

Preparing Your Business for Digital Product Passports

An executive's guide to preparing your
business for DPP compliance

Digital Product Passports: An Overview

Digital Product Passports (DPPs) are a tool for collecting and sharing product data throughout a product's entire lifecycle.

Facilitating several use cases, DPPs can be used by manufacturers to prove the provenance of the components that make up their products; by supply chain managers to gain better oversight of their supply chains; and by customers to check the authenticity and sustainability of products they've purchased. In short, DPPs are a tool for enabling extended producer responsibility and communicating sustainability metrics related to each product — all of which ties into the move towards a more circular economy.

To ensure the adoption of more sustainable business practices, the EU has started to enact sweeping legislation as part of their Circular Economy Action Plan (CEAP). The CEAP is a wide-reaching piece of legislation, adopted in March 2020, to help further Europe's agenda for sustainable growth. Within this plan, the Ecodesign for Sustainable Products Regulation (ESPR) specifically mandates the implementation of DPPs for physical products being sold within the EU — with certain industries required to implement DPPs as early as 2030.

This guide will summarise the key elements of DPPs, and will give practical guidance on how your organisation can ready itself to implement DPPs and ensure compliance.

Regulations Mandating DPPs

Sustainability and ESG are gaining prominence rapidly across all global industries, with around 88% of public companies and 66% of private companies having ESG initiatives in place. Equally, the importance of sustainability to consumers is clear, with 84% saying that poor environmental practices will alienate them from a brand or company. Supranational organisations like the EU are leading the drive towards more circular economies by introducing a new raft of binding regulations – many of which have either direct mandates for DPPs or indirectly support their use.

Ecodesign for Sustainable Products (ESPR)

Published on 30th March 2022, the ESPR is intended to generate more sustainable and circular products, building upon the existing Ecodesign Directive (2009/125/EC).

The ESPR framework sets product design requirements to maximise sustainability and energy performance, to promote reuse, and to reduce each product's overall carbon footprint. It's expected that the criteria will include resource efficiency and the use of recycled materials, reusability, recyclability, packaging, and much more.

The legislation mandates implementing Digital Product Passports to facilitate the sharing of this information between stakeholders in the value chain and help consumers make sustainable purchasing decisions.

Although yet to be formally adopted (at the time of writing), the EU parliament reached a provisional agreement to ratify the legislation in December 2023, with the formal entry into force expected in the first half of 2024.

The ESPR ensures that global manufacturers and importers who place products on the EU market are not exempt. The directive states that each product within the affected categories manufactured or retailed in the EU (even if manufacture occurs elsewhere) must have its own DPP attached, or the

manufacturers and retailers of that product will be breaching the law.

While penalties for non-compliance haven't yet been specified, they may include fines, confiscation of assets, and business sanctions.

Corporate Sustainability Reporting Directive (CSRD)

The CSRD aims to create a sustainability reporting framework to ensure that organisations provide external stakeholders (investors, policymakers etc.) with all the data they need to assess an organisation's environmental impact.

The CSRD already applies to organisations in regulated markets with:

- 250 or more employees on average during the financial year
- €40 Million or more in net turnover
- €20 Million or more in total assets

Whilst DPPs aren't specifically mandated within this legislation, the granular information that DPPs collect at a product level would make them an excellent vehicle for compliance with the CSRD.

Other DPP-Related Legislation

- CEAP
- Battery Passport Regulation
- EU Strategy for Sustainable Textiles
- Construction Product Regulation

Affected Industries & Timelines

Whilst these new regulations are designed to eventually encompass roughly 30 categories of physical products manufactured or sold within the EU, specific industries have been earmarked to implement DPPs sooner (as early as 2027 for some priority industries such as Batteries) due to their impact on the environment and/or their high potential for circularity.

Batteries and Vehicles

As part of the EU Battery Regulation, certain batteries will need to have a form of DPP attached to them (Battery Passport). The responsibility for doing so lies with the organisation putting the item on the market (either the manufacturer or the importer). This part of the regulation comes into force on **1st February 2027**.

Textiles

Companies in the textiles sector will need to have DPPs implemented across their products (originating within or entering the EU) **by 2030** as part of the EU Green Deal, ESPR and the EU Strategy for Sustainable and Circular Textiles.

Electronics & ICT

While specific legislation is not yet finalised, the implementation of DPPs in the Electronics & ICT industry is set to follow shortly after the Batteries and Textiles industries.

This will include (but is not limited to) companies that produce smartphones, tablets, and solar panels, etc.

Other Industries

Outside of the batteries, textiles and electronics industries, other priority industries set to implement DPPs over the next few years include:

- Furniture
- Construction
- Plastics
- Chemicals

Timelines for these industries are set to be confirmed in due course. However, the priority industries are just the tip of the iceberg, with mandates for other industries expected to be announced.



How to prepare your organisation for DPPs

Given the complexity of the task of implementing Digital Product Passports into your operations, it's crucial to develop a clear strategy and roadmap well in advance of the mandate.

Phase A: Preparation

Initial preparations can fall into three key categories. Plan, Engage, and Action. Initial planning stages focus on research, problem analysis, resource allocation, and the setting of clear and actionable strategic goals — all crucially important to define before embarking on subsequent steps. After a clear strategy has been defined and resource has been allocated, the next steps for preparation fall into the “Engage” category. Here your organisation should engage relevant stakeholders — both internally and externally and assess current capabilities. The final steps of this initial planning phase all fall under the category of “Action”. Here are actionable steps that can be undertaken with or without an external partner (e.g. DPP Consultant or Solution Provider). These steps will form the foundation of Phase B: Implementation.

Step #1. Plan

- **Resource:** Assign internal resources to create a team (or person) to take initial responsibility of preparing your organisation for DPP. Allocate budget where necessary.
- **Research & Assess Regulatory Relevance:** One of the very first tasks is to research and understand the upcoming regulations and how or if they apply to your organisation. Explore the requirements that are currently outlined in key pieces of legislation (such as ESPR) and identify which elements will be further decided in the near-future. Look at industry-specific implications, and what compliance looks like for your business. If your organisation does not have this resource in-house, an external partner could be brought in to undertake a regulatory compliance assessment.
- **Strategise:** Create a DPP strategy — at least for Phase A, that outlines clear goals and outcomes. Ensure research and budget is dedicated to initial stages. Ensure the strategy outlines key stakeholders across the value chain both internally and externally.
- **Define Goals & Actions:** Set clear actions, KPIs, milestones, and timelines for both Phase A and Phase B. Make sure timelines align with upcoming EU DPP mandates for DPPs in your industry.

Step #2. Engage

- **Engage Internal Stakeholders:** Begin by engaging relevant stakeholders from across your organisation. Given the breadth of DPPs, it's likely that multiple departments and stakeholders will need to be consulted even in the initial stages. Senior leadership, Operations, Supply Chain, ESG, Compliance etc. are all key business functions that will be impacted by the implementation of DPPs.
- **Engage External Stakeholders:** Given the upcoming regulations, DPPs will likely be a priority agenda item for business leaders across your extended ecosystem — from suppliers, to manufacturers, logistics partners, retailers and more. Reach out to your external stakeholders to understand their own strategy, timeline and agenda for implementing DPPs. Build internal partnerships, identify synergies and opportunities to work together. Briefly assess availability of data from your external stakeholders and put processes and agreements in place to be able to gather the required data going forward.

Step #3. Action

- **Identify Required Data Points:** Outline the data points necessary in order to achieve compliance and to create a functional DPP. Be sure to look at applicable regulatory requirements. If necessary, engage an external partner at this stage to help build a roadmap to achieve compliance.
- **Assess Data Availability, Data Sources and Data Quality:** Assess current data sources and data availability. Evaluate these against the required data points by conducting a Data Gap Analysis. Evaluate the quality of product data and product LCA data.
- **Impact Analysis:** Conduct an impact analysis to understand the impact of DPP implementation on each business function.
- **Plan for Technological Change:** Identify which processes need to be digitised and which systems will need to be integrated with. Identify potential challenges and barriers of integrating with legacy systems (both internally and externally, i.e. that of your suppliers). Essentially, this step involves preparing the technological foundations.
- **Begin Initial Data Gathering:** Begin gathering data from internal and external sources. Gather available data from both upstream and downstream in your value chain. Utilise the Data Gap Analysis to target data gaps and put processes in place to acquire necessary data.
- **Explore Solutions:** Explore the DPP solution market. Engage with solution providers that offer DPP solutions and/or consulting.



Phase B: Implementation

After the initial preparation undertaken in Phase A, your organisation should have a clear strategy for preparing for DPPs. Unless you have the in-house skills, time, and resource to develop a DPP solution, it's likely that the logical next step would be to engage a solution provider to develop or implement a DPP solution. You'll need a solution that not only complies with the EU's requirements, but one that also works in harmony with your existing architecture.

While every implementation will differ, there are a number of common considerations and steps that organisations will likely go through on the road to DPP implementation. A high level overview of these subsequent steps is as follows:

Step #4. Scope

This is a critical stage in preparing your business for the implementation of DPPs. Considerations at this stage should include:

- Off the shelf vs custom solutions
- Blockchain vs cloud
- Interoperability and integration
- Ability to utilise data sources and data sets identified in Phase A
- Alignment with strategic direction and ability to deliver against objectives outlined in your DPP strategy

Step #5. Pilot

While the development and integration of a DPP solution will vary significantly, an iterative high-level overview of this stage includes:

- Assessment of current IT infrastructure: Whereby systems are evaluated for capabilities, data formats, integration points and more.
- Development or selection of DPP solution
- Data standardisation
- Integration
- Testing of solution
- Deployment of DPP for select product lines

Step #6. Scale

The final stage of the implementation process should focus on scaling your DPP to incorporate additional data points, products and functionality:

- Add additional product lines & data sets
- Engage additional stakeholders and train users
- Integrate with external systems and partners in your value chain
- Begin rollout of live solution

Why Act Now?

While the EU mandate for DPPs doesn't come into force until 2030 for Textiles and later for subsequent industries, it's critically important for organisations to begin to understand the impact of the regulations, and to begin strategising their path to compliance.

With the impact of DPPs spanning many different business functions, and with numerous data sources potentially spread over a plethora of ecosystem partners (not to mention fragmented systems, silos and more), the path to compliance has the potential to be both long and arduous. With that in mind, the benefits of preparing at the earliest opportunity are numerous:

Reasons to Prepare for DPPs Now:

- 1. Ensuring Compliance:** By beginning preparation now, organisations have the best chance of being able to put the necessary steps in place to ensure compliance with upcoming regulations. By ensuring compliance is achieved early, companies mitigate the risk of costly last-minute scrambles to implement, and can avoid legal penalties or any reputational repercussions of non-compliance.
- 2. Solving Existing Challenges:** Many challenges that organisations are already facing, related to ESG reporting, provable sustainability, traceability and more, can potentially be solved by a DPP solution. DPP solutions have the potential to increase oversight of the supply chain, enhance product traceability, enhance customer experience, and more.
- 3. Growth Opportunities:** By implementing DPP solutions ahead of the mandate, forward-thinking organisations can benefit from a first-mover advantage. DPPs also unlock the ability to attract and retain customers who value transparency, trust, and provable sustainability. DPPs even unlock growth opportunities by providing data that can facilitate efficiency improvements and increased productivity.
- 4. Efficient and Comprehensive Integration:** Selection, development and integration of a DPP solution will take time and resource to complete. With all the complexities involved, the time to start is now. Postponing the process until DPPs are mandated could result in a costly, inefficient, and incomplete solution prone to various issues.
- 5. Optimise Spend:** With transparency, traceability, and sustainability already top of mind for many organisations, DPPs offer a unique opportunity to optimise spend while delivering against a number of ESG goals. Plus, by opting to implement DPPs sooner rather than later, organisations can optimise resource and budget allocation by avoiding duplication and sunk costs from ESG-related investments that either duplicate elements of, or fail to align with DPPs.
- 6. Futureproof your DPP Solution:** Preparing now will enable your organisation to build a future-proof DPP solution. Not only will your business ensure adequate time and resource to fully scope a future-proof solution that drives real value, but many solutions currently on the market will be flexible and adaptable by design — in order to ensure compliance with EU regulations.

Overcoming DPP Implementation Challenges

Early engagement and strategic planning are essential for overcoming many of the challenges that will arise from the implementation of DPPs. By adopting a proactive approach to DPP implementation, businesses can overcome many of the key issues outlined below.

1. Data Collection and Management

The task of gathering detailed lifecycle data presents a significant challenge. It demands collaboration across the entire supply chain, requiring businesses to work closely with suppliers, manufacturers, recycling partners, and more. This process is complicated by the diversity of data formats and standards used by different stakeholders, emphasizing the need for sophisticated data management strategies to achieve consistency and meet requirements.

2. Integration with Existing Systems

Another critical challenge is integrating this new wave of data into existing business systems, such as ERP software. Ensuring seamless interoperability and adapting these systems to accommodate DPPs poses a significant technological hurdle. It necessitates thoughtful planning for system upgrades and enhanced connectivity, highlighting the importance of a coordinated approach to align with DPP guidelines effectively.

3. Ensuring Compliance

Addressing challenges surrounding compliance begins with understanding the regulatory landscape and data requirements as outlined by the European Commission's Ecodesign for Sustainable Products Regulation. The steps that need to be taken to prepare your organisation, including the assessment of data availability and the planning for technological changes, are foundational to navigating these hurdles. By proactively tackling the complexities in data collection and system integration, businesses can lay a solid groundwork for DPP compliance.

Digital Product Passports: Key Requirements Overview

While many elements of the DPP regulations are still unclear, there are a number of early requirements already shared by the EU. Some pivotal information is already known, such as the key features of a DPP and a high-level overview of proposed data requirements. These are summarised below.

1. Unique Identifiers

Every product must be associated with a unique product identifier, but it is yet uncertain whether a DPP will correspond to a product model, batch or individual item.

2. Data Carrier

Product information must be accessible through a data carrier in accordance with specifications. This carrier is to be physically present on the product, its packaging, or accompanying documentation.

3. Timely Creation

A product passport must be available with accurate, complete, and up-to-date information the moment a product is placed on the market or put into service.

4. Company Responsibility

Economic operators placing products on the market are responsible for creating and maintaining accurate DPP data that complies with the established standards, privacy laws, and other relevant legislation.

5. Availability

The DPP must remain available and accessible for a timeframe equivalent to, at minimum, the expected lifetime of the product.

This table outlines our interpretation of essential data requirements for DPPs. Based on an in-depth analysis of the ESPR draft, we believe these parameters will likely be crucial for businesses to ensure product compliance from market entry to end-of-life.

Requirement Category	Overview of Data Requirements
Durability & Reliability	Standards for longevity and consistent performance
Reusability & Upgradability	Criteria for life extension via reuse/upgrades
Reparability	Ease of repair, and access to information regarding repair
Maintenance & Refurbishment	Guidelines for product upkeep and refurbishing
Substances of Concern	Identification, restriction of hazardous substances
Energy & Water Efficiency	Minimising consumption throughout lifecycle
Resource Use & Efficiency	Optimization of material use, resource efficiency
Recycled Content	Thresholds for recycled material use in products
Remanufacturing & Recycling	Facilitating product remanufacturing/material recovery
Environmental Impacts	Carbon and environmental footprint assessment
Waste Generation	Strategies to minimise lifecycle waste production

DPP Preparation Checklist: Strategic Steps Towards Compliance

As your organization navigates the complexities of integrating DPPs into daily operations, a phased approach ensures thorough preparation. This checklist outlines a high-level overview of critical steps within distinct phases, providing you with a clear roadmap for achieving DPP compliance.

Phase A: Preparation		
Step 1: Planning		
Action Item	Description	Check
Assign a DPP Lead	Designate a team or individual responsible for DPP integration	<input type="checkbox"/>
Research & Assess Regulatory Relevance	Understand how upcoming regulations impact your organisation	<input type="checkbox"/>
Create a DPP Strategy	Outline goals towards DPP integration and develop a clear strategy	<input type="checkbox"/>
Set Clear Goals & Actions	Define actions, KPIs, and timelines for DPP implementation	<input type="checkbox"/>
Step 2: Engagement		
Engage Internal Stakeholders	Involve relevant departments in DPP planning and strategising	<input type="checkbox"/>
Engage External Stakeholders	Begin to collaborate with suppliers and partners regarding data collection	<input type="checkbox"/>
Step 3: Action		
Identify Required Data Points	Determine data needed for DPP compliance	<input type="checkbox"/>
Assess Data Availability	Evaluate current data sources and identify gaps	<input type="checkbox"/>
Plan for Technological Change	Prepare digital infrastructure for DPP integration	<input type="checkbox"/>
Begin Initial Data Gathering	Collect necessary data from internal and external sources	<input type="checkbox"/>
Phase B: Implemetation		
Step 4: Scope		
Assess Technology Options	Evaluate off-the-shelf vs. custom solutions, evaluate blockchain or cloud platforms, solutions that prioritize interoperability, data compatibility, strategic alignment and more.	<input type="checkbox"/>
Step 5: Pilot		
Initiate Pilot Implementation	Assess current IT systems, adapt or select a DPP solution, standardize data, integrate, engage with suppliers and other actors in the value chain (and their systems). Rigorously test on selected product lines before a full-scale rollout.	<input type="checkbox"/>
Step 6: Scale		
Scale & Integrate	Expand the DPP solution to additional products, onboard stakeholders (train users), and further integrate with actors along the value chain.	<input type="checkbox"/>

Protokol's Digital Product Passport

The Protokol Digital Product Passport enables organisations to display compliance with EU product sustainability requirements, improve supply chain traceability and enhance the customer experience.

More than just a tool for verifying sustainable and responsible manufacturing in line with ESPR legislation and circularity initiatives — the Protokol Digital Product Passport is a tool for enabling widespread

business transformation. DPPs power improved data transparency and asset traceability across entire supply chains, and even unlock an entirely new customer experience channel.

1. Provable Sustainability

Accurately assess and share the sustainability and recyclability data of products along with their environmental impact.

2. Lifecycle Tracking

Record key events from throughout a product's lifecycle to build a fully transparent product history.

3. Trace Provenance

Enable customers to track the origin and source of the raw materials and resources used within product manufacturing.

4. Data Transparency

Real-time audit trails of asset, data and documentation flows – increasing supply chain transparency and trust.

5. Combat Counterfeits

Digital twins of a physical product enable customers to verify the authenticity of their product through the associated DPP.

6. Ownership Verification

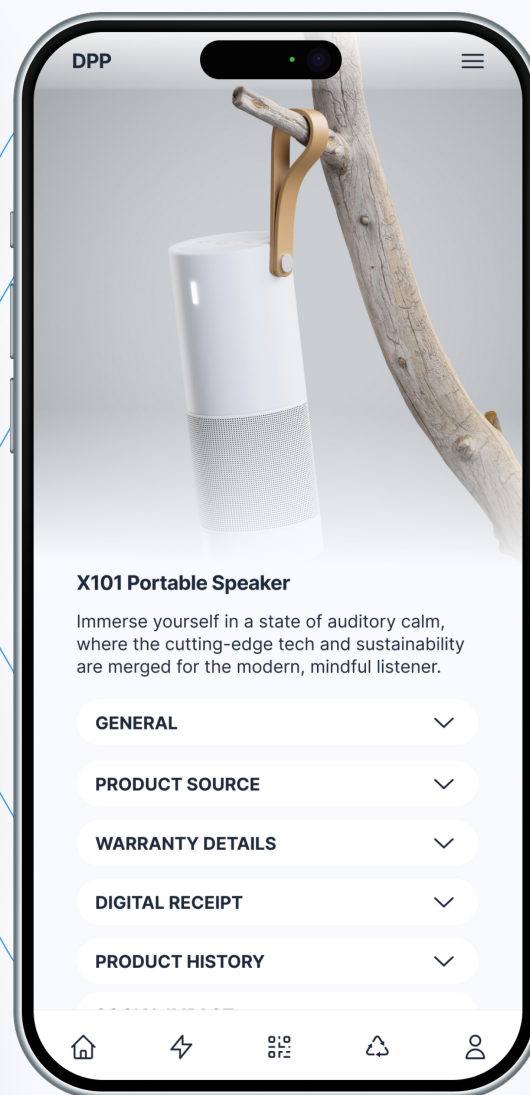
Allow customers to claim immutable ownership of their products that can be easily transferred to new buyers.

7. Customer Engagement

Directly interface with your customers to deliver services, support, loyalty rewards and experiences through the DPP.

8. Regulatory Compliance

Verify compliance with the EU's incoming ESPR regulation and prove your organisation is meeting circularity objectives.



For more information, visit: protokol.com/protokol-blockchain-digital-passport

