the cross-border e-commerce process for the monitoring by authorities and where do the opportunities and challenges lie? By making the cross-border e-commerce processes more explicit, both in terms of how they form part in the circular economy flows, as well as in view of roles of the authorities, possibilities of DPP, and available technologies, we aim to bring the dots together and set a scene and initiate further discussion on the topic.

The figure below visually represents different aspects of the discussed processes. We position DPP in the centre, to bring the focus on examining the DPP in the e-commerce context, and how a DPP-enabled e-commerce process is part of the broader picture of circular economy flows.

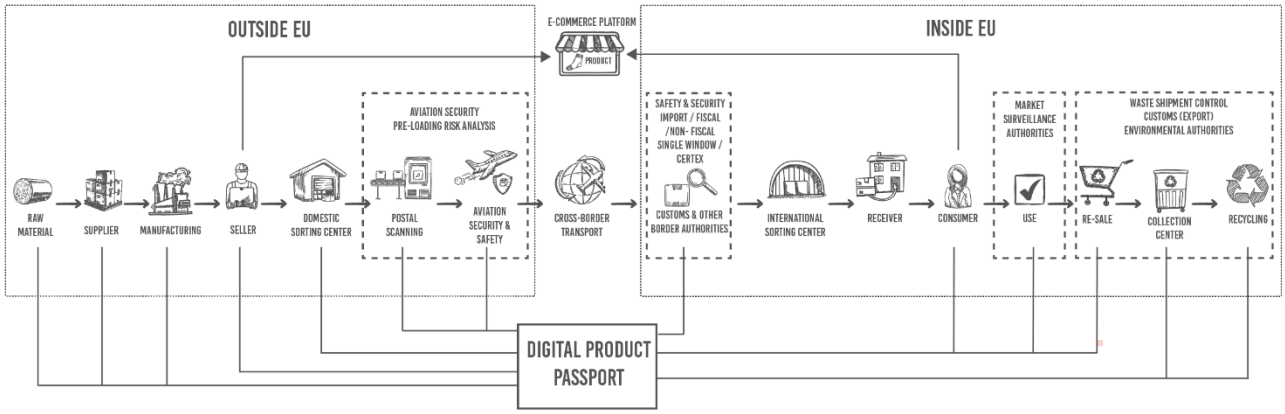

Figure 6. DPP-enabled e-commerce process as part of the broader picture of circular economy flows and role of authorities.

Having this broad context in mind is helpful, as it allows to search for benefits and opportunities of DPP beyond the direct transaction. Looking towards the production process opens questions about trustworthiness and verifiability of DPPs. Looking into use and end-of-life phases opens questions about usefulness of the DPP in the context of Extended Producer Responsibility and beyond, and the need for granular data to be able to deal with some of the use and R-strategies and reverse logistics.

In view of the "e-commerce compliance monitoring challenge", DPPs are looked at from different angles: On the one hand, DPP is another compliance instrument, with which companies need to comply to follow the legislation. At the same time, there is a concern that - while EU businesses will comply - the market may not be protected from non-compliant products coming from abroad onto the EU market and directly to consumers, which brings issues of level playing field but also would continue to enable unsafe products entering the EU market. With e.g. electric and electronic equipment and toy products, that may cause fire or other hazards, this brings significant concerns for businesses and consumers as well. For authorities, the large volumes that come in via e-commerce makes it very difficult to check a relevant sample. There are simply no sufficient time and resources to check the products, and it is not possible to physically inspect all parcels to at least ensure the content is what is declared. In this context, DPPs come as a powerful and unique instrument to improve the procedures and to find much more efficient and effective ways to address the e-commerce compliance monitoring challenge. There are substantial gains to be realized, for both authorities, businesses and consumers from better monitoring of the e-commerce flows. However, realizing these benefits is not self-evident and will require several aspects to be considered in system specification and operationalisation.

Two key issues deserve special attention, namely: (1) the issue of responsibility (who is to issue and register the DPP and who is legally responsible for the content); and (2) the issue of verifiability of DPP data. These two issues need to be addressed in order to (3) allow DPP to have value for the e-commerce compliance monitoring process for (a) authorities, (b) businesses, and (c) consumers. Suitably implemented DPPs can add value to the diverse stakeholders in very different ways, depending on their needs and information requirements, reflecting different data requirements and level of granularity. Below we will reflect on these points in more detail.

6.1 The issue of responsibility

While the e-commerce world, and how different legislation refer to actors in this world, is obscured with many definitions of actors playing roles like manufacturers, producers, dealers, importers etc, looking across these legislations and definitions key responsibilities lie on the party "placing the product on the EU market" … "for the first time" (see the discussion of definitions in section 3.1). Looking for this responsible party (the "responsible Economic Operator" as to ESPR) in the e-commerce context would be the necessary first step. Who is responsible for the first time placement of a specific product (model) on the EU market?

6.2 The issue of DPP data verifiability

After clarifying the responsibility, the second question when it comes to DPP and potential value for the e-commerce monitoring processes, is the verifiability of the DPP data. If the DPP data is not verifiable and not trustworthy, this will severely limit the value of the DPP data for the authorities. Therefore, the question of verifiability of DPP data, either made available by the responsible party placing the product on the market itself, or via a party acting on its behalf, is the second key question to address. The route for verifiability of the DPP data can be very long and winding. As parties

representing different roles may have the obligation to present the DPP data but may not be responsible for the DPP and the product placement on the market. And the parties that are responsible for the product placement (in the case e.g. of e-commerce platform acting as a deemed importer), may not be the party that actually produced the product and that has the access to detailed production data. Proving verifiability of DPP therefore, can be a very challenging task.

However, verifiability is not deemed to have a binary answer with yes or no. In this paper we discussed a range of options of verifiability that can be seen at different levels. These levels can range from situations of having DPP data, having the data that adheres to standards, having data that adheres to standards and that is already verified by third parties etc. And there are a range of technologies and tools that may make achieving some of these levels in a more direct reach. We discussed tools that are getting more established and accepted such as EU Business Wallets with verifiable credentials to mention only a few. These are technologies that businesses can already deploy and are improved in ongoing efforts, e.g. via the WeBuild[63] project. But at the same time, on the government side, the value of the DPP will also depend on the available tools that authorities have, to access and use the DPP data. Especially accessing DPP data in a machine-readable form to allow automated processing of DPP data and to allow for handling large volumes is argued to be highly important in the future - only then it will be possible to effectively survey the large number of imports directly to consumers via e-commerce. Tools such as the EU Centralised DPP Registry and DPP Portal will be useful way forward, but more will be needed to allow for using the DPP data in an automated way linked to risk analysis systems of the authorities, with machine-readability being a key technical characteristic, opposed to only being "digital" (e.g. pdfs).

The handling of large-scale e-commerce flows also opens opportunities for non-intrusive detection technologies. While such technologies are used in a wide scale for safety and security applications, e.g. at airports when x-ray scanning luggage, they may offer opportunities also in the e-commerce context in exploring the potential of linking DPP data and images data for product safety, circular economy and sustainability monitoring. While in very early exploration stage, such approaches may hold promise in the future to address the large volumes of e-commerce flows.

Looking at the different levels of verifiability of data, businesses and authorities can keep these levels of verifiability of DPP data as reference starting points to discuss levels of verifiability possible and realisable in specific e-commerce situations and possible respective business-government partnership arrangements that may be possible. Such level of differentiation may also help in the future in a layered approach to business-government partnership and trust-and-check possibilities, which can allow for differentiated treatment of the large volumes of e-commerce flows.

[63] https://www.webuildconsortium.eu/

6.3 The issue of value of DPP data for stakeholders

One may ask, if we have identified the DPP data responsibilities, and if we have ensured that the DPP data is verifiable at a certain level, is this sufficient for the DPP to add value for businesses and authorities to address the cross-border e-commerce compliance monitoring challenges. The answer is: it depends. As each of these stakeholders, especially looking at the authorities, will have their own aspects that they need to monitor which would require access to data for the specific processes of their own realm of monitoring. For example, customs may be interested in whether the import declaration has a DPP reference number that is also found in the centralized EU DPP registry. Or may be interested in further risk analysis in data about facility identifiers to identify the place of origin of the product. Market surveillance authorities may be interested in certificates of conformity. And for some processes such as reverse logistics of valuable goods and shipment of refurbished goods, item level data may be needed. Therefore, the data contained in the DPP, its level of granularity, but also potentially voluntary data, if needed for certain processes and if available, may determine the value of the DPP for each actor. This touches on discussions such as granularity of data, mandatory and voluntary data and even the time when the DPP data is available that will further play a role.

If some of the concerns above are properly and practically addressed, with respect to clear definition of responsibilities, availability of verifiable data, availability of tools on the business and government side to make the data verifiable and accessible in a machine-readable form to enable automated processing, and if the DPP contains the right data points in terms of availability and granularity of data of value for specific stakeholders, the introduction of the DPP, in the context of the discussion above holds very substantial potential for stakeholders such as:

- Efficient import controls by customs through availability of machine-readable DPP data.
- Effective customs and market surveillance monitoring based on availability of DPP data, again in machine-readable form. Such benefits can be further enhanced if tools and procedures are available for authorities to perform checks early in the process before the e-commerce packages are delivered to the consumer.
- Strengthened consumer rights through access to more and better information about the product, such as for effective and cost-efficient repairs, compatible spare parts, safe product handling, etc.
- Competitive playing field for EU businesses due to better compliance checks enabled by DPP.

It will be a long process and some of the aspects will be easier to achieve in the short run, allowing for some quick gains, while for others a longer trajectory will be required. However, even small steps can pave a way towards a future with a gradual much better grip on the cross-border e-commerce flows.

6.4 Additional ideas for further exploration on the potential of DPP in the context of cross-border e-commerce monitoring

Taking the broader context into account, we identified also a number of other avenues to further explore the potential of DPP in the cross-border e-commerce context. These directions for further exploration are listed below:

6.4.1 Closer collaboration between customs and market surveillance authorities

Given that the cross-border e-commerce flows to consumers are delivered directly to the consumer's home after they are cleared for import, this allows very limited opportunities in the process for market surveillance authorities to intervene before the goods reach consumer's home. Further exploration can examine new models of collaboration between customs and market surveillance authorities, which are data driven and enhanced by the DPP data. This may allow to intervene earlier in the process and may offer interesting avenues to explore. This could be considered as a next level of EU *Single Window* and *Coordinated Border Management,* which would expand on the cases where the EU border customs acts as the first point of control, and often perform risk assessments on goods on behalf of and in collaboration with other market surveillance authorities.[64]

6.4.2 Possibilities for Trust-and-Check certification and voluntary data

Given the large volumes of e-commerce flows, a differentiated approach offers potential. Further exploration may focus on the possibilities of DPP, in combination with the layered approach to verifiable DPP data in the context of trust-and-check certified trade flows.

Potential for further exploration may include further examining of trust-and-check certification with platforms, especially in the case where platforms are responsible for placing the product on the EU market. This may provide new opportunities for a more differentiated risk management.

6.4.3 Scanned images and DPP

Given the large volumes of e-commerce and the speed of handling of e-commerce packages, further exploration may examine the potential of using detection technologies and scanned images in combination with DPP data to address wider concerns of customs and market surveillance authorities for the monitoring of e-commerce flows.

6.4.4 International Extended Producer Responsibility (EPR) schemes and DPP

Many textile products enter the EU via cross-border e-commerce. Further exploration can focus on the link among e-commerce flows, DPP and EPR. Extending on that would include also handling of end-of-life flows and export of products imported to the EU via e-commerce and leaving the EU as second-

[64] See https://taxation-customs.ec.europa.eu/eu-single-window-environment-customs_en

hand clothes or waste. Exploration can focus also on how EPR schemes are safeguarded after export, the role of international EPR and how DPP may play a role in that context.

6.4.5 Potential to collaborate with international organizations like WCO, WTO, ICC

Further exploration may focus on the potential to collaborate with the International Chamber of Commerce (ICC), World Trade Organisation (WTO) and World Customs Organisation (WCO) on data quality and digitisation and verifiable DPP in those countries, where the products are produced. As verifiability of DPP data is a very important aspect, for the usefulness of the DPP data for compliance monitoring for authorities, and as many products coming to the EU via cross-border e-commerce are manufactured outside of the EU, further exploration can focus on how international organisations such as WCO, WTO, ICC, may play a role in view of their Single Window and Trade Facilitation experience also in the context of the DPP and verifiable DPPs. Possibly in collaboration with trade associations and e-commerce platforms to aid businesses, especially SEMs, responsible at the beginning of the generation of the DPP data to enable verifiable DPPs.

6.4.6 Alignment of definitions across legislations for parties responsible for placing the product on the EU market

As indicated in section 3.1, e-commerce flows are affected by different legislations where different definitions are used. It appears that all these legislations have the placing the product on the market as an important event that initiates responsibilities. Further exploration may focus on examining the possibility of aligning these definitions on a higher level, possibilities for reuse of definitions and introduction of new definitions in new legislations only when available definitions do not suffice. This can help to minimise legal uncertainty at both market surveillance organisations and at the various economic operators.

6.4.7 Uniform rules for the presentation of product characteristics on e-commerce platforms enabled by DPP

The presentation of the product characteristics of goods offered on e-commerce platforms often varies greatly in terms of the quantity and quality of the information provided. However, this presentation is very important in the e-commerce business, as this presentation is usually the only way for the potential buyer to find out about the characteristics of the product. Therefore, DPPs may play a key role in presentation of products characteristics.

6.4.8 Issues for SMEs for data sharing and data verification

SMEs play an important role in e-commerce. Open questions that can be further explored include: How best to engage with SMEs to increase their trust in the DPP/e-commerce platforms collaboration? And what is the way of preventing data abuse by third parties?

6.4.9 DPP and potential for monitoring climate change contributions of cross-border e-commerce

EU governments are increasingly interested in monitoring climate change impacts of goods entering the EU market. Availability of DPP data with environmental footprint information may offer opportunities to monitor also environmental effects of goods coming to the EU market via e-commerce. The use of environmental and carbon footprint thresholds to grant access to the EU market is seen as a strong mechanism to incentivise tangible impact reductions at producers globally, which would benefit even products sold elsewhere (while this is not a formal element of the ESPR, of course), due to improved ecodesign, using better technologies and generally better-informed production. Further exploration may focus on examining the usefulness of DPP for monitoring of climate effects of goods placed on the EU market via cross-border e-commerce. This could be done with the approach of consumption-based net environmental footprints, developed since 2010 by contractors and the JRC[65], that have shown that the EU is "exporting" environmental impacts due to an increased production outside the EU and import of the goods, what is substantially reducing and often even inverting improvements inside the EU territory[66].

[65] https://eplca.jrc.ec.europa.eu/uploads/LC-indicators-Basket-of-products.pdf

[66] https://eplca.jrc.ec.europa.eu/sustainableConsumption.html

7 Conclusions

This white paper is the first from a series of white papers which will aim to shed light and better understanding of the role of authorities and how and where to leverage the potential of DPPs. In this white paper we took a specific focus on cross-border e-commerce directly to consumers. The motivation for this white paper is the growing volumes of cross-border e-commerce flows, the challenges for authorities to monitor these and the opportunities offered by DPPs. The interest in the cross-border dimension is particularly triggered by our involvement in customs innovation projects such as PARSEC and BORDERLINK where the work of customs is focussed on flows crossing the EU borders and where the DPPs are a new phenomenon for the customs domain. At the same time, the large expertise of the CIRPASS-2 project on DPP made it very interesting to bring these two worlds together.

This paper is largely exploratory and explanatory and overall conceptual. It is largely based on the expert knowledge of the authors and their attempt to bring different pieces of the puzzle together (DPP, the roles of customs and market surveillance authorities, e-commerce and the role of platforms, and how they form part of the circularity picture, and the role new technologies may play to enable verifiable DPP data and further collaboration models). While each of these topics is huge on its own, our aim was to see how these topics connect. Therefore, we worked with simplifications and our best understanding of the processes. We view this white paper not as a final product but as a basis for further engagement. Follow-up studies will go in depth and engage in dedicated interviews with authorities as part of the follow-up work in CIRPASS-2.

This white paper also serves to provide insights into key open points that need to be discussed and answered as part of the legislative evolution under the EU Product Act and other DPP-related legislation, as well as further operationalisation of role of DPP as follows:

Before placing a product on the EU market:

- What process should be put in place for responsible economic operators and authorised representatives of non-EU manufacturers (and also to EU producers), to show that the compliance-relevant information in the DPP is accurate and valid?
- Which checks should be carried out linked to product compliance before allowing placing a product on the EU market, at what point of the process (e.g. before or after registering a DPP in the EU DPP product registry, before or after customs processing/import), and which checks will rely on periodic audit?
- How do Notified Bodies or other authorized organisations, that certify that specific products meet legal requirements before these are allowed to be placed on the market, provide their certifications, ideally in machine-readable formats, for DPP-based compliance check purposes?

When a product is sold and/or imported into the EU:

- If and what responsibilities should e-commerce platform operators have in validating compliance information maintained in DPPs, for products sold on their platform (i.e. also without their direct involvement)?
- How can product identity management with DPPs benefit e-commerce platforms, given that different product groups will have model, batch or item level identity variations, and the need for secure identification across many sellers of the same product?
- How should customs collaborate with market surveillance authorities in evaluating product compliance information in Digital Product Passports, when an import declaration is filed, what would be the workflow and information flow?
- How should DPPs work with different market surveillance procedures across the EU member states, and link into existing market surveillance IT portals, for sharing product compliance check information (to avoid multiple checks on same product model)?

As an overall need across the entire product compliance life cycle:

- If and how should non-compliant findings be logged into DPPs by market surveillance authorities?
- How can DPPs serve to support not only the access to compliance-relevant data itself, but also improve the reliability of compliance information itself by creating a new trusted system, through improved systematic compliance validation, notified body product certification & issued product certificates, and market surveillance feedbacks, within the EU and through cross-border systems?
- What are opportunities of DPP and business-government partnership and burden reduction in the context of cross-border e-commerce for the flows where high-levels of transparency and verifiability are in place.

The authors hope that this white paper will serve as a conversation starter. It is meant to set the scene and lay a common basis of understanding of the many technical and procedural aspects, for follow-up research and wider engagement on the topic of DPPs and its potential for cross-border e-commerce compliance monitoring.

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AI statement

For limited sections of this report, AI tools (OpenAI ChatGPT and Copilot) were used for language editing for spelling, grammar, structuring, and clarity. The authors of the respective sections have subsequently checked and edited the content to remove inaccuracies.