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## **The Strategic Durability of Digital Product Passports**

*A New Perspective to Raise the Ambition*

Haase, Louise Møller; Lythje, Line Sand; Skouboe, Esben Bala; Petersen, Morten Lund

*Published in:*  
PROCEEDINGS 5th PLATE Conference

*Publication date:*  
2023

*Document Version*  
Publisher's PDF, also known as Version of record

[Link to publication from Aalborg University](#)

*Citation for published version (APA):*  
Haase, L. M., Lythje, L. S., Skouboe, E. B., & Petersen, M. L. (2023). The Strategic Durability of Digital Product Passports: A New Perspective to Raise the Ambition. In N. Kirsi, & C. Kirsti (Eds.), PROCEEDINGS 5th PLATE Conference: The 5th Product Lifetimes and the Environment Conference in Aalto University, Espoo, Finland, 31 May – 2 June, 2023 (pp. 366-372). Aalto University.

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5<sup>th</sup> PLATE 2023 Conference

Espoo, Finland - 31 May - 2 June 2023

## The Strategic Durability of Digital Product Passports: A New Perspective to Raise the Ambition

Louise Møller Haase<sup>(a)</sup>, Line Sand Lythje<sup>(a)</sup>, Esben Bala Skouboe<sup>(a)</sup>, Morten Lund Petersen<sup>(b)</sup>

a) Aalborg University, Aalborg, Denmark

b) Fritz Hansen A/S, Denmark

**Keywords:** Digital Product Passport; Product longevity; Strategic Durability; Circular Economy.

**Abstract:** Digital product passports (DPP) are identified as a key element to contribute to the circular economy. DPP focuses primarily on the collection of product and material information from a manufacturing perspective all the way throughout the supply chain and is planned to be implemented through policy development toward 2030. However, we argue that if we unfold the strategic potential of DPP to make it more attractive to companies, we can speed up this implementation. Accordingly, this paper goes beyond the environmental benefits of DPP by proposing a conceptual framework for DPP services that can increase the product's value both from a user, market and company perspective. Through the concept of strategic durability, the paper contributes with a new perspective on DPPs, namely how companies through digital passport services can: 1) strengthen relationships to customers, 2) sustain and accentuate the company's values and competencies, and 3) generate long-lasting competitive advantage in the market. Finally, the paper qualifies the new concept for digital passport services based on a company case (Fritz Hansen A/S) to exemplify what this conceptualization will mean in the furniture industry.

### Introduction

Digital product passports (DPP) are identified as a key element to contribute to the circular economy (Adisorn et al., 2021) particularly pushed by policy development at the level of the European Union (EU) as part of the European Green Deal (European Commission, 2019) and the Circular Economy Action Plan (European Commission, 2020). Here DPP is identified as new means of gathering product and material information as a vital step for an effective circular approach. The aim is to provide all involved actors to have a better understanding of a product's composition, the environmental impact of the production and use phase, and the recycling options at the end of the product lifecycle (Plociennik et al., 2022), and thereby improve products' durability, reusability and repairability.

The implementation of DPP is currently discussed on a policy level and relies on policy action and regulations which means that the implementation process may happen relatively slow (Walden et al., 2021; Plociennik et al., 2022) and an applicable and holistic DPP approach is still being determined (Adisorn et al., 2021). Moreover, there are still ongoing discussions about the degree of required

information to achieve circularity (see e.g. Eppinger et al., 2021; Walden et al., 2021).

Some of the legal requirements for DPP is that manufacturers provide comprehensive information about a product's traceability, repair and dismantling options as well recycling guidelines. At the current state, the concept of the DPP focuses primarily on the collection of product and material information from a manufacturing perspective all the way throughout the supply chain and it will be implemented through policy development. As such, the current focus is on the products' physical properties that will increase the closing and slowing of resource loops.

However, in line with Plociennik et al. (2022), we argue that other type of information is equally important to the circular economy, especially for slowing down the resource loop, namely information that will also strengthen the strategic durability of a product. For instance, it is not enough that the product itself is repairable if the user for some reason does not want to repair it. Likewise, the repairable act should also make sense to the company in a way that is strategically beneficial in the long term. Finally, the DPP could also have some strategic benefits in regard to a company's market

positioning. Such user, market and company perspectives are highly overlooked in current discussions on DPP.

In this conceptual paper, we unfold the potential of DPP beyond the environmental benefits by proposing a conceptual framework for DPP services, that can support the development of the DPP from a company, market and user perspective with the intention of speeding up the implementation of DPPs. The research question explored in this paper is following: *How can we make the concept of DPP strategically relevant to companies and thereby speeding up the implementation process?*

Accordingly, with a strategic view on DPP, this paper contributes with a new perspective on DPPs, namely how companies through digital passport services can strengthen a product's strategic durability and thereby increase the product value in regard to both users, market positioning and the company.

This new perspective on DPP intends to make its implementation more attractive for companies (and not only a legal requirement that concerns a product's physical aspects) thus speeding up the implementation process. Finally, the paper aims to qualify the new concept for digital passport services based on a case company, Fritz Hansen A/S, to exemplify what this conceptualization will mean in the furniture industry.

This paper is structured as follows: First, we review the concept and framework of strategic durability that is a central aspect of designing products with high longevity. Then we conceptualize the DPP in respect to strategic durability, specifying how a DPP can support a product's strategic durability and thus increase value in respect to user, market and the company perspectives, supported by an example from the furniture industry.

Finally, we discuss how the strategic perspective on DPP is also relevant for other industries and suggest possible future research avenues to be explored.

### **Strategic durability**

In this paper, we propose that DPP can be seen as an integrated part of a long-lasting product's value proposition. To achieve this, we suggest the framework of strategic durability (Haase and Laursen 2022) as a starting point to further develop the concept of DPP and to add this new

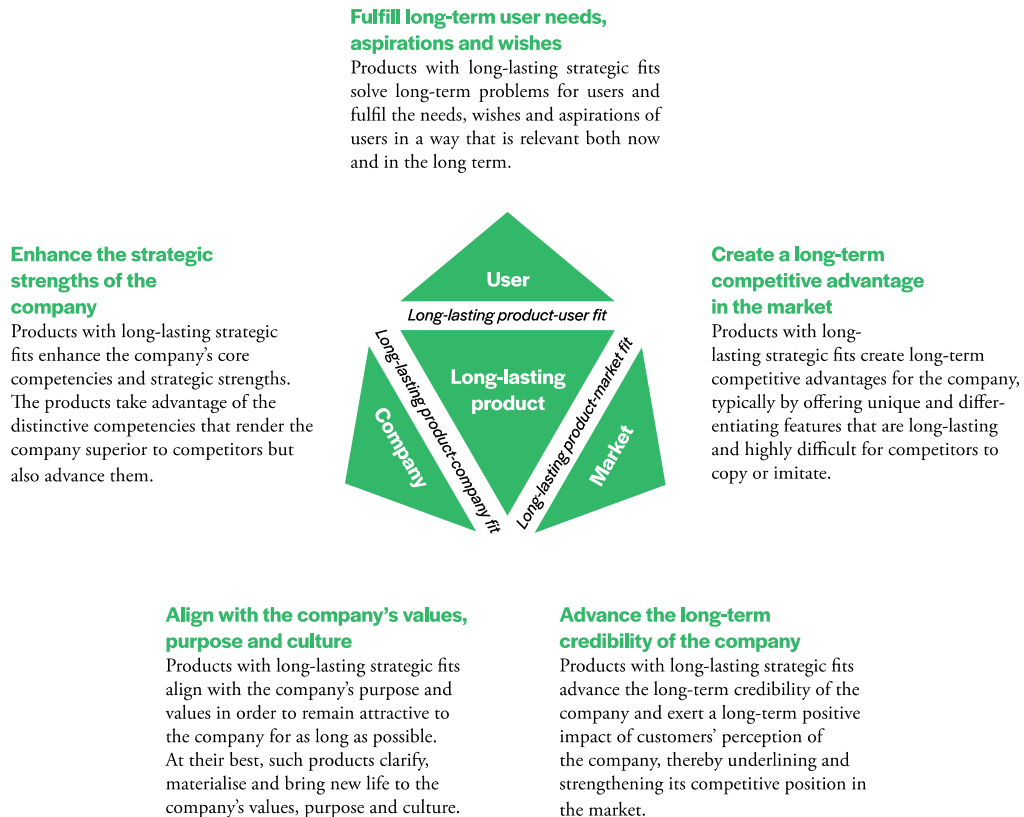
perspectives on the strategic potential of DPP for products with high longevity.

If we look at current studies on circular economy, the majority of circular strategies focus on the technical, functional and material aspects of products to close or slow down resource cycles (Lofthouse and Prendeville, 2017). While these strategies are vital steps to achieve sustainability, there are additional aspects that are equally important but highly overlooked in current research; that is the competitive and strategic aspects of products that also have a vital influence on a product's lifetime. These aspects are addressed in terms of 'strategic durability' (Haase and Laursen, 2022).

In their book, Haase and Laursen (2022) describe strategically durable products as products that have long-lasting strategic fits to both the user, the market and the company. This means that a product must both fulfill long-term user needs, create long-term competitive advantage in the market and be strategically relevant to the company in the long term (see Figure 1).

This framework is highly relevant to unfold and understand the competitive and strategic potential of DPP as well; a focus that is highly overlooked but could be an important parameter for companies. In such case, the implementation of DPP would then be perceived as an attractive tool for companies to escape trap of greenwashing because it shows and documents the company's efforts, thus the DPP becomes attractive to companies to enhance the strategic durability of their products. Accordingly, the implementation process could also be pushed by companies, which would speed up the implementation process.

In the following section, we propose a conceptual framework that describes what strategic durability would mean in the context of DPP.



**Figure 1: A product with strategic durability has long-lasting strategic fits to the user, the market and the company (Haase and Laursen, 2022)**

## The new DPP service: supporting the strategic durability of products with high longevity

Based on the framework for strategic durability, we created a conceptual model for how DPP can serve as an aid to support the longevity of products and thus become an integrated part of a product's long-term value proposition. The following describes the general model for how companies can increase the product value from a user, market and company perspective (summarized in Figure 2).

### *Increased value in respect to the user*

First of all, the new DPP service must support the product in fulfilling long-term user needs, aspirations and wishes.

To accomplish this, the DPP must include unique features to the product that becomes an important part of the product's value proposition. For instance, the DPP could include information about the product's unique story that supports or increases the longevity

value of the product (see the Fritz Hansen case for an example).

### *Increased value in respect to the market*

Secondly, the new DPP service must support the product in creating long-term competitive advantage in the market and advance the long-term credibility of the company.

This means that the DPP should include differentiating features that would be difficult for competitors to copy and affect the customers' perception of the company in a positive and sustainable direction (see the Fritz Hansen case for an example).

### *Increased value in respect to the company*

Finally, the new DPP must support the enhancement of the company's strategic strengths and competencies, and align with the company's long-term core values, purpose and culture.

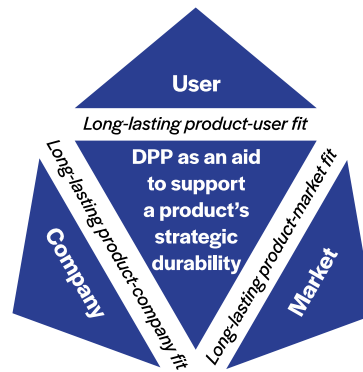
This means that internal processes in the company (such as production or specific technologies) needs to be long-term relevant

**The product passport must**

support the solution of long-term problems for users and fulfil the needs, wishes and aspirations of users in a way that is relevant both now and in the long term.

**The product passport must**

support the enhancement of the company's core competencies and strategic strengths. The products take advantage of the distinctive competencies that render the company superior to competitors but also advance them.



**The product passport must**

support the creation of long-term competitive advantages for the company, typically by offering unique and differentiating features that are long-lasting and highly difficult for competitors to copy or imitate.

**The product passport must**

align with the company's purpose and values in order to remain attractive to the company for as long as possible. At their best, such products clarify, materialise and bring new life to the company's values, purpose and culture.

**The product passport must**

support the advancement of the company's long-term credibility and exert a long-term positive impact of customers' perception of the company, thereby underlining and strengthening its competitive position in the market.

**Figure 2: Conceptual model for DPP as an aid to support a product's strategic durability**

for the company to sustain and enhance the credibility and longevity value in the company (see the Fritz Hansen case for an example).

**The strategic potential of the new DPP in the furniture industry: the case of Fritz Hansen**

This section unfolds the new conceptualization with examples from the case-company Fritz Hansen A/S (summarized in Figure 3). Fritz Hansen A/S is a well-known Danish company producing high-end luxury furniture, lighting and home accessories designed by Danish and international designers. The company has a long and rich history of crafting iconic and lasting products such as Arne Jacobsen's Egg, Swan and Series 7 chairs. Core values are premium quality, expert craftsmanship and high-end materials. Fritz Hansen has made different initiatives to keep their products alive for as long as possible, such as refurbishment programs and takeback systems. Some products in their refurbishment

process are more than 50 years which proves the longevity of their products.

Fritz Hansen A/S has been involved in an ongoing research process where we discussed the possibility of how a DPP could support their products and business with specific focus on the longevity challenge. The work is based on a close collaboration between the management teams in the company (strategic business development, CSR and product development respectively) and researchers in the field in a period of one year. This resulted in data based on presentations, a research application, visits and meetings during this collaborative process.

*Ownership documentation (user value)*

In the specific case of Fritz Hansen, one of the long-term problems that were identified from a user perspective was the risk of having the products stolen. In such case, a main benefit of the DPP could be "ownership documentation"

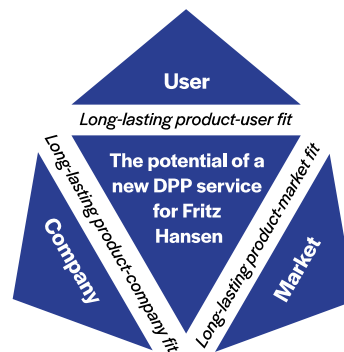
### Ownership documentation

The DPP includes information about who is the owner of the specific product. This would make the product a safe investment for Fritz Hansen's customers because it would hamper thieves to resell stolen products.

Another benefit would be the story that comes with a used product. For instance, it could increase the value of a chair that has lived at a famous location or at an interesting person.

### Copyright protection

The DPP is a possibility to protect core competencies in the company and copyright on their products. Today, production, repair and refurbishment services are located in Denmark to ensure the high-quality development and protect copyright. However, with the new DPP, Fritz Hansen could share and scale their core competencies to international partners and at the same time protect their copyright with the DPP.



### Product lifetime information

The DPP would support the creation of unique and differentiating features by including information about maintenance, repair and restoration. For instance, the user could verify that a chair is repaired or restored at an authorized partner with approved fabrics or other materials.

### Copyright protection

Copyright protection is furthermore a possibility for Fritz Hansen to enhance the company's core values on longevity as the process of keeping their products alive is both more convenient for the customers and sustainable for the planet.

### Product lifetime information

Information about the product's lifetime would support the advancement of Fritz Hansen's long-term credibility as a company and thus strengthen their competitive positioning in the market.

**Figure 3: The strategic potential of the new DPP service in the case of Fritz Hansen**

that is information about who is the owner of that specific product. This would make a Fritz Hansen product a safe investment for their customers because it would hamper thieves to resell stolen products.

Another benefit of an "ownership documentation" would be the story that comes with an older used product. For instance, it could increase the value of a chair that has lived at a famous location or at an interesting person.

### *Product lifetime information (market value)*

Besides ownership documentation, Fritz Hansen also sees the potential that the DPP can support the creation of unique and differentiating features by including information about maintenance, repair and restoration. For instance, the user could verify that a chair is maintained, repaired or restored at an authorized partner with approved fabrics or other materials, just like a service manual for a car that includes information about previous owners' caring. This will also serve as a tool for

secondhand sale at auctions to proof validity and track product history.

Information about the product's lifetime would furthermore support the advancement of Fritz Hansen's long-term credibility as a company and thus strengthen their competitive positioning in the market.

### *Copyright protection (company value)*

Finally, the DPP is a possibility for Fritz Hansen to protect their core competencies in the company and copyright on their products.

Today, production, repair and refurbishment services are located in Denmark and Poland to ensure the high-quality development and to protect their copyright. This means that if products are to be repaired or restored, they need to be shipped to Denmark which is neither a sustainable solution nor a convenient solution for the customer. However, the current challenge for Fritz Hansen is that if their core competencies are shared, there is a risk that products easily get copied. But with the new DPP, the company could actually share and

scale their core competencies to international partners and at the same time protect copyright on their products with the DPP.

This initiative is furthermore a possibility for Fritz Hansen to enhance the company's core values on longevity as the process of keeping their products alive is both more convenient for the customers and sustainable for the planet.

### **Discussion and conclusion**

In this paper, the aim was to explore the strategic potential of DPP to make implementation attractive to companies and thus speed up the implementation process.

Based on the framework of strategic durability, we conceptualized the DPP as an integrated part of a product's value proposition in respect to both the user, the market and the company. This conceptualization was concretized with an industry example based on close collaboration with the furniture company Fritz Hansen A/S.

#### *Implications for research*

This paper has contributed with a new perspective on the DPP that is relevant in the context of products with high longevity to strengthen their strategic durability. However, this research is still initial and conceptual which means that more research is needed to qualify its potential in a broader perspective and other industries. Accordingly, we suggest a number of research avenues to be addressed in future studies:

First, it would be interesting to explore how companies can work with the strategically durable product passport in practice and in different contexts. This would require an experimental approach in order to detail and qualify the framework for application in practice. Second, there is an ongoing discussion on how to communicate information to a multitude of stakeholders in a product's lifecycle (users, manufacturers, recyclers, etc.) and on which platform to access information (Plociennik et al., 2022). This is still a topic that needs investigation.

Finally, with this new perspective on DPP there is a need to investigate how the strategic aspects addressed in this paper would meet the policy requirements in practice in DPP.

#### *Implications for practice*

This paper illustrated how the new DPP service would support and enhance Fritz Hansen's sustainable business model.

In particular, the company showed a very positive attitude to the new concept because it could work as a central means to solve some of the strategic challenges in a circular economy context but also to enhance their sustainable profile with differentiating features in their products. This work has now resulted in an implementation process at the company.

While the abovementioned example shows a great potential of the new DPP in the furniture industry, the strategic perspective on DPP would be highly relevant for other industries as well where products with high longevity are a central part of a company's business model. We hope that this work would inspire other companies and industries to find the strategic benefits of the DPP that could increase value for the users, the market and the company (and not only the environmental benefits driven by policy development) to make implementation of DPP attractive and meaningful in practice.

### **Acknowledgments**

The authors thank the people from Fritz Hansen A/S for the collaboration, interest and the valuable insights in the process of conceptualizing the digital product passport service.

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5<sup>th</sup> PLATE Conference Espoo, Finland, 31 May - 2 June 2023

**Louise Møller Haase, Line Sand Lythje and Esben Bala Skouboe**

The Strategic Durability of Digital Product Passports:  
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