

# Enabling circular transitions: Exploring the strategic role of the Digital Product Passport at Cam Cam Copenhagen

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# 1. Introduction

This project is situated within the field of Sustainable Design Engineering and investigates how design methods and strategic frameworks can support organizational transitions towards circularity (Walden et al., 2021). Rather than approaching sustainability solely as a technical or regulatory requirement, the study adopts a systemic design perspective, focusing on how tools, processes, and organizational practices can enable longer-term sustainability transformations.

Within this context, the Digital Product Passport (DPP) emerges as a particularly relevant instrument. Although still under development at the European level, the DPP is a design-oriented tool that connects regulatory compliance with principles of transparency, traceability, and lifecycle thinking. As such, it has the potential to act not only as a compliance mechanism, but also as a catalyst for organizational learning and strategic change. Through collaboration with Cam Cam Copenhagen, this report explores how the DPP can support a transition from compliance-driven sustainability towards more strategic and circular approaches. The project addresses key competencies of Sustainable Design Engineering, including navigating complexity, integrating sustainability beyond the product level, and anticipating future-oriented interventions within real organizational constraints.

## 1.1. Presentation of Cam Cam Copenhagen

Cam Cam Copenhagen (Cam Cam) is a Danish design company founded in 2012, specializing in products for babies and children, with a strong focus on textiles, as well as furniture and interior accessories. The company operates primarily within the premium segment, combining Nordic aesthetics, craftsmanship, and the use of certified materials, such as GOTS (Global Organic Textile Standard) certified in textiles and FSC (Forest Stewardship Council) certified wood. Cam Cam functions as a small to medium-sized enterprise (SME), operating in both B2C and B2B markets, and distributing products through its own channels as well as selected retailers.

Sustainability is an important part of the brand's communication and identity, particularly in relation to material choices, quality, and longevity. However, the company operates within a sector characterized by short product use phases, fast-changing customer needs, and increasing regulatory and market pressure related to sustainability and transparency. This combination makes Cam Cam a relevant and illustrative case study for examining how design-driven lifestyle brands can respond to emerging circular economy requirements. As a sustainability intern within the company, it has been possible to have direct access to internal processes, interdepartmental perspectives, and strategic discussions, enabling an in-depth qualitative analysis of how the DPP is perceived and how it could be applied in practice. Further details on the case context and collaboration are provided in section 3.2. In figure 1, some images of Cam Cam products are presented to provide the reader with an idea of the context:



Figure 1: Cam Cam products

## 1.2. Regulatory context and the Digital Product Passport

The European regulatory landscape is undergoing a profound transformation with the introduction of the Ecodesign Regulation for Sustainable Products (ESPR), which represents a paradigm shift from traditional compliance-focused approaches to a more holistic, life-cycle-oriented framework that emphasises transparency, durability and circularity (European Commission, 2023). Unlike previous directives, which focused primarily on energy efficiency or specific environmental criteria, the ESPR establishes a comprehensive set of requirements for all stages of a product's life cycle: from material sourcing and production to use, maintenance and end-of-life management, reflecting a systemic approach to sustainability regulation. This shift is in line with the broader objectives of the European Green Deal, which aims to decouple economic growth from resource consumption, while promoting sustainable innovation and competitiveness in the internal market (European Commission, 2023). A central instrument of the ESPR is the Digital Product Passport (DPP), conceived as a structured and interoperable data system capable of aggregating and communicating detailed product-specific information throughout the value chain.

The DPP is designed to improve transparency by providing stakeholders with accessible, standardised data on material composition, origin, certifications, care instructions, repair and reuse options, and end-of-life pathways (European Commission, 2023). Although the technical specifications of the DPP are still under development, current proposals suggest that the passport will be accessible via digital media, such as QR codes or RFID tags, enabling real-time interaction between manufacturers, regulators, retailers, consumers, and recyclers. By facilitating the flow of information, the DPP is expected to mitigate the information gaps that currently hinder circular practices and sustainable consumption (Kirchherr et al., 2018). In the textile sector, which is Cam Cam's main product category, the relevance of the DPP is particularly pronounced. The textile industry is characterised by highly fragmented and globalised supply chains, a multiplicity of material types and systemic challenges in terms of repair, reuse and recycling (Niinimäki et al., 2020). The implementation of a DPP in this context can serve multiple strategic and operational functions. Beyond ensuring regulatory compliance, it improves the traceability of materials and processes, encourages collaboration between designers, manufacturers, logistics operators and recyclers, and supports the development of circular business models, such as product-as-a-service, take-back schemes and repair or refurbishment programmes (Psarommatidis and May, 2024).

By integrating lifecycle data into design and production decisions, companies can anticipate end-of-life management requirements, optimise material selection and reduce environmental impact, while creating added value through transparency and consumer trust (Bocken et al., 2016). Furthermore, the DPP represents a key tool for aligning corporate strategy with emerging sustainability standards and consumer expectations. As stakeholders increasingly demand verifiable sustainability claims and responsible sourcing, the ability to provide accessible, accurate and standardised product information becomes a competitive advantage. Consequently, the DPP can be conceptualised not only as a regulatory compliance mechanism, but also as a facilitator of innovation, circularity and systemic thinking in product design and business model development (Geissdoerfer et al., 2017). This dual regulatory and strategic function places the DPP at the intersection of policy, technology and market transformation, highlighting its potential to catalyse the transition to a truly circular textile economy.

## 1.3. Problem formulation

In the current sustainability landscape, companies are increasingly required to respond to regulatory frameworks, certifications, and reporting mechanisms that aim to improve transparency and environmental performance. Instruments such as the DPP are being introduced to ensure traceability, responsible sourcing, and compliance with circular economy principles. However, in many cases, these regulatory tools are approached primarily as administrative or technical obligations rather than as opportunities for strategic transformation. For small and medium-sized enterprises (SMEs) such as Cam Cam, this situation creates a structural tension.

On the one hand, there is growing external pressure from European regulations, large retailers, and increasingly sustainability-conscious consumers to document materials, certifications, and lifecycle information. Non-compliance can result in restricted market access, reputational risks, and increased operational complexity. As a result, sustainability efforts are often driven by the need to “keep up” with regulatory requirements, rather than by a proactive sustainability strategy embedded in the core business model.

On the other hand, Cam Cam has several characteristics that make it well positioned to go beyond a compliance-based approach. As a design-driven company operating at a relatively small scale, it has shorter decision-making chains, closer collaboration between departments, and greater flexibility to experiment with new practices. These qualities offer the potential to integrate sustainability considerations earlier in the design process and to explore circular strategies that extend product lifespans, increase material value, and strengthen long-term brand positioning. Despite this potential, the introduction of the DPP also raises practical and organizational challenges. Implementing the DPP requires new data management practices, cross-departmental coordination, and clarity around data ownership and responsibilities. Without a clear strategic framing, there is a risk that the DPP becomes an isolated compliance task, adding workload without generating meaningful value for product development, operations, or business strategy.



Figure 2: Project overview

The central problem addressed in this study is therefore how Cam Cam can navigate this transition: how the DPP can be implemented not only as a regulatory requirement, but as a strategic tool that supports circular product development, organizational learning, and long-term sustainability transitions. More broadly, the project investigates how SMEs in the textile design and lifestyle sector can leverage regulatory instruments to move from reactive compliance towards proactive.

#### 1.4. Research questions

Starting from the defined problem, this report aims to explore how regulatory instruments, such as the DPP can transform from simple compliance mechanisms into strategic facilitators of circularity within a product-based company.

##### Main research question:

How can the DPP operate as a catalyst to facilitate circular product development and support strategic sustainability transitions at Cam Cam?

##### Sub-questions:

S-RQ1: How the DPP can be implemented in a way that ensures regulatory compliance and enhancing value creation in product development at Cam Cam?

S-RQ2: What circular business model opportunities could be explored at Cam Cam using the DPP, and how might these models be structured to support more sustainable strategic pathways?

By addressing these sub-questions, the study aims to provide a more detailed and comprehensive answer to the overall research question. The answers to these sub-questions will be presented in the analysis (Chapter 4), which will provide a structured understanding of how the DPP can work as a strategic catalyst for circularity at Cam Cam.

## 2. Theories and literature

This chapter outlines the theoretical foundations that guide the analysis of Cam Cam's transition towards sustainability. It brings together key perspectives from sustainable design engineering, the circular economy, systemic design, and EU regulatory developments, and provides the concepts necessary to understand how product-level initiatives can influence broader strategic change.

### 2.1. Sustainable design engineering and systemic design

Sustainable design engineering is grounded in the integration of environmental and social responsibility into design and development processes, moving beyond incremental efficiency improvements towards transformative change (Bocken et al., 2016). Within this paradigm, designers are not only responsible for the optimisation of products, but also for shaping the conditions under which production, use, and disposal take place. This requires the ability to navigate complexity, balance competing objectives, and anticipate long-term consequences of design decisions. Systemic design extends this approach by explicitly recognising that products are embedded within interconnected social, economic and ecological systems (Jones, 2014). From a systemic perspective, sustainability challenges cannot be addressed through isolated interventions, as changes at one point in the system may generate unintended effects elsewhere. Instead, systemic design promotes multi-level and multi-actor thinking, where interventions are assessed in relation to their broader system dynamics.

In this context, sustainability is not treated as a design parameter, but as an emergent property of interactions across scales. Product-level decisions like as material selection, information management, or durability can therefore act as leverage points for wider organisational and strategic change. This perspective is particularly relevant for companies operating in complex value chains, where transparency, coordination, and shared understanding among stakeholders are critical. Within this project, systemic design provides the conceptual lens through which the DPP is examined. Rather than being understood solely as a technical compliance tool, the DPP is analysed as a potential systemic intervention capable of influencing Cam Cam's internal processes, cross-departmental collaboration, and long-term strategic orientation towards circularity.

### 2.2. Circular economy and product lifecycle

The circular economy (CE) framework seeks to decouple economic activity from the consumption of finite resources by prioritising durability, reparability, reuse, and material recovery (Ellen MacArthur Foundation, 2013). In contrast to linear “take–make–dispose” models, circular approaches aim to maintain products, components, and materials at their highest value for as long as possible. In product-oriented industries, the concept of the product life cycle plays a central role in operationalising circular economy principles. Design strategies such as design for disassembly, design for longevity, and life cycle assessment (LCA) enable the identification of critical intervention points across production, use, and end-of-life stages (Bocken et al., 2016). These approaches highlight that many environmental impacts are locked in during the early design phases, reinforcing the strategic importance of design decisions.

However, as Konietzko et al. (2020) argue, “a circular business model with circular products cannot compete in a linear economy without regulatory support and the removal of market barriers.” This observation underscores the systemic nature of circular transitions and the need for enabling conditions beyond individual firm-level initiatives.

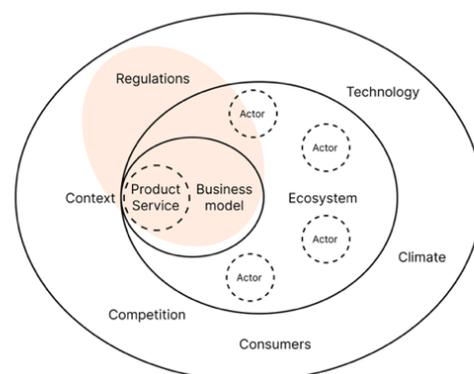


Figure 3: Circular products

Regulatory frameworks, shared standards, and transparent value chains are therefore essential to support the scalability and viability of circular solutions. This challenge is particularly pronounced in sectors such as children’s products, where the **use phase is relatively short due to rapid physical growth** and changing needs. In such contexts, achieving circularity requires more than material optimisation; it calls for new value propositions that extend product lifetimes beyond single-user ownership. Examples include take-back schemes, refurbishment and renewal programmes, and second-hand or resale platforms (Haugsrud et al., 2024).

These circular strategies rely heavily on accurate and accessible product information, including material composition, usage history, and condition. As a result, there is an increasing alignment between circular design approaches and digital transparency tools. Reliable data flows and traceable product histories become critical enablers of circular business models, highlighting the growing relevance of instruments such as the DPP (Kemmner et al., 2025).

### 2.3. Four Levels of sustainable design

Baldassarre et al. (2020) propose a framework for sustainability-oriented innovation structured around four interdependent levels of design. The framework offers a progressive understanding of how companies can move from isolated product improvements towards more systemic forms of sustainability, emphasising that meaningful transitions require coordinated interventions across multiple levels.

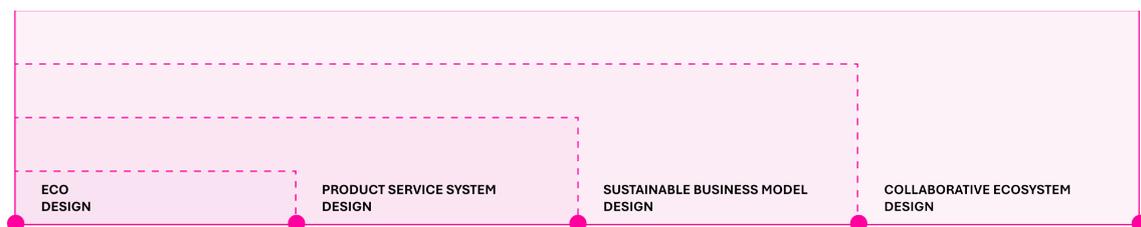


Figure 4: Four levels of Sustainable Design

- **Eco design or product design:**  
Focuses on material selection, durability, safety, and functionality. This represents the most immediate level of intervention, where decisions directly affect resource use and product life.
- **Product-service systems (PSS):**  
Design introduces services such as repair, reuse, leasing or take-back schemes, extending the value of products beyond the point of sale.
- **Sustainable business model design:**  
Redefines how value is created and captured, moving from linear sales models to circular strategies such as subscription, resale, or product-as-a-service.
- **Collaborative ecosystem:**  
Design involves collaboration between value chain actors, institutions, and users to share infrastructure, reverse logistics, and systemic change.

This framework is particularly relevant to the present study, as Cam Cam currently operates primarily at the product level, relying on material certifications as its main sustainability strategy (Kanda et al., 2021). While these efforts contribute to reduced environmental impact, they remain limited in their capacity to drive broader circular transformation.

By applying the four levels of sustainable design as an analytical structure, this study explores how the DPP can function as an enabling mechanism across multiple levels. In doing so, the DPP is examined as a potential catalyst for moving from isolated sustainability measures towards integrated, systemic innovation within Cam Cam’s organisational context.

## 2.4. Theoretical framework selection for the analysis

This study adopts the “Four Levels of Sustainable Design” framework proposed by Baldassarre et al. (2020) as its main analytical foundation, complemented by principles from systemic design. Together, these perspectives enable a multi-level understanding of how sustainability initiatives can evolve from product-focused interventions to broader strategic and organisational change.

The Four Levels framework is particularly suitable for this analysis, as it distinguishes between eco-design, product-service systems, sustainable business models, and collaborative ecosystems. It provides a clear structure for assessing Cam Cam’s current sustainability practices that are largely concentrated at the product level and for exploring how more advanced circular strategies could be progressively developed. Systemic design supports this framework by emphasising the interconnected nature of products, organisations, and value chain actors (Jones, 2014). From this perspective, sustainability transitions are understood as collective and iterative processes rather than isolated technical solutions.

Within this framework, the DPP is conceptualised as a catalyst and intermediary device that can connect product data with organisational processes and strategic decision-making. Rather than being treated solely as a compliance tool, the DPP is analysed as an enabler of circular practices across multiple design levels. Although EU regulations such as the ESPR and the DPP are not considered theoretical frameworks in themselves, they constitute an essential contextual umbrella for the analysis, reflecting the regulatory conditions under which Cam Cam operates and within which circular transitions must be realised.

## 3. Methods and case study

This chapter presents the methodological approach, the rationale for the case study, and describes the methods used to generate useful knowledge for strategic analysis.

### 3.1. Methodological approach

This study adopts a qualitative case study design, examining Cam Cam as an illustrative example of a product-oriented company navigating the emerging transition towards circularity. The aim is not to produce generalisable conclusions, but to generate situated, practice-oriented knowledge on how the DPP can act as a catalyst for organisational learning, product-level improvements, and strategic transitions towards sustainability (Walden et al., 2021).

The theoretical basis is based on the four levels of sustainable design by Baldassarre et al. (2020); however, rather than applying these levels as a linear progression, the analysis uses them as inspiration to develop multiple circularity scenarios for Cam Cam. These scenarios explore different strategic directions, which correspond to different degrees of organisational change (Salmi & Kaipia, 2022). This approach allows academic frameworks to be translated into concrete and tangible pathways for a company in the early stages of circular transformation.

From a methodological point of view, the study integrates analytical diagnosis with strategic exploration. The diagnostic phase investigates existing practices at Cam Cam, data flows, operational routines and collaboration between teams through internal documentation, observations and informal interactions. Based on this knowledge, the strategic phase develops and evaluates several potential scenarios for circular business models, each reflecting different opportunities offered by the DPP (Kemmner et al., 2025). Within this process, the DPP is not simply treated as a regulatory compliance tool, but as a boundary object (Hagedorn-Rasmussen, Koch, & Vogelius, 2003), a shared artefact that facilitates communication between departments, aligns expectations, and supports the exploration of new forms of value creation. As such, its methodological function is both analytical, to identify data gaps and misalignments between teams, and catalytic, generating debates on future circular strategies and organisational capabilities.

### 3.2. Case study justification: Cam Cam

This case study examines Cam Cam, a Danish design company specialising in baby textiles and interior products. The brand offers a particularly relevant context for exploring how small and medium-sized enterprises (SMEs) in the design sector can transition from compliance-based sustainability toward more strategic, systemic, and circular practices. By investigating Cam Cam, this study aims to understand how a design-led SME can leverage its aesthetic identity and material expertise to integrate circular innovation within its business model.

#### Relevance of the case

Cam Cam represents a product-oriented SME navigating increasing regulatory and market pressures for sustainability and circularity. While the company is recognised for its Scandinavian design identity and commitment to certified organic materials, its current sustainability approach is largely compliance-driven, focusing on meeting minimum regulatory standards rather than proactively designing systemic circularity. This positions Cam Cam as a compelling case study for examining the transition from linear, compliance-based sustainability to strategic circular innovation.

Analysing Cam Cam allows for the identification of both opportunities and constraints faced by design-led SMEs: opportunities such as leveraging design to extend product life cycles and enhance customer engagement in circular practices, and constraints such as limited control over outsourced production, material traceability challenges, and dependence on conventional retail models. This dual perspective offers a nuanced understanding of the organizational, operational, and cultural factors influencing circular transitions.

#### Market and sector positioning

Cam Cam operates in the Nordic baby and children’s interior sector, competing with brands such as Liewood, Konges Sløjd, and That’s Mine. These competitors share a similar minimalist aesthetic and rely on material certifications but have not fully implemented systemic circular strategies, such as product take-back, repair, or resale programs. The following table summarises key findings from the market research and competitor analysis, highlighting opportunities for circular innovation:

Brand	Products	Quality / Durability	Certifications	Circularity Initiatives	Strengths
<b>Cam Cam Copenhagen</b>	Baby textiles, nursery decor, furniture	High perceived quality, Scandinavian craftsmanship	Uses organic certifications, but limited full transparency	No formal circular model yet (no take-back, repair, or service)	Strong sustainability image and brand trust
<b>LIEWOOD</b>	Accessories, textiles, toys & lifestyle products	High quality with functional design	Uses recycled materials (GRS-certified polyester in outerwear); material guides available	No structured circular model, mainly material-focused	Strong branding and balance of style & eco-values
<b>Konges Sløjd</b>	Baby/kids clothing, toys, decor & lifestyle	Good quality, aesthetic & multifunctional	Certifications: GOTS, OEKO-TEX, FSC for wood toys; use of eco dyes	Small initiatives (reusable packaging); no formal circular pathways	Strong market presence, Scandinavian identity
<b>That’s Mine</b>	Baby decor, textiles, interior accessories	Acceptable quality for lifestyle products	Danish design ethos; limited public certification information	No visible circular strategy or service model	Aesthetic alignment with Danish market; niche appeal

Table 1: Market and sector positioning

This positioning suggests that circular practices represent a strategic opportunity for Cam Cam to differentiate itself in a market where sustainability and systemic circular strategies remain largely unexplored. Integrating traceability, product life extension, and customer engagement programs could enhance competitive advantage while reinforcing the brand’s design identity.

## Business model context

Cam Cam currently operates a linear business model, primarily focused on the design, production, and sale of physical products. Design and product development occur in Copenhagen, while manufacturing is outsourced to suppliers in India, Latvia, and China. This structure underscores the challenges of supply chain transparency and traceability, which are critical enablers of circularity (Osterwalder & Pigneur, 2010). Below is the Business Model Canvas with more details:

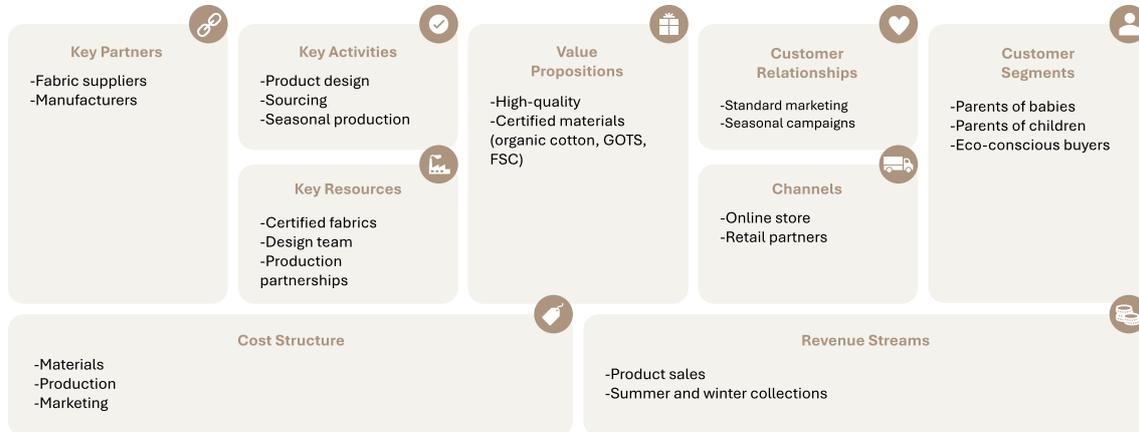


Figure 5: Business model context

From a business model perspective, Cam Cam creates value through high-quality, aesthetically cohesive products, but the linearity of the model constrains circular opportunities. Addressing these gaps could transform Cam Cam’s value proposition from merely providing premium products to enabling sustainable consumption patterns, thus aligning business success with environmental and social impact.

## Sustainability & circularity context

Currently, Cam Cam’s sustainability efforts are focused on responsible sourcing using organic cotton and certified materials and durable design creating timeless products. Despite these strengths, the company’s approach is product-centric and linear, with circular strategies such as repair, resale, or take-back programs remaining unexplored. From a systemic perspective, integrating circularity would require:

1. Extending product life cycles: Designing for disassembly, repair, or modularity.
2. Closing material loops: Implementing take-back initiatives to recover and reuse materials.
3. Reframing value creation: Moving from a transactional sales model to a product-service ecosystem that captures circular value.



Figure 6: Business model circularity context

By situating Cam Cam within the broader discourse on sustainable and circular design, this case study enables the examination of how SMEs can transition from compliance-based approaches to strategic, systemic circularity, leveraging design identity and market positioning as key enablers of change.

### 3.3. Data collecting methods

This study follows a qualitative case study approach, combining multiple data collection methods to capture both organisational practices and perceptions related to sustainability, circularity, and the potential role of the DPP at Cam Cam. Data was collected throughout the internship period from September to January and brought together to reinforce the validity of the analysis, integrating operational knowledge, documentary evidence and participatory activities.



#### Internal discussions and informal conversations

A significant portion of the empirical data was gathered through ongoing informal discussions with employees across different departments. These conversations emerged organically during daily work activities, task-related interactions, and internal meetings. Topics frequently addressed included supply chain transparency, material sourcing, certification requirements, product labelling, and internal data management practices. Although informal in nature, these discussions provided valuable contextual insights into how sustainability is currently interpreted and operationalised within the organisation. They also helped identify internal constraints, knowledge gaps, and differing departmental priorities, which informed the development of the circular scenarios and the framing of the workshop and roundtable discussions.

#### Documentation review

A documentation review was conducted to understand how product-related information is currently structured, stored, and accessed within the company. This included the analysis of product sheets, technical specifications, material compositions, certification documents, and labelling requirements related to Cam Cam's textile products. This review revealed that relevant information is often fragmented across different documents and departments, making it difficult to access in a consolidated and transparent manner. These findings directly informed the development of the DPP mock-ups used in the workshop, highlighting both the potential value of a centralized data structure and the practical challenges associated with data availability and consistency.

#### Workshop: DPP exploration and possible implementation

One interactive workshop was conducted to explore the practical implications of implementing a DPP at the product level. The workshop combined the presentation of DPP mock-ups with group discussion and collaborative data-mapping activities. Four employees participated in the session: two from the sales team, one designer, and one operations specialist. During the workshop, participants were invited to engage with physical and visual DPP mock-ups and collectively identify which data points would be required, who would be responsible for providing them, and where gaps currently exist. The workshop worked as both an exploratory and reflective tool, helping participants move from abstract discussions of the DPP to a tangible understanding of its implications for cross-departmental collaboration and data ownership.

#### Roundtable discussion: Scenario evaluation

A roundtable discussion was organised to evaluate the feasibility of the three proposed circular scenarios and to assess the perceived role of the DPP in supporting their implementation. Six employees participated in the session from design, logistics, operations, marketing, sales, and finance, ensuring a broad organisational perspective. To ensure a coherent and comparable discussion, the session was structured into three segments, each dedicated to one scenario. As the facilitator, each scenario was presented in detail, outlining the operational stages for Cam Cam, the implications for the consumer journey, and the potential role of the DPP at each stage. To stimulate dialogue and encourage critical reflection, three guiding questions were posed for each scenario. The insights generated during the roundtable formed the basis for the scenario assessment and the subsequent development of the recommendation list.

## 4. Analysis and strategic exploration

This chapter presents the core analytical work of the project and is structured around the research questions from Chapter 1. The analysis begins with issues relating to the internal implementation of the DPP, focusing on regulatory compliance, collaboration between teams, and the practical implications of integrating a new product- focused tool from Cam Cam (Leonard-Barton, 1992).

The second part of the analysis moves from implementation to strategic exploration. The focus is on identifying potential opportunities for circular business models that the DPP could enable and illustrating how these scenarios could be structured within Cam Cam's current capabilities (Geissdoerfer et al., 2018). This section aims to broaden the perspective beyond everyday practices and address the concerns often associated with systemic change. The scenarios developed will serve as the basis for providing a set of strategic recommendations that Cam Cam can consider toward a more sustainable transition.

Finally, the chapter concludes by synthesizing these ideas to address the main research question of how the DPP can function as a catalyst for the development of circular products and broader transitions toward sustainability within the company. This final reflection links the findings with the broader context of sustainable design theory and clarifies the opportunities and challenges involved in circular transition in small and medium-sized enterprises such as Cam Cam.

### 4.1. The DPP as a tool for traceability and value creation

S- RQ1→ How the DPP can be implemented in a way that ensures regulatory compliance while strengthening cross-team collaboration, improving data management practices, and enhancing value creation in product development at Cam Cam?

The first part of the analysis examines the practical implementation of the DPP within Cam Cam and considers its potential to support regulatory compliance, strengthen internal collaboration, and improve product data practices (Kemmer et al., 2025). As a small design-oriented company operating in both B2B and B2C markets, Cam Cam faces increasing pressure from new EU requirements, retailer transparency demands and growing consumer expectations (Kanda et al., 2021). In this context, the DPP is not only an impending legal obligation, but also can be an opportunity to structure product data more effectively and integrate sustainability considerations into everyday workflows (Walden et al., 2021).

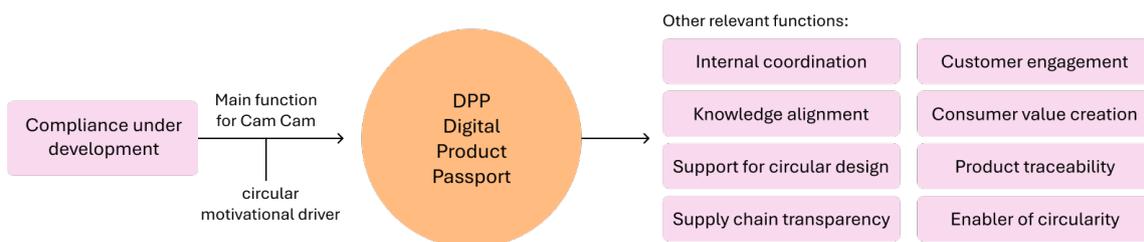


Figure 7: DPP functions

From a regulatory perspective, DPP enables compliance with the EU's Ecodesign Regulation for sustainable products (ESPR), which requires product-level data such as material composition, origin, recyclability, and chemical treatments to be distributed across teams including design, purchasing, and operations. Ensuring that this data is accurate and accessible reduces risks related to penalties, loss of key customers, or damage to reputation.

At the same time, DPP improves traceability and transparency by centralizing information on product lifecycles and identifying opportunities to improve durability, recyclability, and environmental impact. This can strengthen the brand's positioning in the market.

## DPP workshop for initial implementation and knowledge distribution

To demonstrate the practical feasibility of implementing the DPP and mitigate internal uncertainty, mock-ups of Cam Cam's 3 best-selling products have been developed. These mock-ups serve as tangible examples of how data can be collected, structured, and utilised at the product level, providing team members with a clear understanding of the practical application of the DPP.

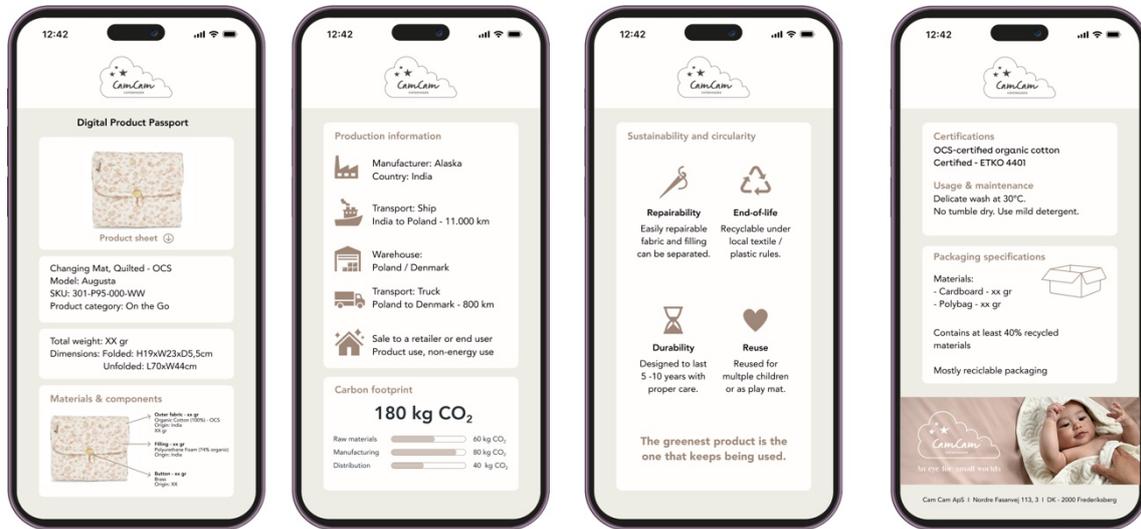


Figure 8: DPP mock-ups

Alongside the mock-ups, a workshop was held to introduce the team to the potential use of Digital Product Passport (DPP) templates and encourage knowledge sharing across departments. The aim was to highlight the types of information required by the DPP and identify which departments already hold this data, thereby clarifying who could take responsibility for filling specific information gaps.

This approach ensures that responsibility for data collection and management is distributed across the entire organisation, rather than concentrated in a single function. It also clarifies ownership of specific types of data and encourages collaboration between departments, which is essential for the effective implementation of circular data practices (Carvalho et al., 2025). The following table provides a structured overview of the workshop, describing its objectives, the composition of participants, and key observations derived from the session.

Description and details	
<b>Title</b>	DPP Workshop for Initial Implementation and Knowledge Distribution
<b>Objective</b>	To familiarise Cam Cam employees with the DPP through hands-on interaction with product mock-ups; to identify data ownership across departments and foster cross-functional understanding of DPP requirements.
<b>Key Insights / General Observations</b>	<ul style="list-style-type: none"> <li>- The <b>operations</b> participant demonstrated a strong understanding of the existing product data and certification processes.</li> <li>- The <b>sales</b> representatives perceived the DPP as highly valuable, noting that many clients increasingly request transparency data or similar tools.</li> <li>- The <b>designer</b> initially expressed some concerns regarding workload and data complexity; however, once the DPP was visualised as a tangible, structured tool built largely on existing information, her perception became notably more positive.</li> </ul> <p>Overall, the DPP mock-ups were well received and recognised as a practical and realistic approach to structuring product sustainability data.</p>



Table 2: Workshop details

Together, the mock-ups and workshop facilitate the adoption of the DPP, reduce resistance to its implementation, and incorporate sustainability practices into routine product development processes.

### Answering Sub-Research Question 1

The conclusions learned from the mock-ups and workshop provide a clear answer to research S-RQ1. How the DPP can be implemented in a way that ensures regulatory compliance while strengthening cross-team collaboration, improving data management practices, and enhancing value creation in product development at Cam Cam?

The start of DPP implementation at Cam Cam can effectively ensure regulatory compliance while strengthening collaboration between teams, improving data management practices, and enhancing value creation, provided that the process is introduced through tangible, participatory, and multifunctional formats.

The workshop demonstrated that collaboration is essential to reduce uncertainty around the DPP and to clarify roles and responsibilities related to data collection. Each department approached the tool from its own perspective: the operations department emphasised data accuracy, the sales department highlighted customer expectations and market value, and the design department focused on integrating data into creative processes. Despite these differences, the session fostered a common understanding of the DPP as a practical, structured, and viable framework, based largely on existing information within the company (Kemmer et al., 2025). This cross-team convergence proves that the DPP can function as a boundary object, providing a common reference point that promotes internal alignment.

By centralising information at the product level, the DPP not only facilitates compliance with ESPR requirements, but also reinforces workflow consistency, reduces redundancy, and opens opportunities for data-driven optimisation. As a result, the tool contributes to value creation by informing material choices, guiding product improvements, and supporting transparent sustainability communication.

Overall, the combination of mock-ups and an interactive workshop illustrate that DPP implementation is feasible and strategically beneficial for Cam Cam. It enables regulatory alignment, improves traceability and transparency, and fosters cross-departmental collaboration, providing a basis for the systemic circularity opportunities explored in the next section.

## 4.2. Product and system integration: Designing for circularity

RQ2 → What circular business model opportunities could be explored at Cam Cam through the use of the DPP, and how might these models be structured to support more sustainable strategic pathways?

This section evaluates possible viable circular scenarios for Cam Cam products, focusing on textiles, as this category has the highest sales volume for Cam Cam. Furthermore, taking into account the relatively short lifespan of its products and possible consumer behaviour, conditions can be created that promote circularity.

Although Cam Cam operates through both B2C (20% of sales) and B2B channels, the viability of circular business models differs substantially between these segments. Circular models, such as repair-oriented services, collection systems, or subscription-based offers, are more realistic in small-scale B2B and B2C contexts, where customer relationships are direct, logistics are manageable, and product returns can be handled without excessive operational complexity (Osterwalder & Pigneur, 2010). In contrast, implementing these models with large B2B retailers (Zalando, BabySam, Magasin) would require dealing with more rigid supply chains, higher coordination costs and stricter logistical requirements, making it considerably more difficult to launch circular services at this stage.

For this reason, the most promising business model opportunities are primarily explored in relation to customer groups where Cam Cam has more control over distribution, product returns and customer communication. The DPP plays a key role in providing the traceability, material documentation and lifecycle data needed to structure such models reliably and at scale.

Three strategic scenarios based on Baldassare et al (2020) are developed in the following subsections to illustrate how Cam Cam could leverage the DPP to enable circularity:

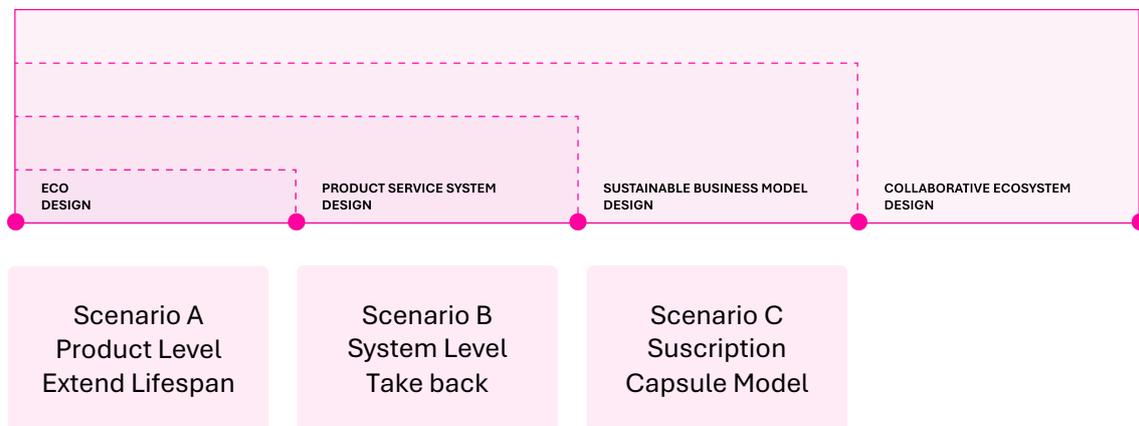


Figure 9: 4 Levels & Scenario relation

These scenarios do not prescribe a single path but rather illustrate how different models could be structured based on Cam Cam's strategic ambitions, operational capacity, and stakeholder ecosystem. Together, they outline a series of circular opportunities enabled by the DPP and lay the groundwork for the organizational recommendations developed in the next section. Below, the scenarios are explained in detail, including what they would imply for Cam Cam.

**A) Extend Lifespan – Product Level**

This scenario examines a repair-oriented model in which Cam Cam enables customers to extend the useful life of key textile products through accessible repair instructions, replacement components, and a company-managed repair service. Rather than changing the business model, this approach introduces a lightweight circular pathway based on Baldassare et al (2020) that remains fully aligned with Cam Cam's current linear structure, making it the least disruptive and most feasible entry point for SMEs exploring circularity.

**Value proposition for Cam Cam**

The repair-oriented model strengthens Cam Cam's business model by opening up a secondary value cycle that improves the economics of product lifecycle without requiring major operational restructuring. By enabling products to continue functioning for longer, Cam Cam increases the return on investment in materials, creates brand value around durability, and gains data-driven insights that can inform cost-effective design optimizations. From a sustainability perspective, extending product life directly reduces material consumption, decreases waste generation, and improves the circular recovery potential of textiles. As a result, the model positions Cam Cam to capture both economic and environmental value while maintaining compatibility with its current linear production and distribution system.

**Customer journey**

The customer uses a Cam Cam textile product until it presents minor damage. In this case, the customer can choose to repair it at home following the guidelines provided by the brand or request Cam Cam's repair service, which manages the shipping, repair and return of the item. Once repaired, the product returns to its original use and to the same user, extending its useful life and avoiding the purchase of a replacement, while Cam Cam obtains valuable information about recurring faults and design improvements.

**Role of DPP**

The DPP enables this business model by centralizing all relevant product information:

- Care instructions to reduce product damage and extend durability.
- Material composition and fabric structure, for providing proper repair instructions.
- Space to record repair history, increasing transparency and resale value.

By making repair knowledge accessible through a DPP linked to a QR code, Cam Cam can make repair practices more accessible and empower customers to engage in circular behaviors.

This model takes advantage of the specific nature of baby textiles: their use phase is short, but most products remain in excellent condition and only require minor interventions (e.g., sewing, replacing zippers, replacing buttons). Empowering customers to repair these items reinforces the value of the product, promotes emotional durability, and strengthens Cam Cam's positioning as a brand focused on longevity and responsible design. A detailed overview of the aspects of this scenario can be found in table 3 below:

Benefits - Advantages	Risks - Drawbacks
<ul style="list-style-type: none"> <li>- Minimal organizational disruption and low implementation cost.</li> <li>- No reverse logistics or storage required.</li> <li>- Improves product durability and emotional satisfaction.</li> <li>- Generates valuable information about material deficiencies and design improvements.</li> <li>- Easy for consumers to understand and use (low level of abstraction).</li> </ul>	<ul style="list-style-type: none"> <li>- Limited potential for new revenue streams compared to systemic circular models.</li> <li>- Requires the development of repair instructions and possible assistance for replacement parts.</li> <li>- Depends on consumers' willingness to participate in repair.</li> <li>- Impact mainly at the product level; does not yet change the system as a whole.</li> </ul>

*Table 3: Scenario A Extended - product level*

# Scenario A: Extend Lifespan

This model enables customers to request repair services so their existing Cam Cam products can be restored and returned to them. By supporting maintenance and extending use within the same household, the model lengthens product lifetimes while building trust and emotional durability.

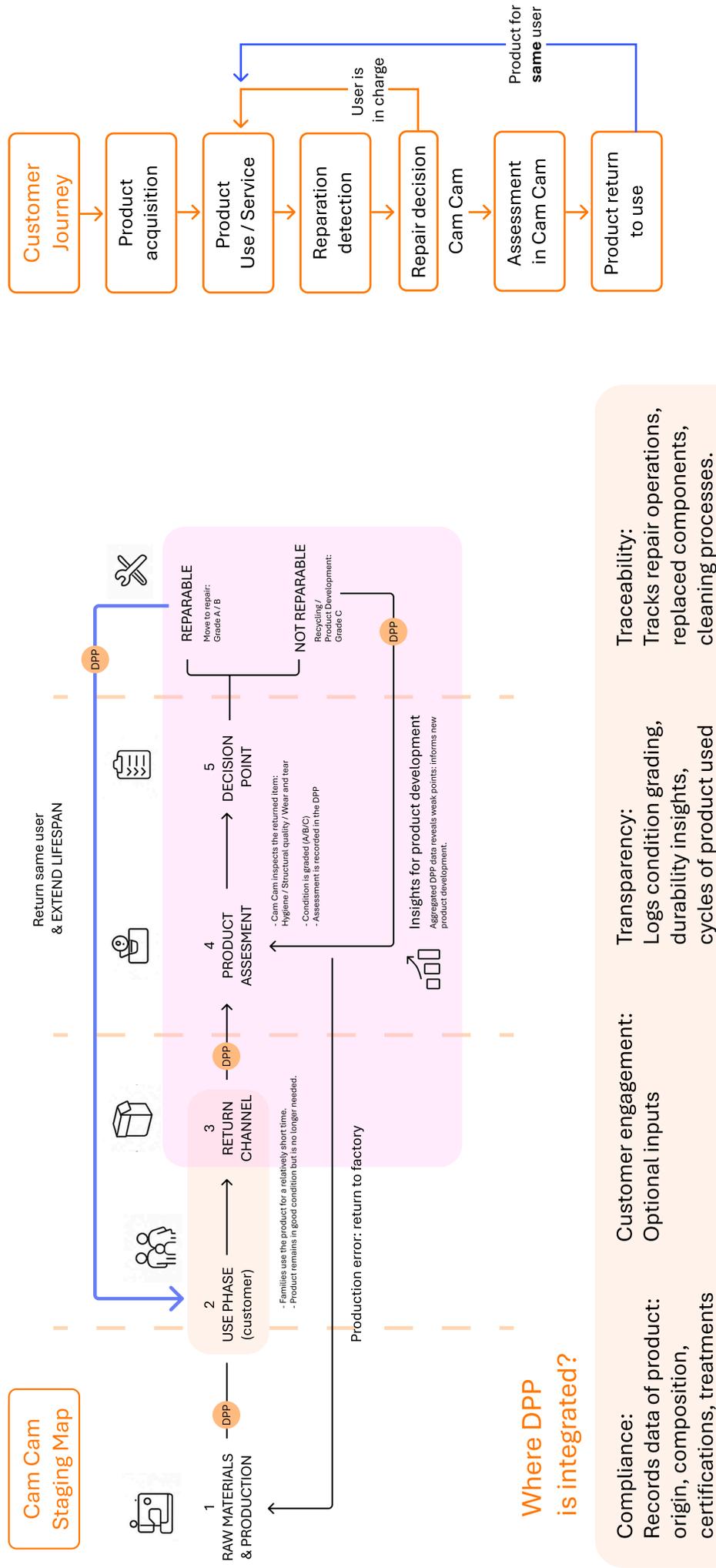


Figure 10: Scenario A, Extended lifespan

## B) Take back – System Level

This scenario examines a recovery-oriented model in which Cam Cam allows customers to return used products once they no longer need them and receive a credit in exchange for future purchases at Cam Cam. The model based on Baldassare et al (2020) is particularly well suited to children's products, which have short usage cycles but often remain in very good condition. By facilitating product returns, Cam Cam can reintroduce items into circulation, reinforce its circular brand identity, and gain insights into product durability and failure patterns. The model targets B2C customers and selected small B2B partners, as managing logistics on a large scale would be too complex at this stage.

### Value proposition for Cam Cam

The take-back model reinforces Cam Cam's business model by creating a systemic circular pathway that extends the product's lifespan beyond the initial user. By taking back items, Cam Cam can reintroduce them to the market or recycle the materials, generating economic value and reducing environmental impact. This model also enhances Cam Cam's brand reputation as a circular-oriented company, provides insights into product design and durability, and fosters greater customer loyalty. From a sustainability perspective, recovery programmes directly reduce waste, extend the life cycle of materials, and promote circular flows in textiles, contributing to a broader systemic impact.

### Customer journey

Customers use Cam Cam products until they no longer need them. They can then return them via designated collection points provided by Cam Cam. Once collected, the products are sorted, assessed for reconditioning, and returned to circulation or processed responsibly. Customers enjoy a simple, guilt-free return process, while Cam Cam gains visibility into product lifecycle and material recovery, reinforcing trust and commitment to circularity practices.

### Role of DPP

The DPP is essential for enabling a functional and reliable collection channel by:

- Collecting product history, including repairs, washes, and certifications.
- Recording product details, which helps determine items reconditionable.
- Facilitating customer participation by providing a QR code that links to collection instructions, drop-off points, or shipping labels.

In this scenario, the DPP acts as the informational thread that reduces information gaps and operational friction in the collection cycle.

This approach creates a system-level circular pathway that complements Cam Cam's current business model without completely restructuring it, while promoting long-term material recovery and brand trust. A detailed overview of the aspects of this scenario can be found in table 4 below:

Benefits - Advantages	Risks - Drawbacks
<ul style="list-style-type: none"><li>- Enables product recirculation and maximizes resource use.</li><li>- Strengthens Cam Cam's brand identity as a circular and responsible company.</li><li>- Provides data on product durability and failure patterns to inform design team.</li><li>- Enhances customer trust through visible long-term sustainability commitments.</li><li>- Supports small B2B partners with additional value-added services and access to refurbished products.</li></ul>	<ul style="list-style-type: none"><li>- Reverse logistics and collection require organizational effort and coordination.</li><li>- Limited scalability with large B2B partners due to complexity in logistics.</li><li>- Success depends on customer willingness to return products.</li><li>- Requires robust tracking of product</li><li>- Impact is largely dependent on effective system-level implementation rather than individual product actions.</li></ul>

Table 4: Scenario B Take-back System level

# Scenario B: Take back system

This model establishes a take-back and sorting system in which end-of-use products are collected. Items are evaluated, repaired, resold, donated, or recycled, embedding circular practices into the wider operational system and engaging multiple stakeholders.

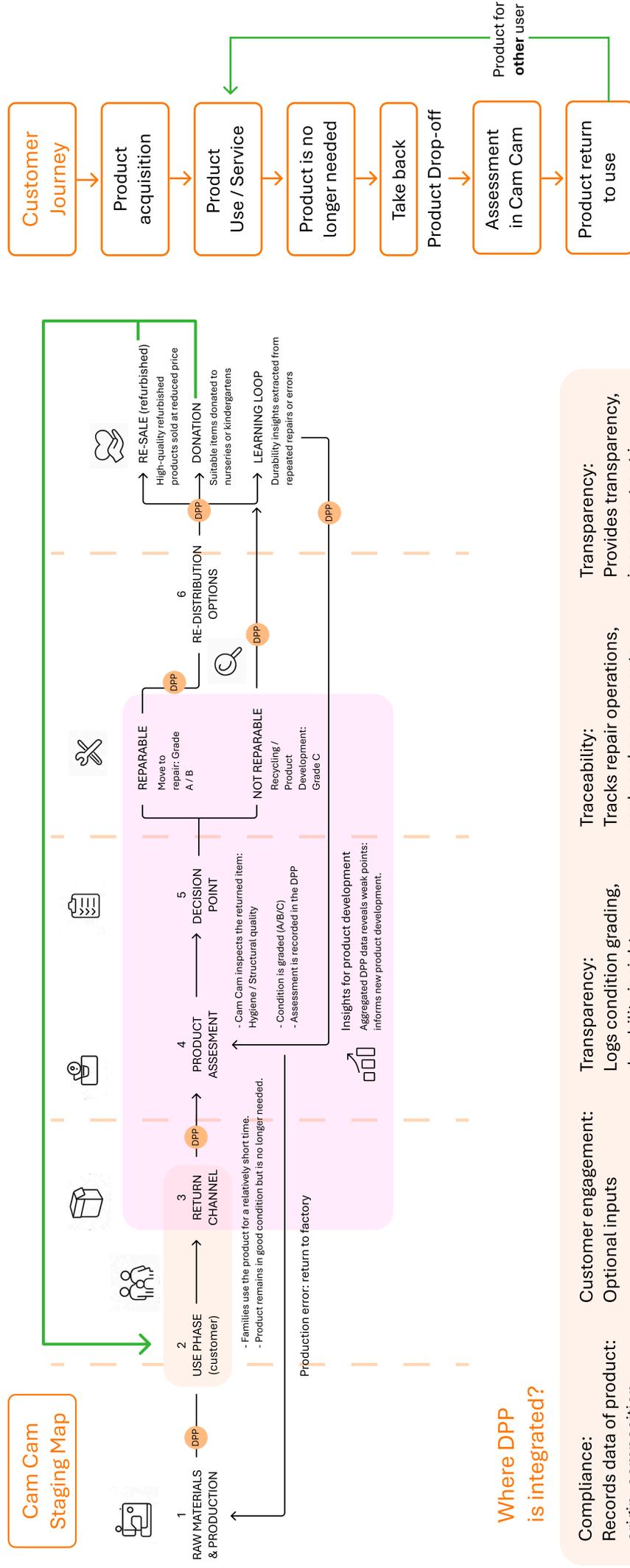


Figure 11: Scenario B, Take-back system

### C) Subscription – Business Model Level

This scenario examines a subscription-based model based on Baldassare et al (2020) in which Cam Cam provides customers with temporary access to selected product sets, which can be returned, exchanged, or upgraded after a defined period. The model is naturally suited to children's products, whose needs change rapidly, and meets the needs of parents seeking flexible, convenient, and responsible consumption options. By allowing multiple users to access the same products in succession, Cam Cam can extend the useful life of products, reduce overall consumption and generate recurring revenue, while differentiating the brand in the marketplace.

#### Value proposition for Cam Cam

The subscription model creates a systemic circular business approach by enabling controlled multiple-use cycles and extending the useful life of each product beyond a single owner. It strengthens the economic model by generating recurring revenue, creating opportunities for brand differentiation, and providing data-driven insights. From a circularity perspective, the model reduces material consumption, enables repeated reuse cycles, and decreases the environmental impact of children's products. It positions Cam Cam as a forward-thinking circular brand capable of delivering both economic and ecological value while responding to changing consumer needs.

#### Customer journey

Customers select a subscription package of Cam Cam products for a specified period. During use, the DPP tracks the product history, including condition checks and the number of rental cycles. At the end of the period, products can be returned, exchanged or upgraded. Returned items are cleaned, reconditioned if necessary, and prepared for the next user. Customers enjoy flexible and economical product service. They receive high-quality products, while Cam Cam obtains information about product performance, durability, and design improvements.

#### Role of DPP

The DPP plays a key role in:

- Tracking the product's history across multiple users.
- Standardizing cleaning and refurbishment criteria, ensuring the hygiene and safety.
- Providing transparency to customers, increasing confidence in multi-cycle products.
- Supporting operational decisions on when to repair, refurbish, resell, or retire items.

In this scenario, the DPP acts as a generator of evidence on quality and durability, with evaluations by the team during each cycle. This enables continuous product improvement and strengthens design-for-longevity strategies.

This approach represents a circular business model approach that affects the system as a whole rather than individual products. A detailed overview of the aspects of this scenario can be found in table 5 below:

Benefits - Advantages	Risks - Drawbacks
<ul style="list-style-type: none"> <li>- Generates new recurring revenue streams and predictable cash flow.</li> <li>- Strengthens brand differentiation through innovative, flexible service offerings.</li> <li>- Provides insights into product wear, usage patterns, and multi-use durability.</li> <li>- Reduces environmental impact by maximizing the utilization of each product.</li> <li>- Promotes retention and engagement.</li> </ul>	<ul style="list-style-type: none"> <li>- Requires significant operational and logistical infrastructure for collection, cleaning, refurbishment, and redistribution.</li> <li>- Higher organizational complexity and cost compared to product-level circular models.</li> <li>- Requires robust tracking and hygiene standards to maintain quality and safety.</li> </ul>

Table 5: Scenario C Subscription Business Model

# Scenario C: Subscription Model

This model offers families access to rotating batches of baby textiles through a subscription service. Products are returned once they are no longer needed and redistributed to new users, shifting the value from ownership to access and representing the most transformative and operationally demanding circular model for Cam Cam.

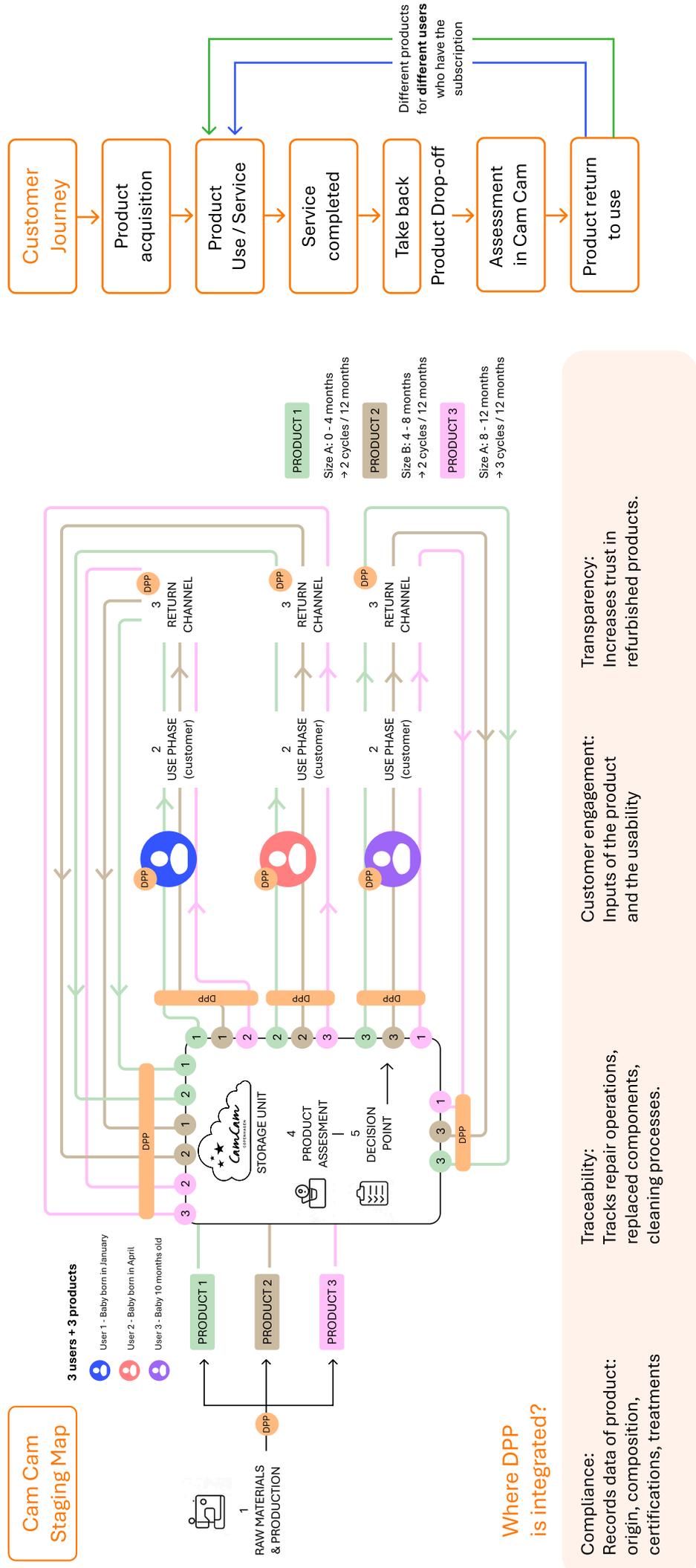


Figure 12: Scenario C, Subscription model

Based on the understanding that the DPP is both a regulatory compliance mechanism and a catalyst for organizational learning, it was necessary to translate these ideas into specific actions. Given that the three proposed circular scenarios depend on the DPP to different levels (Turunen et al., 2023). A roundtable discussion was organized with members from the design, logistics, operations, marketing, sales, and finance departments. The goal was to gather different perspectives on the feasibility of each scenario and understand how the DPP could realistically support their implementation.

To ensure a clear narrative, the conversation was structured into three segments, each dedicated to one scenario. As facilitator, each scenario was presented in detail, explaining the operational steps involved for Cam Cam, the implications of the user journey for consumers, and the specific role and added value of the DPP. To stimulate dialogue and ensure a comparable vision across the different scenarios, three guiding questions were posed:

1. What opportunities and challenges do you identify in each scenario in relation to your area (design, logistics, sales, marketing, finance)?
2. In what year do you consider the implementation of this scenario to be realistic?
3. Do you think the DPP could support or simplify the operational and logistical requirements of this scenario?

#### ROUND TABLE HIGHLIGHTS

The following section summarizes the key ideas from the roundtable discussion, highlighting the main points raised by the team and a selection of representative quotes.

##### **A) Extend Lifespan – Product Level**

The discussion around the first scenario was notably fluid and aligned, as all participants perceived it as a low-risk and minimally disruptive intervention that closely fits Cam Cam’s existing identity and operational structure. While initial concerns focused on the limited potential for direct monetary returns, the conversation gradually shifted towards a broader interpretation of value creation. In this sense, the model was seen less as a revenue-generating mechanism and more as a strategic tool to strengthen long-term customer relationships, increase brand trust, and sustain consumer engagement over time, for example through repair incentives, vouchers, or loyalty-based mechanisms. This reflects an understanding of circular value that extends beyond immediate financial metrics and incorporates relational and brand-based benefits.

##### Key reflections

- Perceived as the most immediate and feasible scenario due to its low level of internal disruption.
- Fits organically with the narrative of quality and durability associated with Cam Cam.
- Generates useful insights for design without requiring additional logistical efforts.
- Considered an ideal “first step” towards circularity without modifying the business model.

##### Quotes from the team

- Claudia (Operations): *“It’s low effort and low risk. No reverse logistics means we can keep things manageable.”*
- Nana (Marketing): *“Customers will understand this instantly. It reinforces longevity without overwhelming them.”*

##### **B) Take back – System Level**

The second scenario was widely interpreted as a logical progression from the repair-oriented model, offering greater circular impact through product recirculation, but also introducing higher levels of organizational complexity. Participants recognized that enabling products to move between multiple users could unlock additional value streams, such as refurbished resale or store credits, while simultaneously generating valuable insights into product durability and lifecycle performance.

However, concerns were more pronounced among representatives from operations, logistics, and marketing, who highlighted challenges associated with reverse logistics, coordination efforts, and quality control. In addition, the potential risk of reducing perceived brand exclusivity emerged as a key tension, indicating a delicate balance between circular ambition and brand positioning.

#### Key reflections

- Conceived as a more ambitious next step with greater circular impact.
- Requires careful design of reverse logistics and limited pilots with B2C and small B2B.
- Seen as a strategy that can strengthen customer confidence and demonstrate real circular commitment.
- Potential risk that products will lose the exclusivity valued by consumers.

#### Quotes from the team

- Nicholas (Finance): *“There are costs, yes, but if enough products come back in good condition, refurbished sales can offset them.”*
- Nana (Marketing): *“We need to ensure we communicate this without compromising the premium perception of the brand.”*

### **C) Subscription – Business Model Level**

The discussion of the subscription-based scenario was the most polarized among participants, revealing significant dilemmas and contrasting perspectives depending on departmental roles. While its transformative potential and strong alignment with long-term circular economy principles were broadly acknowledged, the scenario also triggered the greatest degree of uncertainty and concern. From a strategic perspective, it was recognised as a model capable of fundamentally reshaping value creation through repeated use cycles and recurring revenue streams.

However, operational, logistical, and financial stakeholders highlighted the substantial complexity such a model would entail, particularly in relation to product handling, hygiene standards, inventory management, and cost structures. These concerns contrasted with more exploratory perspectives from design and sustainability roles, which emphasized learning potential and long-term resilience. As a result, a shared understanding emerged that, if this model were to be pursued, it would likely need to be positioned as a long-term ambition and potentially supported through outsourcing key operational functions. Across all viewpoints, the protection of brand identity, perceived quality, and user satisfaction remained a central condition, underscoring the tension between innovation, feasibility, and brand integrity.

#### Key reflections

- Identified as the most innovative and transformative scenario.
- Offers opportunities for recurring revenue and market differentiation.
- Requires robust infrastructure and cross-functional coordination.
- Considered viable only in the long term.

#### Quotes from the team

- Sara (Design): *“The challenge is durability. Not all textiles are ready for repeated cycles, and we’d need stronger design-for-longevity standards.”*
- Trine (Sales): *“It could work, but only if we partner with someone who specializes in this. We can’t compromise operations and logistics if we’re the ones who have to carry it out.”*

The analysis of the three scenarios, together with the conclusions of the previous workshop and roundtable, highlighted how circular opportunities develop at different levels: product, system, and business model. The discussion also allowed for internal alignment, making each department's expectations, priorities, and concerns visible. These reflections are fundamental to understanding not only the feasibility of each scenario, but also the organizational readiness required to implement them. The ideas gathered during the roundtable discussion will serve as the basis for developing a set of practical recommendations that Cam Cam can implement to move towards a more sustainable and circular transformation.

## Answering Sub-Research Question 2

The starting point for this analysis is Baldassarre et al.'s (2020) paper, which discusses possible sustainable design frameworks in organizations and what these levels imply. For a small design-driven company like Cam Cam, the product, system, and business model levels have been proposed. These levels represent increasingly abstract transitions, from concrete improvements in products to organizational and infrastructure changes and therefore require varying degrees of internal adaptation and commitment. Three scenarios are proposed: a product-level, a system-level, and a business model-level. Each scenario describes not only a potential circular opportunity, but also the definition of the proposal, the roles of segments, the enabling functions of the DPP, and how this scheme would look visually. In this way, it demonstrates how the DPP can make abstract circular options part of the business strategy in a more viable and easier to understand way. It is important to highlight that these scenarios reflect different levels of organizational readiness: while product-focused interventions remain close to Cam Cam's existing linear operations, system- and business model-level scenarios introduce greater uncertainty and perceived risk, especially given that the current model is commercially successful. However, they also offer opportunities to anticipate regulatory changes, diversify value creation, and build long-term resilience. Each scenario is supported by a visual mapping system that helps reduce abstraction and facilitates internal understanding for non-expert stakeholders. These models will be shared with the Cam Cam team to gather feedback and assess their feasibility. Their responses will serve as the basis for answering the project's main question, about how the DPP can act as a catalyst for circular product development and strategic transitions towards sustainability.

### 4.3. The DPP as a catalyst for circular transition

Based on the knowledge generated through the analysis of implementation and the exploration of circular business model scenarios, this section summarises the results to address the project's overall research question. While the previous sections examined the DPP from an operational and strategic perspective, here the focus is on understanding its broader catalytic role in enabling circular product development and supporting long-term sustainability transitions within Cam Cam. By integrating empirical insights from internal activities with a systemic design perspective, this section reflects on how the DPP can go beyond regulatory compliance and actively shape organisational change.

RQ → How can the DPP operate as a catalyst to facilitate circular product development and support strategic sustainability transitions at Cam Cam?

The analysis indicates that the DPP can act as a catalyst for circular product development and strategic transitions towards sustainability at Cam Cam, functioning both as enabling infrastructure and as an organisational alignment mechanism. Beyond its intended regulatory function, the DPP introduces structured data practices that improve transparency throughout the product lifecycle, support informed design decisions, and reduce uncertainty related to future sustainability requirements (Feeney et al., 2023). In the three scenarios explored, based on the literature of Baldassarre et al. (2020), the DPP emerges as a common thread connecting product-level interventions with higher-level strategic considerations. By enabling the documentation of materials, production processes, end-of-life information, and potential post-use pathways, the DPP makes circular options more visible and operationally viable, even within the constraints of a small business. In this sense, the DPP reduces barriers to experimentation by providing a shared information base on which different circular strategies can be incrementally tested and evaluated. Importantly, the DPP also plays a key role in fostering organisational learning and cross-departmental dialogue. As a shared reference point, it facilitates communication between teams with different priorities and perspectives, making trade-offs, capabilities, and limitations more explicit. This supports a gradual and realistic transition towards circularity, avoiding disruptive or high-risk transformations. Overall, the DPP enables Cam Cam to move from a predominantly regulatory compliance-oriented approach to sustainability to a more strategic and systemic commitment to circularity, in line with its organisational capacity and long-term vision.

The following section provides a list of recommendations that will be presented to Cam Cam to assist them in transitioning to a more circular strategy. The recommendations will be divided into two sections: short-term (referring to scenarios A and B) and long-term (scenario C), and how the DPP can support their implementation.

### Short-term recommendations

Aligned with Scenario A: Repair-Oriented Model + Scenario B: Take-Back System

#### 1. Implement a minimum viable DPP framework

Start with essential product-level data (materials, care, durability attributes) and assign internal ownership. Creating the foundation needed for repair and take-back operations.

#### 2. Launch a lightweight repair programme

Develop repair guides linked to the DPP and offer a repair service. Provide a small selection of common textile problems and run a pilot test to assess actual user participation.

#### 3. Pilot a small-scale take-back system

Introduce a return-for-credit programme for B2C customers and a few small B2B partners. Use the DPP to verify product information and to support sorting, assessment, and refurbishment decisions.

#### 4. Collect and integrate durability and quality insights

Use DPP information (repair records, condition trends) to identify recurring failures and translate the insights into design improvements, procurement criteria, and product quality guidelines.

### Long-term recommendations

Aligned with Scenario C: Subscription Model

#### 1. Explore external partnerships for subscription logistics

Evaluate collaborations with third-party rental or subscription providers to test feasibility without requiring full internal infrastructure from the start.

#### 2. Strengthen design-for-longevity standards

Use insights from repair and take-back pilots to redesign key products for multiple use cycles (reinforced seams, durable closures, high-resilience fabrics).

#### 3. Expand DPP capabilities for multi-cycle tracking

Develop the DPP into a full lifecycle system capable of recording rental cycles, cleaning processes, refurbishments, and condition assessments to support subscription operations.

#### 4. Assess organizational and financial readiness

Model the operational demands and financial implications of a subscription model (costs, pricing, staffing, logistics). Use this analysis to determine if and when a subscription model becomes viable.

Overall, these recommendations provide Cam Cam with a structured and realistic pathway to begin navigating the transition to circularity. Rather than prescribing a single direction, they outline a range of possibilities, from low-risk product-level interventions to more transformative business model innovations, allowing the company to choose actions that align with its strategic priorities, operational capacity, and long-term vision. The figure 13 shows the different recommendations classified into the four levels of Baldassare et al. (2020).

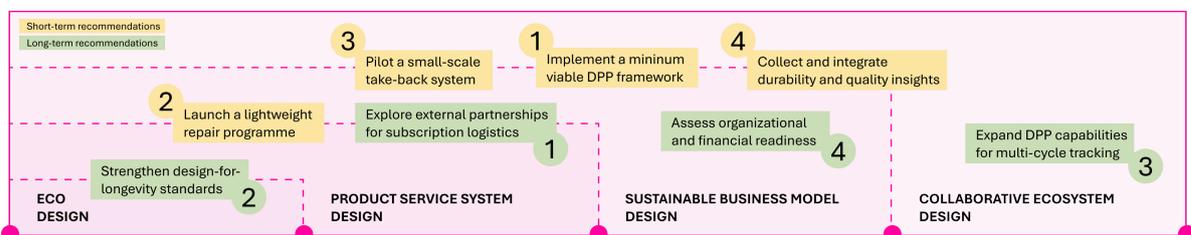


Figure 13: Recommendations for Cam Cam

This chapter has demonstrated that circularity is not a binary change, but rather a gradual process of organisational learning, experimentation, and capacity building. The ideas generated through the workshop, scenario development, and roundtable discussions now provide a basis on which Cam Cam can make informed decisions about its future direction.

## 5. Conclusion

Analysis of the baby clothing sector highlights a fundamental tension between market practices and sustainable design principles. Baby clothing tends to have a very short life cycle, as children grow quickly and outgrow their clothes. This raises the question of whether the production of collections, models, and trends is necessary. While brands such as Cam Cam thrive by offering a wide variety of products with different styles and prints, a more systemic approach to sustainability would require questioning which products are truly essential to consumers and which contribute to unnecessary resource use and waste generation. From a circular perspective, there is a clear opportunity to reevaluate the product portfolio, prioritizing quality, versatility, and longevity over variety and fashion cycles.

### 5.1. Key learnings for Sustainable Design Engineering

The practical work carried out during this project revealed several insights relevant to the master's degree in sustainable design engineering. These insights highlight the gap between theoretical frameworks and real-world constraints, as well as the organizational factors that shape sustainability practices. The main conclusions are the following:

- **Theory versus reality:** There is often a significant gap between circular design principles and their practical application due to business constraints and a lack of technical expertise.
- **Business priorities:** Profitability often takes precedence over sustainability concerns; initiatives that do not directly contribute to revenue are rarely considered a priority.
- **Sustainability perspective:** Within companies, sustainability is often framed in terms of regulatory compliance or marketing, rather than as a core design principle.

### 5.2. Limitations and future directions

This project was conducted with the intention of producing realistic and practically relevant outcomes for Cam Cam. However, certain limitations emerged during its execution, particularly with regard to access to detailed product data and fluid communication with suppliers. While the DPP presupposes transparent information flows throughout the supply chain, such data was not always readily available or structured in a consistent manner. Rather than viewing this limitation as a definitive barrier, the project focused on internal preparation within the organisation. The work therefore emphasised internal coordination and common understanding among teams, enabling Cam Cam to clarify what data is needed, for what purpose, and how the DPP could be used as a strategic enabler of sustainability. Strengthening internal alignment is seen as a necessary first step before more advanced collaboration with external suppliers can be effectively established.

Based on the results of this project, several directions for future research and practical applications can be identified. These directions aim to explore the potential for more sustainable business models and product strategies in the children's clothing sector and related industries:

- **Expansion of sustainable principles:** explore the applicability of sustainability-focused approaches to other product categories, such as furniture.
- **Profitability analysis:** evaluate the economic performance of different product models and financing structures to identify sustainable business opportunities.
- **Segmentation strategies:** Develop customized B2C and B2B approaches to better tailor products to consumer needs and company objectives.
- **Pilot testing:** conduct experiments with alternative business models to assess viability, consumer response, and environmental impact.

In conclusion, this project highlights the need for a more systemic approach to sustainable design in the baby clothing sector. By critically examining product necessity, life cycle, and business practices, it becomes clear that sustainability cannot be based solely on marketing or regulatory compliance. Future efforts should focus on aligning business strategies with environmental responsibility, optimizing product portfolios, and exploring innovative models that balance profitability with significant reductions in resource use and waste.

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