All About the Digital Product Passport

How to turn compliance into a competitive edge



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Foreword

The Digital Product Passport is here, and it's shaking things up.

Often shortened to "**DPP**", it's one of the biggest changes to product information and supply chain transparency in decades, driven by the European Green Deal. For many businesses across Europe, it's a **new**, **mandatory reality**.

But **what will this actually mean** for your day-to-day operations? It's easy to get lost in the uncertainty. Which products are affected first? How do you prepare your data, your IT systems, and your supply chain for a change this significant?

Many businesses risk underestimating the complexity, while others see it only as a compliance headache. **Both perspectives are missed opportunities.**

This guide will help you cut through the noise. We'll:

- Walk you through what the DPP is, why it exists, and how it works.
- Show you the concrete business opportunities it creates.
- Give you a clear, five-step framework to get started.
- Explain how we guide you through your entire DPP adoption track.

Our goal is to give you the knowledge to not only meet the requirements, but to use the DPP as a **strategic tool** for your business.



EXECUTIVE SUMMARY



The Digital Product Passport (DPP) is a complex topic with significant implications for businesses across Europe. While it's important to understand all its nuances during implementation, it's just as crucial to have a high-level overview before getting started. To help you understand the landscape and prepare to take action, we've distilled the key information below.

What is it?

The DPP is a **digital information sheet for physical products**. It's mandated by the EU to make information on a product's origin, environmental impact, and recyclability easy to access. The goal is more transparency and a real push towards a circular economy.

Why does it matter?

The DPP was created to solve real-world challenges. It fights greenwashing with verifiable data, helps reduce Europe's dependency on raw materials by making recycling easier, and gives consumers the information they need to make more informed choices.

Who is affected? And when?

The rollout is happening in waves. Batteries are first, with compliance required by February 2027. Sectors like textiles, furniture, and metals will follow. The EU will release delegated acts of the ESPR regulation for each product group, and from that point, businesses have 18 months to comply.

What are the business opportunities?

The DPP is more than just a set of compliance rules. It's a practical tool that can create a direct link to customers, improve supply chain traceability, reduce operational waste, and enable new circular business models.

How should I prepare?

A proactive, step-by-step approach is the only way to manage this effectively. The key steps involve making sustainability a strategic priority, mapping out your data and systems, and building a solid, well-governed data foundation.

How can Cronos ESG help?

Thanks to the wide expertise of De Cronos Groep, we offer a true end-to-end solution; the only one of its kind in Europe. We start with a maturity assessment for a clear roadmap, move to an in-depth analysis to design the right solution, and complete the journey with a full implementation of a working DPP system.

THE DIGITAL PRODUCT PASSPORT, EXPLAINED



WHAT IS A DIGITAL PRODUCT PASSPORT (DPP)?

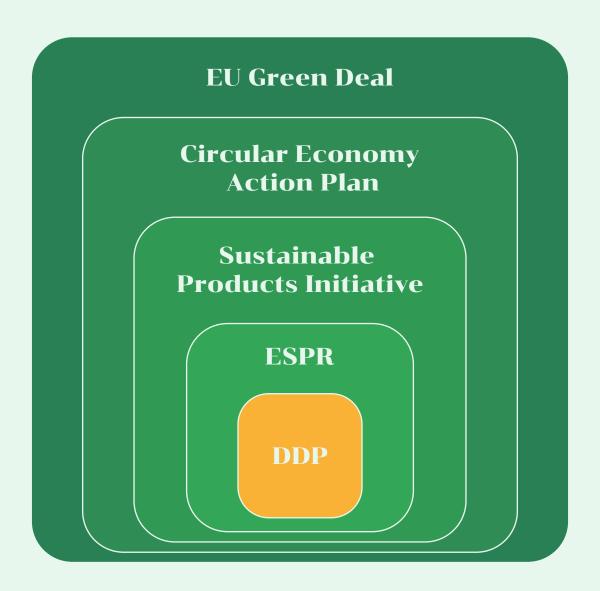
In discussions about sustainability and the circular economy, one term is starting to pop up more and more: the Digital Product Passport, often shortened to DPP. But what does a Digital Product Passport actually mean? And why is it such a current topic for businesses across Europe? This first chapter lays out the basics and explains the broader context of the legislation.

The origins of the Digital Product Passport

The Digital Product Passport isn't a standalone initiative. It's an essential part of the <u>European Green Deal</u>, an ambitious plan by the European Union. The overarching goal of this Green Deal is to reduce CO2 emissions by 2030 and make Europe the first climateneutral continent by 2050.

An important component of this is a fully **circular economy**, for which the EU has established the <u>Circular Economy Action Plan (CEAP)</u> and the <u>Ecodesign for Sustainable Products Regulation (ESPR)</u>. This important piece of legislation outlines strict requirements for products to make them more durable, easier to repair, and better to recycle.

Within this ESPR legislation, the DPP plays a key role. The digital passports are designed to significantly improve the **transparency**, **sustainability**, **and recyclability** of all sorts of products and further reduce CO2 emissions.



What does a Digital Product Passport do?



A DPP is a standardised digital information sheet that is unique to each product. Think of it as a kind of digital CV or an extended label, but much more dynamic and informative.

The main goal of a DPP is to make all relevant data concerning a product's **origin**, **ecological footprint**, **composition**, **repair instructions**, **and recycling possibilities** available to all relevant parties in the supply chain. So, don't just think of manufacturers and consumers, but also suppliers, importers, retailers, repairers, recycling companies, and so on.

A key part of the DPP is that this product information isn't just hidden away somewhere. The legislation outlines that it must be easily accessible via a **physical data carrier** on the product itself or its packaging. The best-known example of this is a QR code, but an NFC chip that you can tap with your smartphone or an RFID tag are also possible.

What information is included in a Digital Product Passport?

A key advantage of a DPP is its digital aspect: a lot more (and better structured) information can be shared than on, say, a physical label or form. The exact information will differ per product group, but you will generally be able to consult the following.

1. Basic product data

The name, brand, and model number of the product.

2. Manufacturing details

The materials used to make or build the product and the origin of the raw materials.

3. Environmental impact

Concrete data on the ecological footprint: energy and water consumption during production, CO2 emissions throughout the lifecycle, and the presence of any potentially hazardous substances.

4. Repair and recycling

Clear instructions for repair, information on the availability of spare parts, and guidelines for disassembly and reuse.

5. Safety and legislation

Links to relevant conformity declarations, safety instructions, and other legally required documents.



This image is an example. Collaboration with GS1 is not exclusive, as other partners can also provide this.

Much more than a label

So, in short: a DPP gives you much more information than a traditional label. Thanks to this dynamic system, it becomes far easier to guarantee the **digital traceability of products**. Since the sustainability of a product is made tangible (and, more importantly, **verifiable**), the circular economy receives a serious boost.

The importance of verifiable sustainability data raises a key question: **why is such a far-reaching change necessary**? In the next chapter, we'll explore the concrete drivers behind the Green Deal, the ESPR, and the DPP.

WHY IS A DIGITAL PRODUCT PASSPOST NECESSARY?

As we've seen, the Digital Product Passport is a unique digital information sheet for every product, accessible via a simple scan. A revolutionary concept which also raises an important question: why is such a fundamental change needed right now?

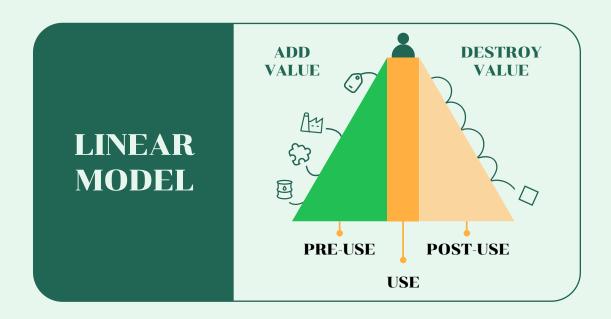
The answer is that the DPP is not a goal in itself. It is a practical tool designed to address some of the most pressing econotmic and environmental challenges of our time. Let's explore the key drivers behind its introduction.

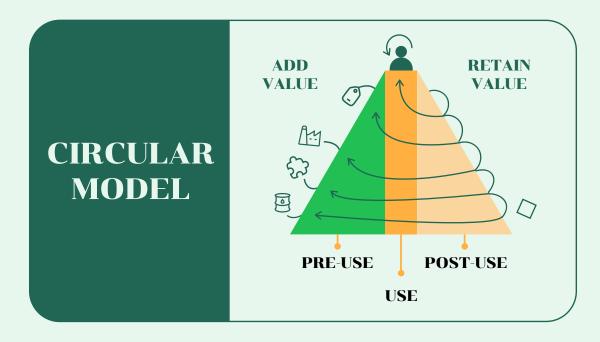
Why are Digital Product Passports important?

For decades, our economy has mostly operated on a **linear model**: we take raw materials, make products, use them, and then dispose of them. This "take-make-dispose" system has led to increasingly shorter product lifespans and a tremendous amount of waste.

Instead of continuing down the same road, Europe wants to pioneer the **transition to a circular economy.** In this model, the goal is to prolong the life of products through better maintenance and repair. When a product can no longer be used in its original form, we start looking towards reuse, refurbishment, remanufacturing, and, as a final step, recycling.

In other words, the idea is to **keep materials and products in use for as long as possible** and retain their value. This is often visualised on the "value hill," where the higher you are on the hill, the more value you retain. The DPP is a key enabler of this entire system.





The key drivers behind the Digital Product Passport

Beyond the overarching goal of switching to a circular economy, there are four concrete problems the DPP is designed to solve:

The climate challenge

According to the European Environment Agency, <u>Europe is the fastest-warming continent in the world</u>. This directly threatens our food security, nature, energy supply, and financial stability.

Small and individual efforts like recycling at home or installing solar panels are important, but their impact isn't always immediately visible. The same applies to businesses. An instrument like the Digital Product Passport makes sustainability efforts **measurable** and visible. That way, good intentions are backed up by verifiable data.

Strategic dependency on raw materials

Europe is heavily reliant on the import of raw (and often rare) materials, such as lithium for batteries. At the same time, the EU exports around 32 million tonnes of waste annually to non-EU countries, which means valuable resources are being lost.

The DPP helps to reduce this dependency by providing **clear insights** into what products are made of and where they come from. This knowledge actively promotes recycling and reuse within Europe, which strengthens the EU's **strategic autonomy**.



The EU exports around **32 million tonnes** of waste annually.

Combating greenwashing

It's an unfortunate truth that many companies make environmental claims that are difficult, if not impossible, to prove. This practice, known as greenwashing, damages consumer trust and hinders real progress in sustainability.

With a DPP, companies must provide **demonstrable and verifiable information.** It moves the conversation away from vague marketing claims and towards transparent, accessible proof.

Informing the consumer

People want to know more about the products they buy. Research shows that a staggering **86% of EU consumers** want better information on product durability and origin. The DPP makes this information easy to access via a simple QR code or NFC chip.

This helps consumers make more sustainable choices, encourages repair over replacement, and simplifies recycling. In short, it gives people a powerful tool to actively contribute to the circular economy.



86% of EU consumers want better information on product durability and origin.

The engine of sustainability

In essence, the Digital Product Passport is the practical mechanism that ties Europe's sustainability objectives together. It's a tool that gives us the reliable, verifiable data we need to move from abstract goals to concrete action and build a truly circular economy.

Now that the 'why' is clear, the next logical question is: what will this system of digital passports actually look like in practice? The following chapter explains the **architecture and security** behind the DPP.

HOW DOES THE DIGITAL PASSPORT WORK?

The Digital Product Passport is a digital information sheet designed to drive sustainability, but how does it all work in practice? When you scan a QR code on a product, what kind of system delivers that information? It's more than just a link to a simple webpage. The DPP is powered by a sophisticated, Europe-wide architecture. While the final technical details are still being fine-tuned, the core principles guiding its design are already clear. Let's dive in.

The core principles of the DPP architecture

The DPP system is being designed to be **decentralised**, **modular**, **and interoperable**. In simple terms, this means it will be flexible, secure, and able to communicate with other systems. Here are the **five key principles** that define how it will work.

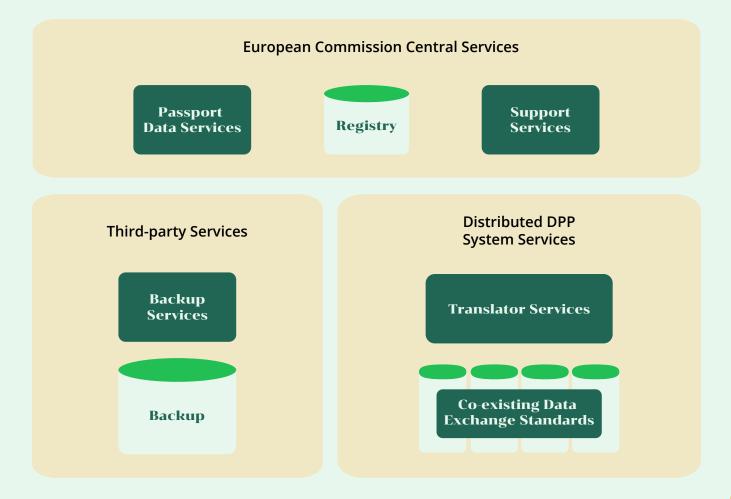
1. Decentralised data storage



There will be **no central database**: the data will be stored with the companies that generate it.

This is a crucial point for many businesses. There will be **no single, central EU database** containing all product information. Instead, the data **will remain stored with the companies** that generate it: the manufacturers, suppliers, and other economic actors in the value chain.

The system will operate as a "federated" network, where different, secure databases can communicate with each other using standardised protocols. While your data stays with you, it can be correctly accessed when needed. A central EU register will only store basic information, such as the unique product identifiers.



2. Unique identification and data carriers

As we mentioned in the first chapter, every product that requires a DPP will get a **unique product identifier.** This ID is linked to the product via a **physical data carrier**, such as a QR code, NFC tag, or RFID chip.

This identifier is the key that unlocks a **standardised set of data** about the product. It ensures that when a consumer, customs officer, or recycling facility scans an item, they are directed to the correct, verified information for that specific product.

3. Controlled access rights

Not everyone will see the same information. The DPP system will use a sophisticated **system of access rights**, depending on who is requesting the data.

This means a consumer might see general product information, repair instructions, and recycling advice. A customs authority, however, might have access to compliance documents and origin details. A repair shop could see detailed technical schematics. That way, **sensitive commercial information remains protected**, while essential sustainability and safety data is made public.

4. Interoperability with other systems

The DPP doesn't exist in a vacuum. It must be compatible with other regulations and systems. A prime example is the <u>EU Battery Regulation</u>, which already mandates its own Battery Passport. The DPP architecture will be designed to work with these existing and future requirements.

To achieve this, **technical standards and common data formats** will be established. This allows different IT systems across various industries and countries to communicate effectively within the DPP ecosystem.

5. A mandatory backup service

To guarantee that product information remains available throughout a product's entire lifecycle, a data backup service will be mandatory. This is an important protective measure against data loss due to technical failures or even a company going out of business. It's also a way of guaranteeing the promise of long-term traceability and information access.

What's next for the DPP architecture?

Further details will be defined by standardisation organisations like <u>CEN-CENELEC</u>, with **harmonised standards expected in early 2026.** In the meantime, major European projects like <u>CIRPASS-2</u> are already working on pilot projects to test and refine the practical application of the DPP architecture.

So, while the system is complex behind the scenes, it's being built on a foundation of security, flexibility, and control. **Now that you know how it will work, you're probably wondering if you should start preparing.** We'll give a detailed breakdown of the affected industries in the next chapter.

IS A DIGITAL PRODUCT PASSPORT MANDATORY FOR MY BUSINESS?

Now that we've covered the what, why, and how of the Digital Product Passport, we arrive at the most pressing question for many businesses: "Do we need one?" The short answer is: yes, for many. And for many more, it will be soon. Let's break down what sectors are affected and when.

What's next for the DPP architecture?



Once a Delegated Act is adopted, you have just 18 months to comply.

The **Ecodesign for Sustainable Products Regulation (ESPR)**, in effect since 18 July 2024, provides the main framework for the DPP rollout. However, the requirements will be introduced via two main routes:

- 1. For most product groups, the EU will publish a 'Delegated Act' under the ESPR.
- **2.** For certain products, the DPP will be introduced through **separate**, **product-specific legislation**. This is already the case for batteries (under the EU Battery Regulation) and toys (under the Toy Safety Regulation).

In either case, the rule is the same: once the Delegated Act is officially adopted, businesses have **18 months** to comply.



The first wave: priority product groups

The first fixed deadline is for industrial and EV batteries over 2kWh, which will require a DPP starting from February 2027. After that, a range of other high-priority product groups will be addressed through the Delegated Act process. These include:



Good to know: the dates mentioned in initial working plans refer to the **expected adoption of the Delegated Act**, not the final compliance deadline. The 18-month clock starts ticking after that adoption.

> For instance, the Delegated Act for **textiles** is expected around late 2026. This would set the final, mandatory compliance deadline 18 months later, in mid-2028.

If your business is active in any of these sectors, the DPP is no longer a distant concept, but a concrete compliance deadline that you need to start acting on.

The second wave: other key regulations

The DPP's role doesn't stop with the priority list. Digital Product Passports will also be a **core component** in several other key EU regulations related to transparency, safety and traceability.

However, establishing a precise timeline is difficult: many regulations and their deadlines are subject to change. With that in mind, here are some initiatives that will feature the DPP:

EU Strategy for Sustainable and Circular Textiles

Here, the DPP is the primary tool to verify 'green claims' and give consumers reliable information on the durability, repairability, and recyclability of textiles.

Revised EU Toy Safety Regulation

All toys sold in the EU will need a visible DPP to prove they meet safety standards. This will simplify market surveillance for authorities and give consumers easy access to safety warnings.

Revised Detergent & Surfactant Regulation

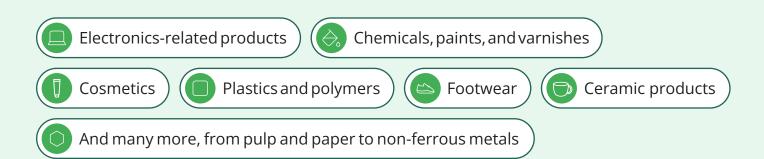
The DPP will be key for providing accessible product information that increases product safety and market access for all detergent products.

Construction Products Regulation (CPR)

The DPP will support the CPR by ensuring construction products in Europe meet strict safety and environmental requirements.

The future: who's next?

The EU's long-term vision for the DPP is **extensive**. A wide range of other product groups are already being considered for future waves of implementation. The concrete timelines are **not yet fixed**, but if your business deals with any of the following, the DPP is very likely in your future:



It's worth noting the specific situation for electronics. The decision on a DPP will be made per product type (e.g., for dishwashers, smartphones, ...). For some categories, the EU may decide to use existing systems like the EPREL database instead of mandating a brand-new DPP.

Overall, the message is clear: the DPP will become a reality for most, if not all physical product sectors.

While compliance is a powerful motivator, it's not the only reason to act. The DPP also creates significant business opportunities. In the next chapter, we'll explore the **strategic advantages** you can gain by embracing the DPP proactively.

WHAT ARE THE STRATEGIC ADVANTAGES OF A DIGITAL PRODUCT PASSPORT?

It's easy to view the Digital Product Passport as just another compliance exercise. But looking at it only as an obligation means you're missing out. The DPP is a practical tool that can create real value for your business, well beyond simply meeting legal requirements. Here are some of the concrete opportunities a DPP can create.



Understand your customers and build loyalty

If you're a manufacturer selling through third parties, you probably don't know much about your end customers. The DPP changes that. When a customer scans a QR code, you get a **direct touchpoint.**

This allows you to **gather valuable data on how your products are used.** You can use this information to improve future designs, offer relevant new services, or simply build a direct relationship with the people who use what you make.



Improve your traceability and supply chain



In case of a recall, the DPP lets you identify specific batches to speed up the process.

A DPP forces you to map out your product's journey in detail. This has immediate practical benefits. In case of a product recall, you can **identify specific batches** with precision, which makes the entire process faster and cheaper.

The same data helps you build a **more detailed supply chain.** With precise sustainability information from your suppliers, you can select better partners and prove to your stakeholders that your value chain is transparent.



Cut waste and optimise your operations

The data required for a DPP is incredibly useful for your own operations. It will help you **spot inefficiencies**, showing you how to reduce material waste or fine-tune your production processes.

It also helps your customers. By giving them clear instructions for repair and information on spare parts, they can **make products last longer.** This means fewer returns for you to manage and less overall waste.

© Develop new circular services

The DPP gives you the trustworthy data you need to **build new services** based on a circular model.

For example, you could launch a take-back program for recycling, facilitate a second-hand marketplace for your own goods, or set up a network of certified repair shops. These are all **potential new revenue streams** that the DPP makes possible.



Protect your brand against fraud

A DPP also functions as a **digital certificate of authenticity.** This confirms the legitimacy of your products for consumers and provides a strong defence against counterfeiting and illicit trade, protecting your brand's value.

So, the potential of Digital Product Passports is clear. The question is no longer if you should act, but *how*.

» Now that the strategic benefits are clear, the next logical step is to create a practical plan. In the following chapter, we'll give you a 5-step guide to get started with your DPP preparations.

HOW TO GET STARTED WITH THE DP: A 5-STEP GUIDE

The Digital Product Passport is coming, and it's a significant shift that touches everything from product design to data management. So, how can you prepare your business for it effectively without getting overwhelmed?

Waiting until the deadlines are close means the implementation will likely become a rushed compliance headache. Taking a proactive approach is smarter. Here are five practical steps you can take to get started with the DPP today.

Step 1

Make sustainability part of your business strategy

First, take a step back. Look at how the DPP, and sustainability in a broader sense, can contribute to your overall business goals. Analyse your current processes and **identify the opportunities** the circular economy can offer. This isn't just about compliance. You'll need to make a strategic choice to align your business with the future of your industry.

Step 2

Map out your data, systems, and processes



You need an assessment to understand what product data you already have and, more importantly, what's missing.

This is a critical, hands-on step. You need to set up an **internal assessment** to understand what product data you already have and, more importantly, what's missing. Think about these three key aspects:

1. The data carrier

How will you give people access to the DPP? Will you use a QR code, data matrix, NFC, or RFID tag on your products?

2. The granularity

What level of detail is required for your traceability? Do you need to track at the product, batch, or individual item level?

3. The impact on systems

What are the real-world implications for your current (physical) IT systems and processes? What needs to change to get you ready?

Step 3

Build a future-proof sustainability data layer

Your business is likely already collecting data from all sides. You might be creating product-specific **Environmental Product Declarations (EPDs)** and **eco-labels**, responding to **customer requests**, or complying with major regulations like CSRD, CSDD, and EUDR. The challenge here is to make sure these efforts aren't wasted.

To do this, you need a central, reliable source for all your sustainability information. This includes specific data on your product's environmental impact, such as its **CO2 footprint,** which is often calculated through a **Life Cycle Assessment (LCA).** This data is foundational for your DPP.

Just as important is implementing **strong data governance.** This means setting up clear processes to maintain the accuracy and quality of your data across the organisation. A key part of this is optimising your ERP and PIM systems to act as a **single source of truth.** By building this structure, the data you gather today will be reusable for the DPP and whatever comes next.

Step 4

Deepen your supply chain traceability and collaboration

You can't do this alone. A DPP requires detailed data from your entire supply chain. Start working with your suppliers and partners now to figure out how you'll collect the necessary product information. This can lead to shared information and a faster, more cost-effective implementation.

At the same time, look into implementing **traceability solutions**, like the <u>EPCIS</u> standard. This will help with DPP data, but it also offers benefits like real-time insights, efficient recalls, and fraud prevention.

Step 5

Understand the regulations and anticipate what's next

Finally, stay informed. **Keep up to date with the legal framework** around the ESPR and other relevant legislation. Analyse which products in your portfolio will be affected by the new rules and make sure you are ready to meet the requirements on time. A proactive stance is always better than having to react in a hurry.

These five steps provide a solid framework for your preparations, but **it's always a good idea to call an expert.** In the next and final chapter, we'll explain how we can help you throughout the DPP compliance process.

HOW CAN WE HELP YOU WITH DIGITAL PRODUCT PASSPORTS?

Throughout this whitepaper, we've explored the **what, why, when,** and **how** of the Digital Product Passport. It should clear by now that preparing for the DPP is a significant task, but it doesn't have to be overwhelming.

If you want to implement the DPP successfully, you'll need a structured approach that combines strategy, data management, and technology. At Cronos ESG, we'll guide you through this process in three clear phases, from implementation to support.

Phase 1

The DPP maturity assessment



The assessment results in a 'Dummy DPP' for your chosen product and a comprehensive DPP roadmap that outlines your next steps.

Everything starts with a clear understanding of where you stand today. Our DPP maturity assessment is a practical first step that gives you immediate clarity and a concrete plan.

Step 1

First, our experts run a **detailed workshop**, based on your industry, to explain the DPP and its effects on your key stakeholders.

Step 2

Then, it's time for a **readiness check.** We'll focus on one of your products and dive deep into your data, systems, and processes to evaluate your current state against all DPP requirements.

Step 3

First, our experts run a **detailed workshop**, based on your industry, to explain the DPP and its effects on your key stakeholders.

Phase 2

In-depth analysis

Based on our findings during the assessment, we'll design the right DPP solution for you. We work together with you to define the precise requirements for your business. This means no two projects are the same, but this phase can include:

- A technical analysis to map out IT system needs, data sources, and architecture.
- **A functional analysis** to define process workflows and how the DPP will work in your daily operations.
- **A commercial analysis** to identify how you can use the DPP to strengthen your brand and find new circular business opportunities.

The outcome of this phase is a **detailed plan** for your DPP implementation, made specifically for your business.

Phase 3

Full implementation

With a solid plan in place, our community of experts gets to work. In this phase, we'll focus on the practical build and rollout of your DPP system and beyond. It includes:

Technical development:

We provide the technical solutions you need, from setting up traceability systems that follow standards like <u>EPCIS</u> to configuring the necessary data platforms.

Guidance and integration:

We don't just hand over a tool. We guide you through the details and make sure the solution works with your existing production lines and IT systems.

Ongoing support:

We always make sure your company is fully equipped to manage your DPPs effectively, long after the initial project is complete.

This approach, from initial assessment to a fully working solution, is what makes the Cronos ESG community your ideal partner. It's also what sets us apart from the competition: we are the only partner in Europe offering end-to-end expertise when it comes to Digital Product Passports.

Conclusion

In this whitepaper, we have outlined the what, why, when and how of the Digital Product Passport. But having the information is only the first step. The real work begins now.

Waiting until deadlines approach will turn DPP compliance into a rushed and expensive project. A proactive approach, on the other hand, gives you the time to do it right. It allows you to not only meet the legal requirements, but also to improve your operations, unlock new opportunities, and gain a competitive edge.

The path forward requires a clear plan and the right expertise. It's a significant task, but you don't have to figure it out on your own.



The best place to start is with our DPP maturity assessment. It provides a clear, honest picture of where your business stands today and a practical roadmap for what to do next.

Ready to get started?



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ABOUT CRONOS ESG

Cronos ESG is a **community of specialised companies** focused on data, technology, and strategy to help businesses navigate all manner of ESG-related challenges.

However, we are not a typical consultancy firm. Our approach is **hands-on and pragmatic**, designed to deliver real impact that you can measure. We help you tturn complex regulations like the DPP into concrete opportunities.

Our unique strength comes from being part of **De Cronos Groep**, a network of **over 10,000 technology and business experts** with 5,000 customers across the Benelux. Founded by and for technology pioneers, De Cronos Groep is an incubator for innovation.

This means that, for any DPP challenge, we can tap into our **extensive network of specialists** to deliver the best possible outcome. From technical integrations with inplace technologies and complex data governance to manufacturing-specific insights and product strategy, we know who to get around the table. As **the only partner in Europe offering a truly end-to-end solution**, we ensure seamless delivery from strategy to execution.

