made.

Digital product passport

Legislation or Opportunity

Intro

Legislation or opportunity?

Over the next several years, around 1.1 million businesses will be subject to EU Digital Product Passport rules, introduced in 2022 to enhance product sustainability transparency.

The Ecodesign for Sustainable Products Regulation (ESPR) outlines these requirements, presenting not just a compliance challenge but a significant opportunity. At first glance, complying with the EU's Digital Product Passport legislation may seem like another administrative burden for businesses. However, beneath the surface, lies a multitude of opportunities waiting to be unlocked.

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What is a digital product passport?

A Digital Product Passport (DPP) is a digital record that follows a product throughout its lifecycle, offering crucial information about its composition, origin, environmental footprint, and repairability.

This enhances product traceability, facilitates recycling and repair processes, and empowers consumers to make informed choices. Accessible via QR code or RFID, it provides a complete, updated product profile.

A data carrier, connected to a unique product identifier, shall be physically present on or with a product.

All information included in the DPP shall be based on open standards, developed with an interoperable format and shall be machine-readable, structured and searchable.

The information included in the DPP shall refer to the product model, batch or item.

QR code

Bar code

RFID

The Context of Emerging Regulations

The consumption of materials and products significantly drives biodiversity loss, impacting ecosystems and causing global socio-economic repercussions. Our current economic model—"take-make-replace"—depletes resources, pollutes the environment, and harms biodiversity and the climate.

This model also makes Europe reliant on resources from other regions. To address these challenges, the European Union (EU) is advocating for a shift towards a circular economy (CE) model, emphasizing sustainable products.

EU Leadership in Sustainability

The EU has taken a pioneering role in sustainability efforts, setting best practices for implementing legislation that supports sustainable initiatives. European-level climate legislation and proposed actions aim to achieve Europe's sustainability goals and will significantly affect global brands aiming to market their products in Europe.

> **"Making the EU a more resource-efficient, climate neutral, and pollution-free circular economy calls for more sustainable products."**
>
> — European Commission

The EU's proactive stance on sustainability issues will influence global standards, impacting industries beyond Europe. Regulations will extend to global upstream supply chains, requiring manufacturers and their suppliers to adapt their operations. This includes industries involved in resource extraction and production, such as mining and cotton.

The Role of Digital Product Passports

The EU aims to address sustainability challenges through Digital Product Passports (DPPs). These challenges include:

1. Inefficient use of natural resources
2. Environmental degradation
3. Low rates of reuse and recycling
4. Negative social impacts
5. Varied sustainability approaches across countries

A DPP provides comprehensive information about a product's lifecycle, accessible to all stakeholders in the supply chain, including manufacturers, importers, retailers, repairers, and consumers. This information is easy to access and use, aiding decisions on using, recycling, or disposing of products. While DPP rules are still being developed, businesses can start preparing now to integrate them into their operations.

Implementation Timeline

The DPP will eventually cover at least 30 product categories, starting with specific sectors. Industrial and electric vehicle batteries are the initial focus, with the EU Batteries Regulation providing detailed guidance on required data points and DPP construction.

"The Battery Passport will raise standards to achieve truly clean e-mobility. For Umicore, its proof-of-concept launch at the World Economic Forum in Davos is a milestone towards creating traceability and accountability at each EV battery supply chain stage."

— Mathias Miedreich, CEO of Umicore, founding member of the Global Battery Alliance

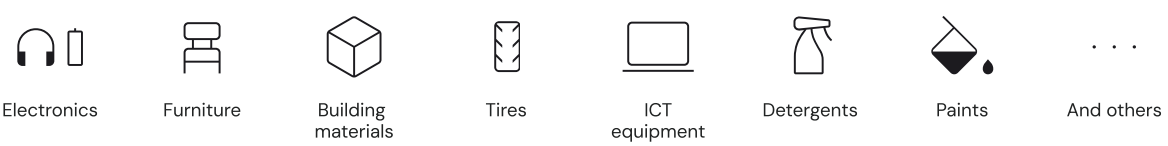
11 December, 2019
European Green Deal

11 March, 2020
EU Circular Economy Action Plan

30 March, 2022
ESPR Proposal published (incl. Digital Product Passport)

2023 - 2027
Industry specific Digital Product Passport regulation in progress

DPP will be rolled out gradually to different product categories between 2025 and 2030 via delegated actis



Key Benefits and Opportunities of Digital Product Passports

Digital Product Passports impact multiple stakeholders across the value chain, offering extensive benefits: From organisations, to consumers, to policy makers and recyclers – digital passports provide benefits for all.

Implementing Digital Product Passports can have profound impacts on businesses:

New Revenue Streams

Innovative business models like PaaS and take-back programs open new revenue opportunities, driving growth and sustainability.

Generate more customer value

Marketing, sales and customer success teams can all utilise the digital passport application as a means of offering new services or features that are otherwise unavailable. Transparency in product information builds trust and loyalty among consumers and stakeholders, enhancing brand reputation.

Enable circularity

Improved traceability and data accuracy streamline operations, reduce waste, and lower costs through optimized supply chains and recycling processes.

Key Benefits and Opportunities

Create new revenue streams

The push towards a circular economy with more focus on product longevity provides a range of new business opportunities (such as product-as-a-service) that can be utilised to unlock additional revenue streams.

1. Product as a service

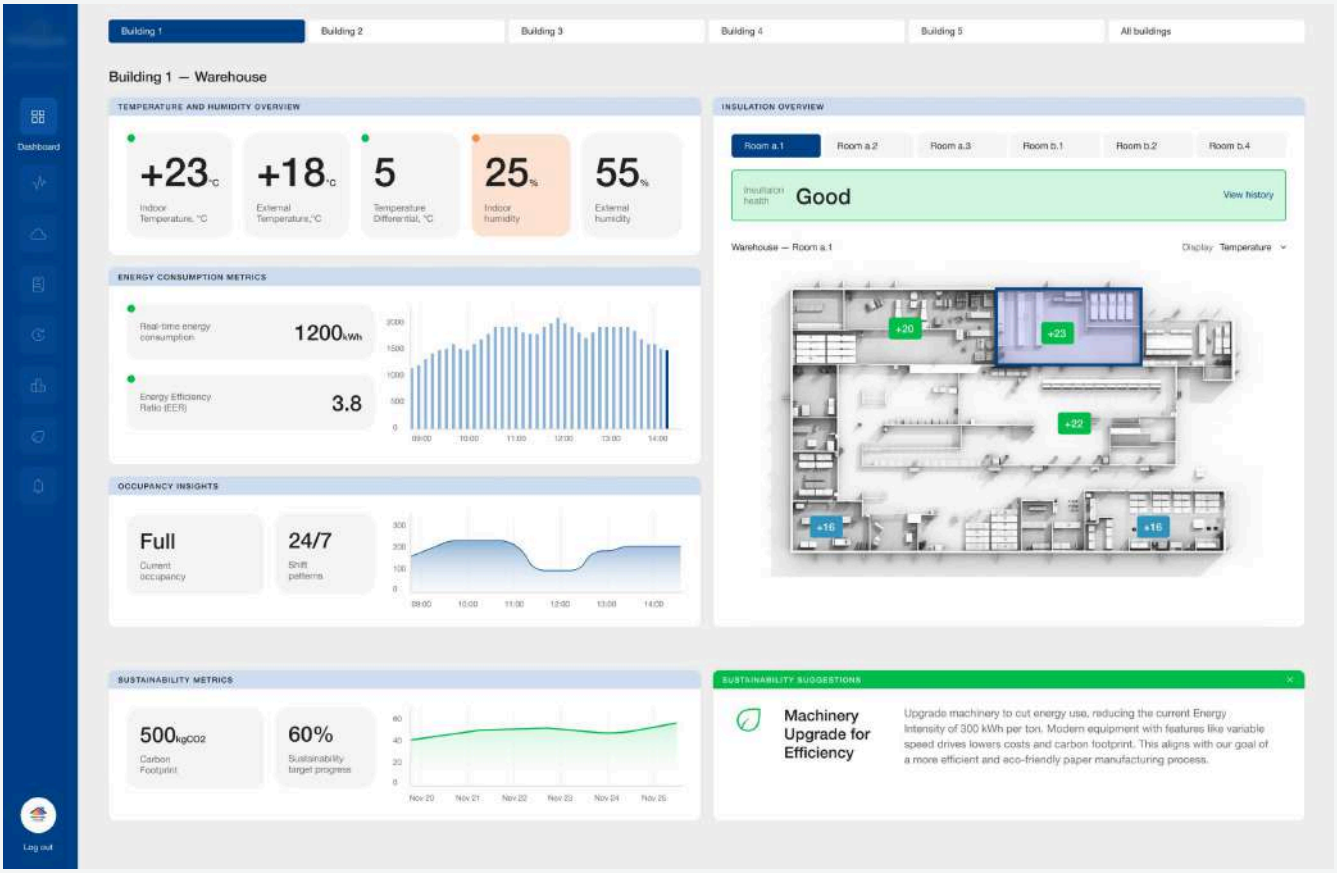
With DPPs, companies can shift to a PaaS model, where their product is provided as a service. This model includes installation, maintenance, and eventual removal and recycling of the material.

— e.g. Building Insulation as a Service

The DPP tracks the installation date, performance metrics, and maintenance schedules.

The company provides ongoing maintenance and ensures optimal insulation performance.

At the end of the product's lifecycle, the company removes and recycles the insulation, using the data in the DPP to facilitate efficient recycling.



2. Take-Back and Recycling Programs

Companies producing high-value materials, such as aluminum windows, can implement take-back programs facilitated by DPPs.

— e.g. Aluminium Window Take-Back Program

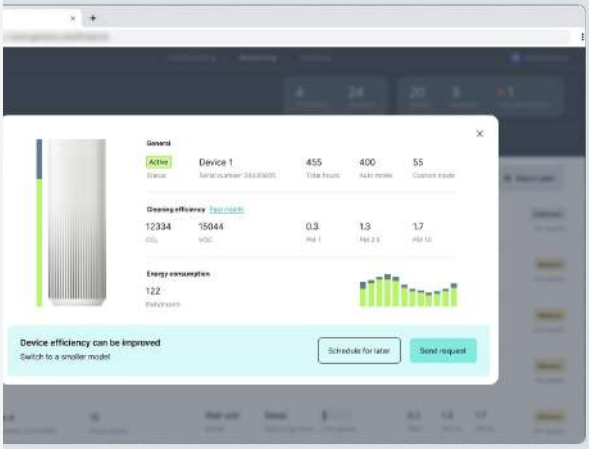
- Each aluminum window is equipped with a DPP that includes information on material composition, manufacturing details, and recycling instructions.
- Customers are incentivized to return the windows at the end of their lifecycle.
- The company collects the windows, recycles the aluminum, and reuses it in new products.

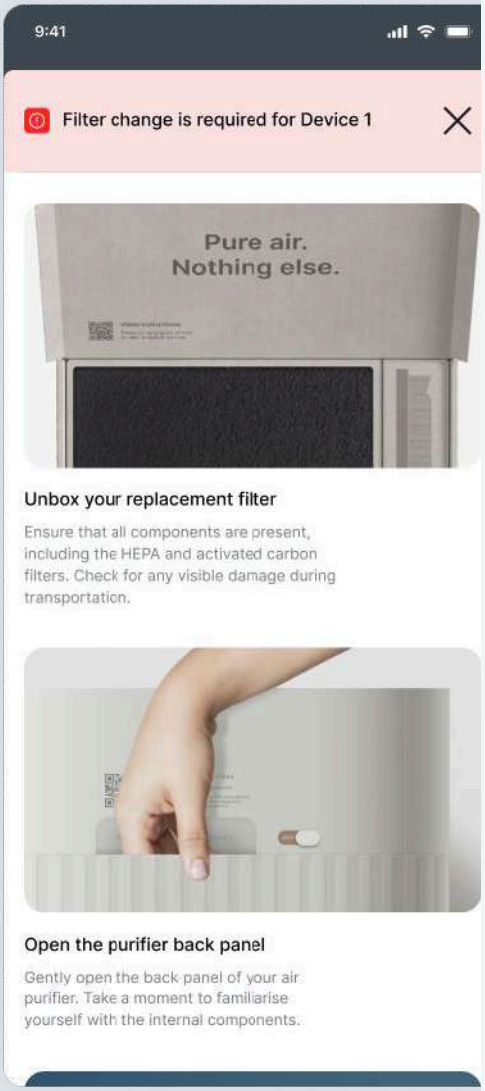
Benefits

Reduces the need for virgin material extraction, lowering costs and environmental impact. Creates a circular supply chain, enhancing sustainability. Offers customers a value-added service and reinforces brand loyalty.

3. Smart Maintenance and Predictive Services

DPPs enable the implementation of smart maintenance and predictive services for complex systems like HVAC (Heating, Ventilation, and Air Conditioning).





— e.g. Predictive Maintenance for HVAC Systems

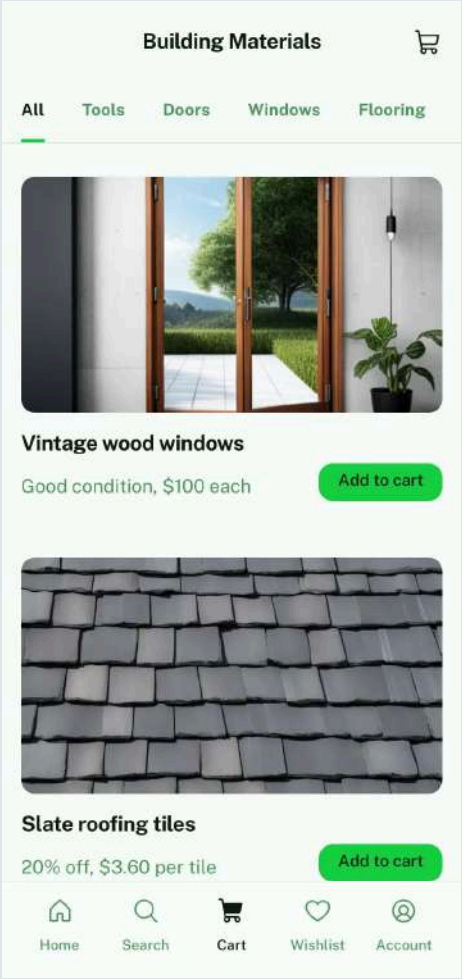
- DPPs collect and store detailed data on system components, usage patterns, and performance metrics
- AI and machine learning algorithms analyze the data to predict when maintenance is required.
- The company provides proactive maintenance services, minimizing downtime and extending the system's lifespan.

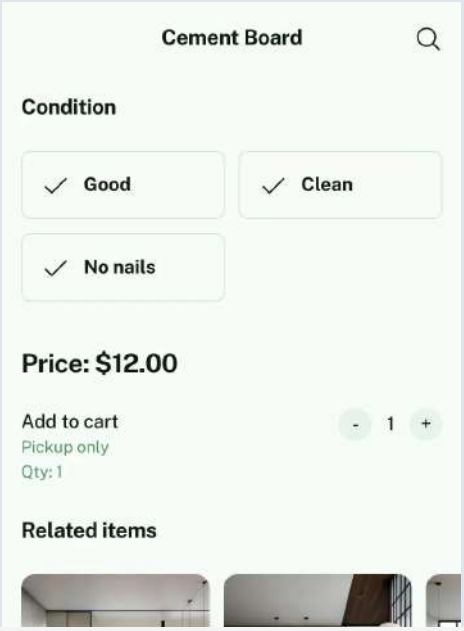
Benefits

Reduces unexpected breakdowns and maintenance costs for customers. Generates ongoing service revenue for the company. Enhances system efficiency and reduces energy consumption, contributing to sustainability goals.

4. Material Marketplaces and Secondary Markets

DPPs can facilitate the creation of online marketplaces for surplus and recycled construction materials.





— Eg: Construction Material Marketplaces

Contractors and builders list surplus materials, such as leftover steel or concrete, on the marketplace.

Each material listing includes a DPP detailing its composition, origin, and any previous usage.

Buyers can purchase these materials, confident in their quality and provenance.

Benefits

Reduces waste by finding new uses for surplus materials. Lowers material costs for buyers. Promotes sustainability by extending the lifecycle of materials and reducing the demand for new resources.

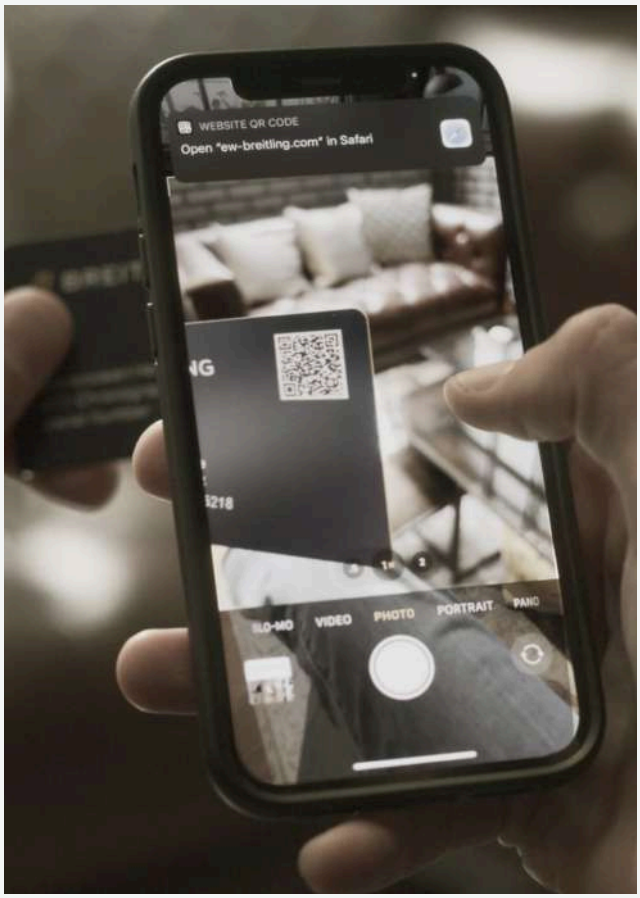
Key Benefits and Opportunities

Generate more value for consumers

Digital Product Passports offer the opportunity for businesses to leverage an additional channel, one that provides a direct link to their customers. Marketing, sales and customer success teams can all utilise the digital passport application as a means of offering new services or features that are otherwise unavailable.

An example of this is Breitling, who via their blockchain-powered digital passport enable customers of their luxury timepieces to claim ownership of their watch and access exclusive services.

This is an early example of how digital passports provide additional value outside of their core purpose and how the concept will continue to evolve and open up new opportunities for both brands and customers.



Increase Consumer Trust

By recording events across the full lifecycle of products from manufacturing all the way to recyclability or disposal – businesses can offer consumers a fully transparent view into the authenticity and state of the product they are purchasing. This is backed up by the finding that 46% of consumers want clarity on product sourcing. This effectively increases buyer confidence and can maximise retention and loyalty.

Validate Green Claims

Greenwashing is becoming a serious issue that is tainting the reputation of companies who are making legitimate claims. Through a digital passport, the sustainability attributes and claims are fully validated and secured on an immutable blockchain network – which is crucial as 53% of consumers can't identify greenwashing claims. This also enables businesses to optimise their circular strategy and become a sustainability leader in face of increasing demand from their customer bases to do so.

Consumer Protection

By ensuring that the raw materials and manufacturing processes abide by pre-set standards, businesses can protect their customers from illegitimate, dangerous and sub-par raw materials and end-products. By extension, this protects the brand from negative PR issues such as product recalls and incidents caused by product defects.

Ensure Compliance

Supply chains can become incredibly complex and difficult to track, meaning that organisations may legitimately lack the required data to monitor their compliance and sustainability performance. Through digital passports as a single and shared source of truth – this data can be more easily tracked and accessed, leading to businesses being able to track their compliance with initiatives in real-time.

Key Benefits and Opportunities

The DPP will also directly benefit the other players in the value chain

Data Transparency: Digital passports provide a foundation for increased transparency and data accuracy throughout the entire supply chain – increasing efficiency and strengthening relationships among suppliers and ecosystem participants. Processes and information exchange throughout the value chain are improved as DPPs enable real-time audit trails of asset and data flows.

Material suppliers will be rewarded for transparent processes emphasizing environmental safety and worker welfare.

Repair professionals will be able to see a product's full repair history (including reasons for repair) and better diagnose new issues.

Recyclers will have detailed component and material composition information to optimize take-back programs and material recovery.

Governments and public authorities will have a new set of standards and an easily accessible way to verify compliance.

Value chain benefits

Material supplier

- Helps recover raw materials for remanufacturing

Manufacturer

- Provides post-sale insights from customers
- Drives additional revenue through maintenance, leasing / rental or resale opportunities

Retailer

- Enables access to essential product information
- Supplies customers with trusted information
- Provides value-added services

Consumer

- Delivers access to care, maintenance, and usage instructions
- Locates recycling services
- Provides access to leasing, peer-to-peer lending and other services

Repairer

- Delivers access to info for maintenance, repair or upgrade
- Identifies hazardous parts or steps used in repair

Recycler

- Identifies valuable materials that can be used in remanufacturing (e.g. cashmere)

Key Benefits and Opportunities

Enable circularity

At the heart of the current Digital Product Passport discussions are the concepts of circular economy and sustainability. The circular economy initiative looks to transform the way that we produce, consume and utilise products and resources – aiming to cut waste to a minimum and extend both resource and product longevity.

This is part of a broader pledge to enable the world and its population to become more sustainable – enabling all stakeholders to optimise the use and reuse of valuable resources and materials. Under the circular economy framework, nothing of value is wasted through new approaches to sharing, repairing, reusing and recycling.

Provable Sustainability

Digital passports enable organisations to capture key upstream data points, information and events from across the manufacturing and product creation process. Data points related to resources utilised and emissions released during the manufacturing process fully details the environmental impact of the product. This enables organisations and brands to prove their sustainability claims to consumers whilst validating compliance to regulators and authorities.

Lifecycle Tracking

Digital passports are continuously updated with downstream events throughout the entire lifecycle of a product. From repairs, to maintenance, to upgrades – DPPs become a repository for storing all noteworthy events. Importantly, information on disposal, end-of-life and product recycling are also captured in a DPP, providing a foundation for product circularity and remanufacturing.

Linked to the points above, by capturing a range of upstream and downstream data points – DPPs become a tool for powering product and supply chain circularity. Through full visibility into the raw materials and components used within a product along with details into which parts of the product can be recycled & re-used – circularity can be achieved.

Minimum viable DPP

It is interesting to find out what is the minimum viable DPP for the manufacturing industry and thus help companies to proceed with the implementation of new R-cycles, more generally towards CE and to reach sustainability goals. Obviously, further studies are required to gain documented and shared success stories as well as impact assessments of those.

— 1

Begin by **identifying pilot products** in your portfolio for which you can produce a Digital Product Passport.

— 2

Source your sustainability information, **create your Digital Product Passports, and launch** them to your audience.

— 3

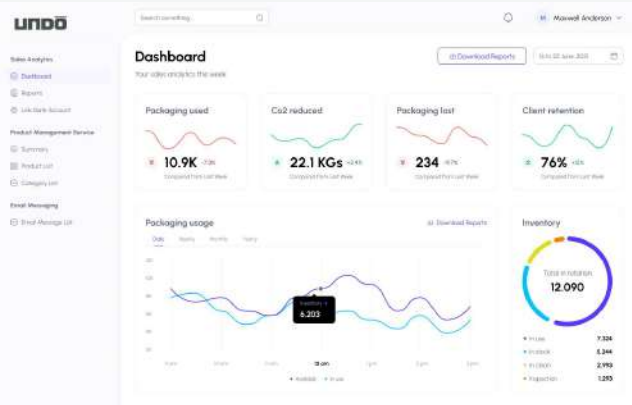
Review the feedback you've received from your customers on how they're using the Digital Product Passport, as well as the learnings from your team on the information gathering and publishing process.

With this data in hand, you'll be better prepared to scale your Digital Product Passport implementations when the ESPR legislation and its related, industry-specific requirements require full action from your company.

Buy vs Build

Once a company decides that it wants to start using DPPs, they have to make a decision about the tooling. The two main options available are to either use an existing system or to build your own, whether from scratch or as an extension of your existing PIM or ERP system.

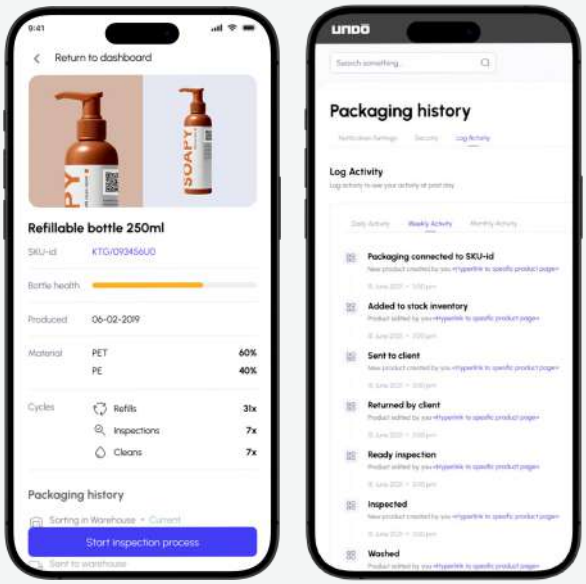
An existing solution that can allow you to create DPPs is **undo.software.** This startup (and spin-off from Made) has an off-the-shelf platform in which companies can create DPPs on product and component levels.



They also offer asset tracking software to combine the insights of the DPP interactions throughout it's lifecycle, helping companies gain valuable insight into product lifecycle and performance.

It is possible to set a POC for a set timeframe to allow for the company to experiment with DPPs before fully committing, afterwards they apply a monthly SaaS fee, which is an affordable, futureproof and fast way to get started.

When dealing with greater complexity and a large set of SKUs, it can be interesting to build your own system or have an extension built into your existing PIM or ERP system. This allows you to scale DPPs within an existing ecosystem, rather than depending on an external solution provider.



What's next?

The Digital Product Passport is not just a compliance tool; it's a strategic opportunity. By embracing DPPs, businesses can differentiate themselves, inspire consumer trust, and drive positive global change. Made is committed to supporting your journey towards a sustainable and transparent future.

Actionable steps:

Research and Understand Regulations: stay informed about relevant regulations and their impact on your business.

Develop a Phased DPP Strategy: outline clear goals and actions for DPP implementation.

Engage Stakeholders: involve internal and external stakeholders in planning and execution.

Assess Data Requirements and Availability: conduct a thorough gap analysis to identify data needs.

Explore DPP Solutions: investigate technical solutions to support DPP implementation.

Dive into the world of rapid prototyping and MVPs

Download white paper

Conclusion

Embracing the Digital Product Passport is not just about staying compliant; it is about leading the way in a global movement towards more responsible and sustainable industry practices. It opens doors to innovative business models, such as product-as-a-service and take-back programs, which can create new revenue streams and strengthen customer relationships.

DPP is a vital tool for businesses aiming to thrive in a future that values sustainability and transparency. By integrating DPPs into your operations, companies can not only meet regulatory demands but also position themselves as pioneers in their industries, driving meaningful change and securing long-term success.

Enabling future compliance with the EU DPP mandate is a journey that starts today, and Made is committed to being at the forefront of developments in these and other regulations. Reach out to us for a discussion on an incremental preparation that enables a futureproof DPP solution that will provide benefits immediately - even before DPPs are required.

Contact our team of sustainability experts and discover the first steps for enabling a digital product passport.

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