

1st ICCS event: Digital Product Passport &
Tracing: projects joining forces

Digital product passports as an enabler for circular furniture flows

Dr. Sara Fallahi, Director Technologies for Interaction
RISE Research Institutes of Sweden

antrop

CHALMERS
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With financial support from:

VINNOVA
Sveriges innovationsmyndighet

VÄSTRA
GÖTALANDSREGIONEN



interior cluster
sweden



Kinnarps

LAMMHULTS

Lundbergs
MÖBLER



SWEDESE



white



antrop

Maria Klint
Therese Glimskär
Amanda Mair



Max Bekken Björkman
Karolina Kazmierczak

**RI.
SE**

Derek Diener
Sara Fallahi
Peter Ljungstrand
Hanna Lindén
Niels Stor Swinkels

**RI.
SE**

ENDURANCE

Insights for designing for extended lifespan, information that enables repair/remanufacturing.
Easier to manage furniture-as-a-service, which should change incentive structures.

RECIRCULATION

Better knowledge of material content makes it easier to 'approve' materials for recycling that would otherwise have been incinerated due to the precautionary principles.

UTILIZATION

Better inventory management and tracking enable higher utilization, primarily by minimizing the storage of furniture that is needed elsewhere.

REGENERATION

Easier to avoid the use or incorrect reuse of harmful/toxic substances... prevent harmful outcomes and choose products that are made with renewable energy and materials.

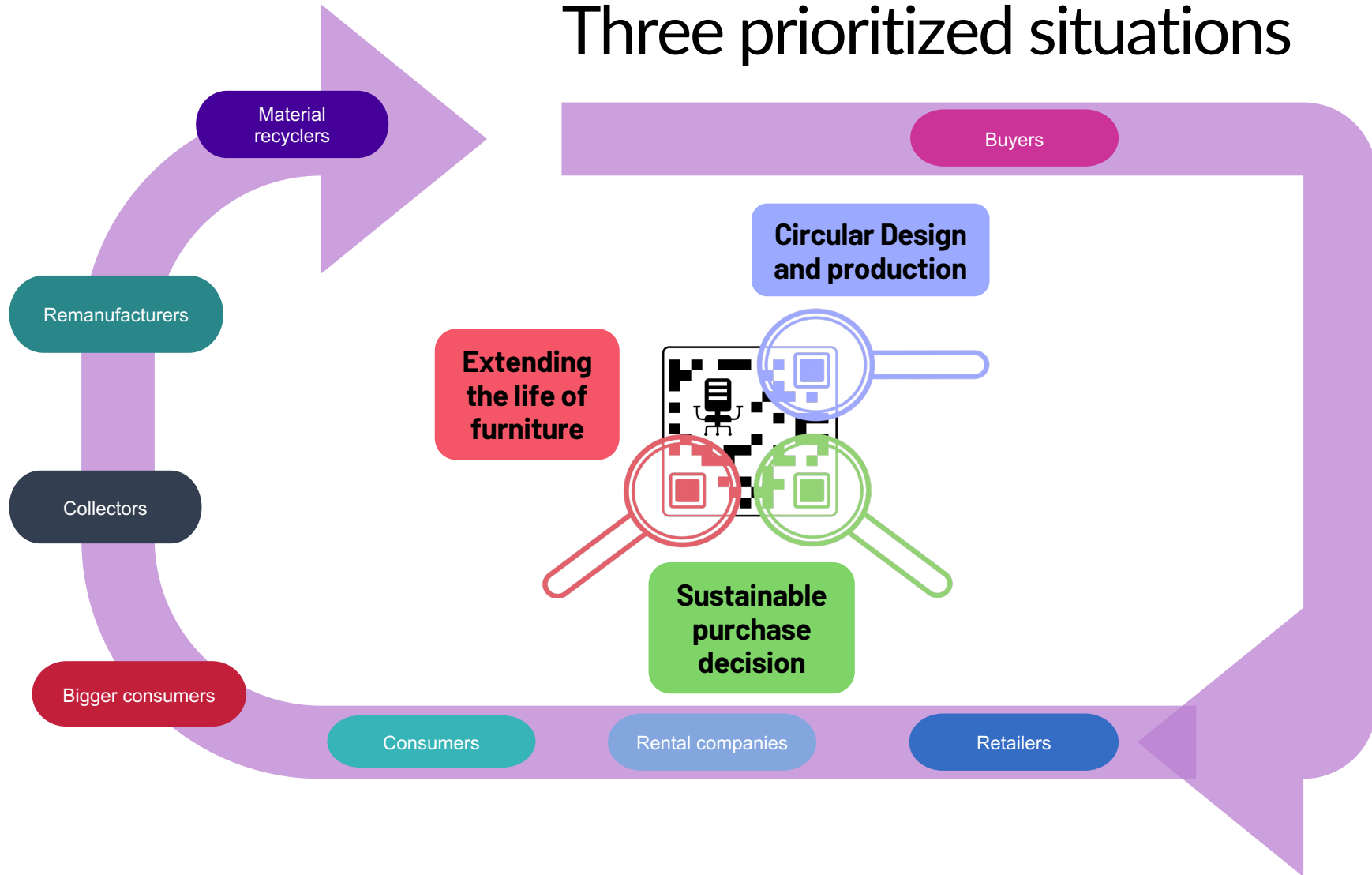
Product passports can enable higher circularity in products

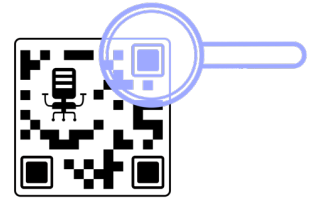


Measuring circularity

More information (and higher information quality) enables better estimates of circularity (and resource use).

Three prioritized situations





How can digital product passports encourage manufacturers to design and produce furniture that follow circular principles?

Information points for furniture in a DPP

- An increased flow of information and transparency is not enough → Also important need for **enviornmental and sustainable furniture**
- No suggestion is provided on **how “circular information points” should be expressed** to work within an information-sharing standard where the information and underlying data should be machine-readable without human intervention.
- Used **three example pieces** of furniture to work in a more 'realistic' context.
- Updated proposal for a list of **information points** that was tested on the three example pieces of furniture in a gap analysis
- Design for **“Repairability”** was identified as a particularly interesting area to explore further.

Lundbergs
MÖBLER

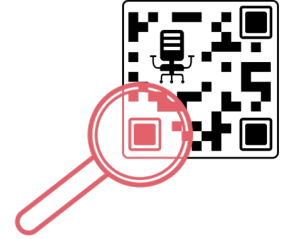


LAMMHULTS



SWEDESE



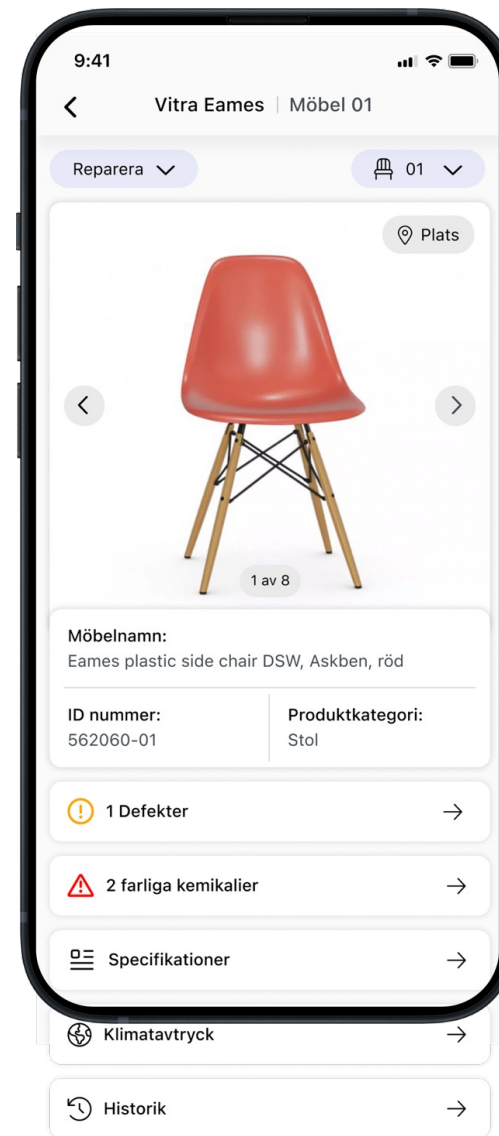


How can digital product passports enable different actors along the value chain to extend the life of furniture?

"Swedish households throw away approximately 170,000 tons of usable furniture at the dump each year. This is equivalent to about 10 million beds, sofas, tables, shelves, and chairs."

Assessment and repairs

- Support for assessing the fate of a piece of furniture, as well as more and higher-quality repairs
- Assessment support
- Repairability
- Repair guides
- More people can perform better repairs
- Not just 'own furniture'
- 'Hybrid furniture'



User-friendly information

EPREL Public website

eprel.ec.europa.eu/screen/product/dishwashers2019/1656069

Siemens

SN77ZX06CE

General information

B **A** **G**

14 x

Overall dimensions	82 (Height) x 60 (Width) x 55 (Depth)	cm
Energy efficiency Index for the eco programme (EEI)	37,9	
Cleaning performance index for the eco programme	1,121	
Drying performance index for the eco programme	1,061	
Energy consumption [per cycle, based on the eco programme]	0,645	kWh
Energy consumption [per 100 cycles, based on the eco programme]	65	kWh
Water consumption [per cycle, based on the eco programme]	9,0	litres
Programme duration for the eco programme	3:35	(h:min)
Type	Built-in	
Airborne acoustical noise emissions for the eco programme	40	dB(A) re 1 pW
Airborne acoustical noise emission class for the eco programme	B	(A-D)
Off-mode	-	W
Standby mode	0,50	W
Delay start	4,00	W
Networked standby	2,00	W
Minimum duration of the guarantee offered by the supplier	24	months

Download the label for printing

Download the label in high resolution formats

Only the PDF version is suitable for printing with the correct colour codes

ENERGIA

Y UA
IE IA

A+

A

B

C

D

E

F

A

ENERGIA · ENERGIA
ENERPEIA · ENERGIJA
ENERGY · ENERGIE
ENERGI

89 kWh/annum

61 Watt

102 cm

40 inch

2010/1062 - 2014

Digital Product Passport

Plus 6

Kinnarps

Reparerbarhet

56

Klimatavtryck

81.29 Kg CO2e

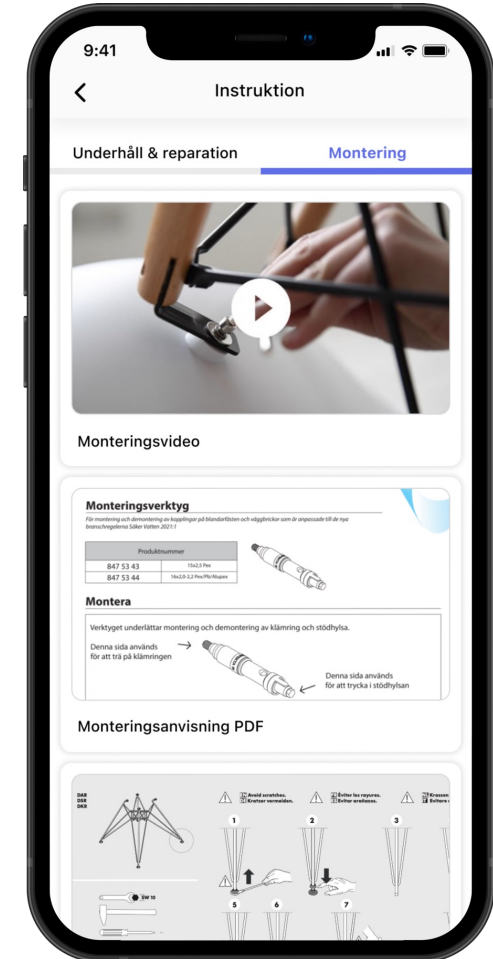
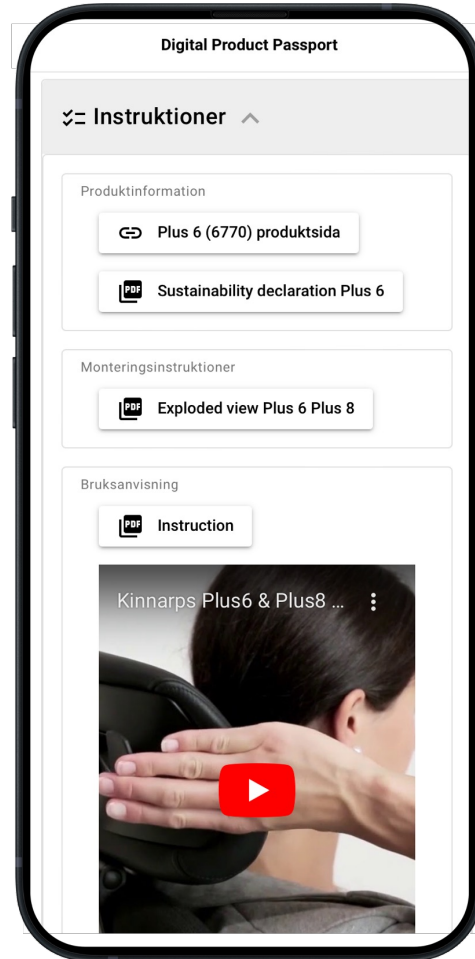
NF

OFFICE EXCELLENCE CERTIFIED

MÖBELLFAKTA

User-friendly instructions

- Assembly instructions
- Videos, images, and illustrations
- Step-by-step instructions



Add data at individual level

- Ability to add information for each individual piece of furniture throughout the entire product journey.
- The furniture's 'service book'
- Upstream and downstream

9:41

< Registrera defekt

Möbel 01

Defekt 1 *

Bild på skada *

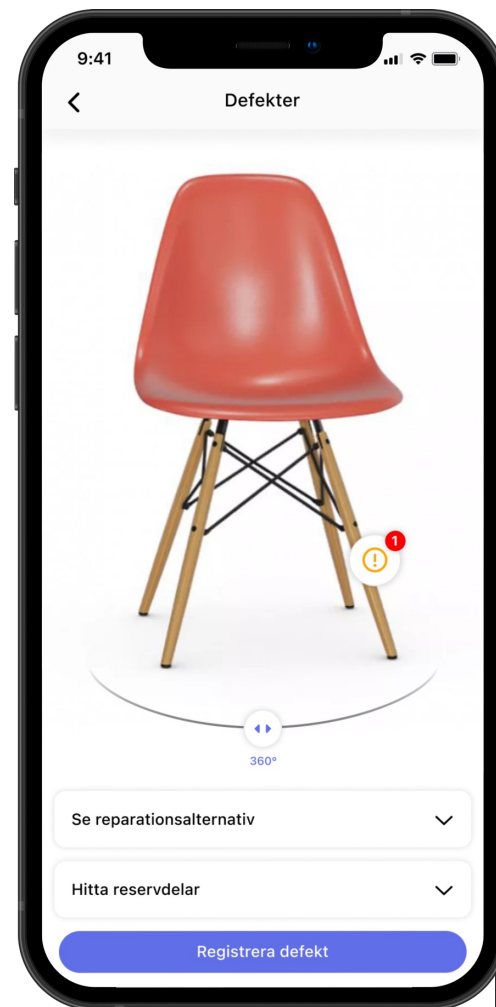
Bild på eventuellt slitage

Skick * [Info om klassificering](#) ⓘ

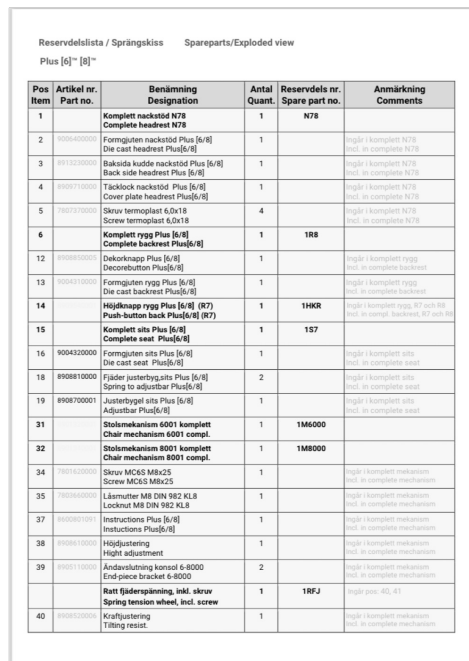
Antal (st.) * Ursprungligt pris (kr)

1

Lägg till defekt

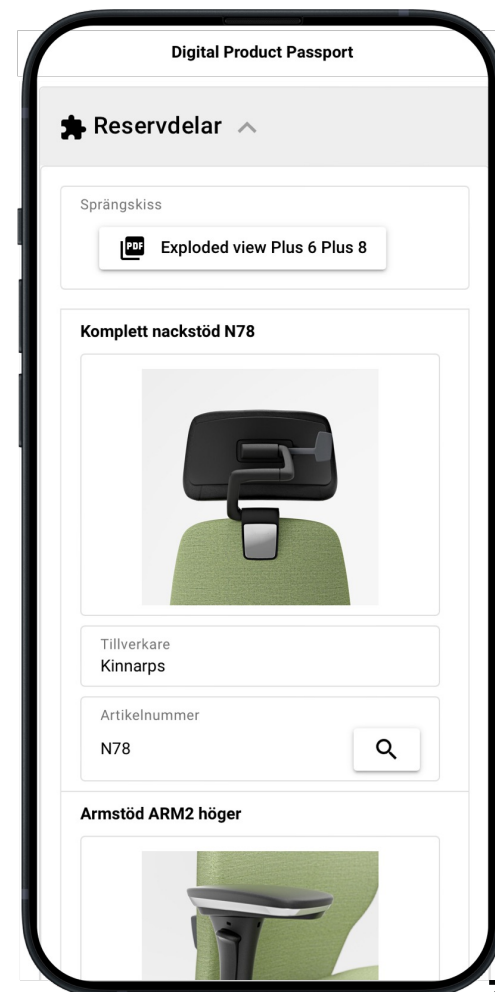
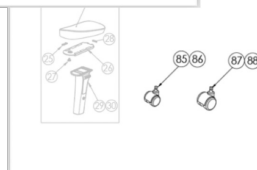


RESERVDELSLISTA



STATUS PÅ DELAR

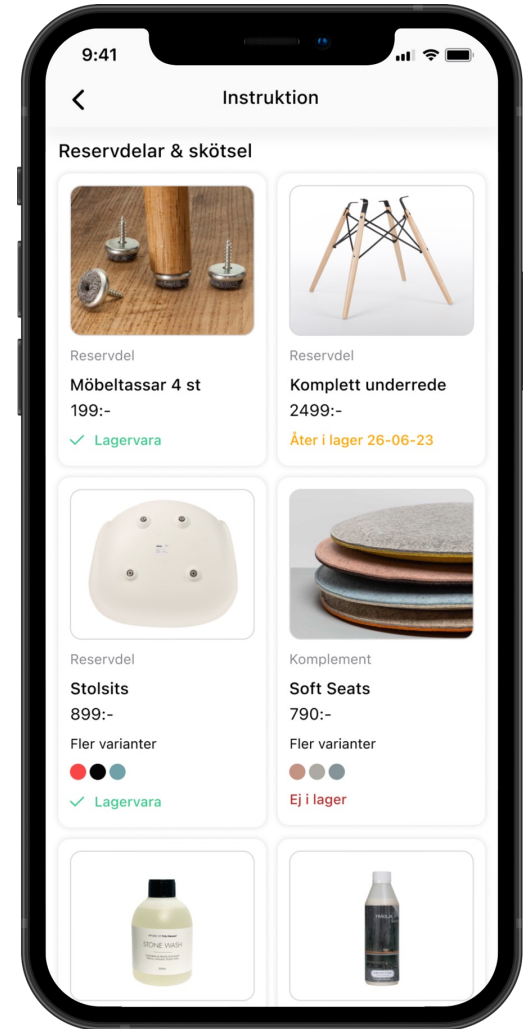
	1	1ARM4H	Ugnet, sàljs som par Discontinued, Only sold in pairs
Armledare guide	1	1ARM4MH	Ugnet, sàljs som par Discontinued, Only sold in pairs
Armledare guide	1	1ARM4PHU	Ugnet, sàljs som par Discontinued, Only sold in pairs
armedare without arm	1	1ARM4U	Ugnet Discontinued
armedare without arm	1	1ARM6PU	Ugnet Discontinued
	1	1ARM6V	Ugnet, sàljs som par Discontinued, Only sold in pairs
Armledare guide	1	1ARM6VU	Ugnet, sàljs som par Discontinued, Only sold in pairs
Armledare arm guide	1	1ARM6PVU	Ugnet, sàljs som par Discontinued, Only sold in pairs
	1	1ARM8EST	Ugnet Discontinued -left: pos. 78, 79, 80, 81 -end: item 78, 79, 80, 81
	1	1BOHJUL	Ugnet Discontinued
	1	1BOHHJUL	Ugnet Discontinued
	1	1BOHJUL65	Ugnet Discontinued
	1	1BOHHJUL65	Ugnet Discontinued



Furniture-specific e-commerce for spare parts"

Can the product passport function as an e-commerce platform?

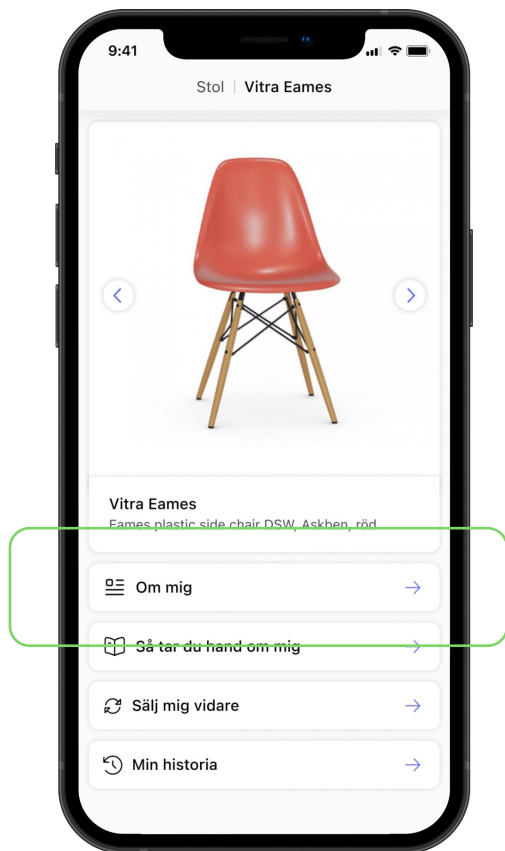
- Present spare parts as products:
- Product image
- Price
- Delivery time
- Stock status



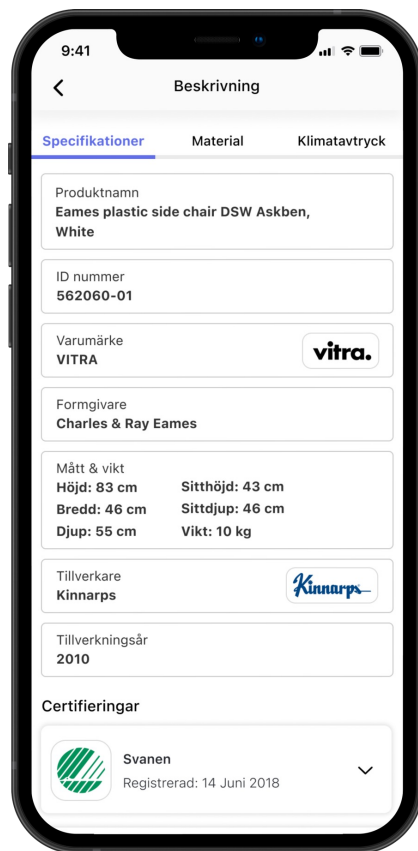


How can digital product passports
support customers in choosing
circular/sustainable/used furniture?

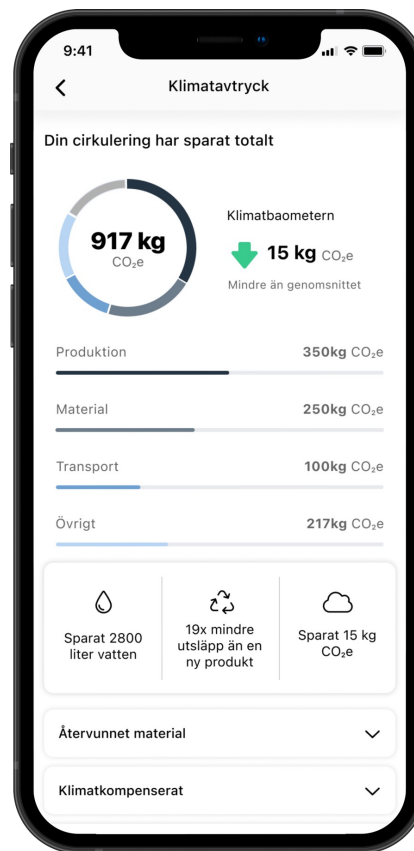
Support in purchasing decisions



This is where you end up when you have scanned the QR-code on the chair.



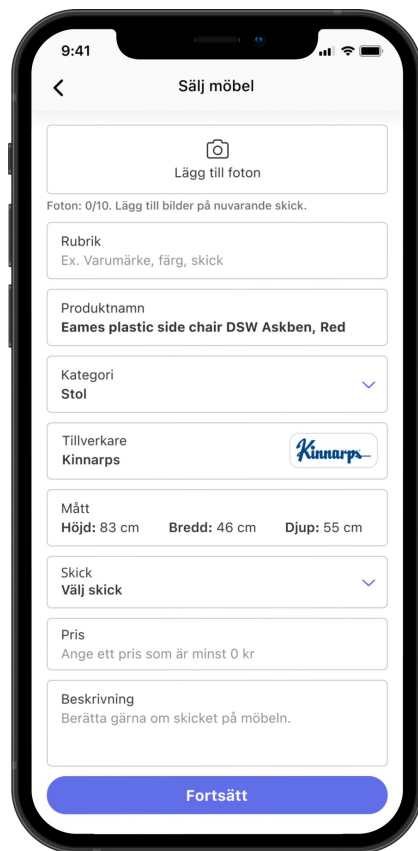
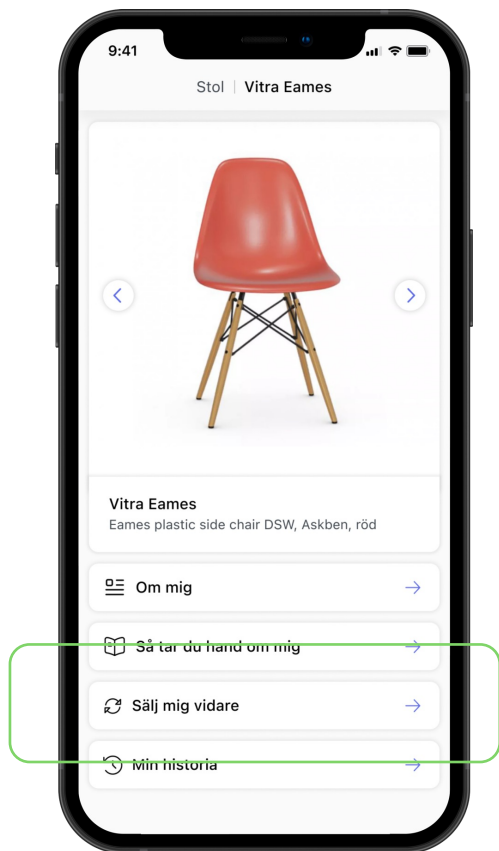
Specifications such as dimensions, year of manufacture, and certifications



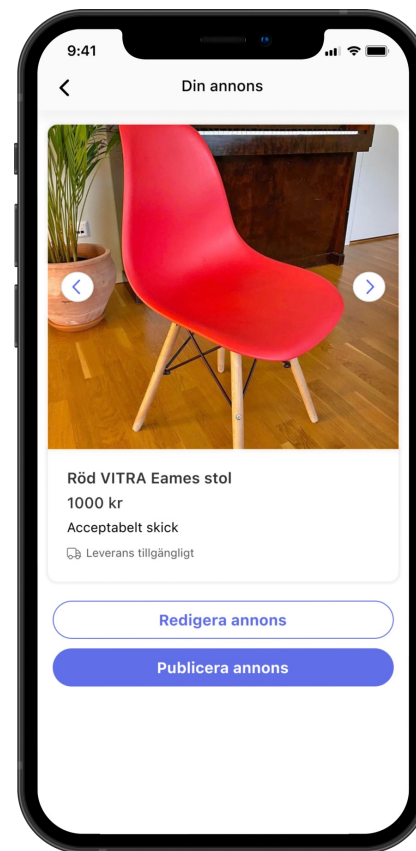
Information about the chair's carbon footprint



Second, third, fourth hand, and new



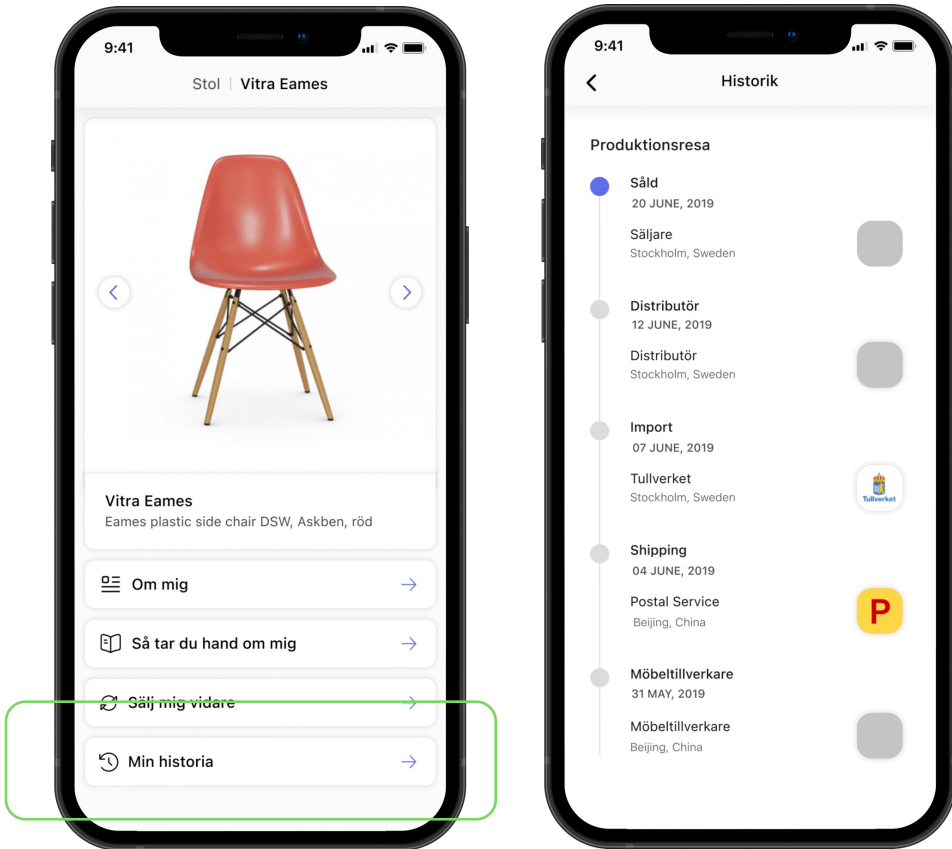
2nd hand ads based on
information in the product
passport...



... makes reused furniture easier to
compare on an equal footing with newly
manufactured ones.



Support in purchase history



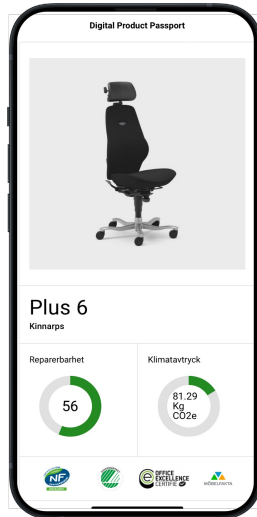
Information about the
furniture's history



Links and prototypes

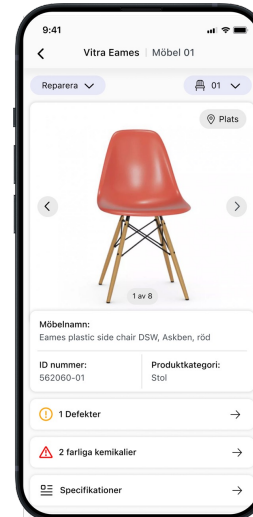
Prototype for repairer and assessor

Available for two pieces of
furniture; Kinnarps office
chair Plus 6 and Lammhults
armchair S70



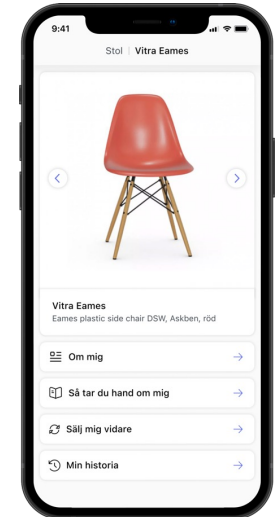
<https://pp.betaversion.se/#/p/Z3EUUTYS7b/2BScqD7enQ>

Example of an interface for professionals such as repairers, assessors, or furniture owners



<https://tinyurl.com/nj94unjb>

Simplified prototype for private consumers



<https://tinyurl.com/cktkzk2b>



Future business ecosystem

Companies will form strategic alliances and partnerships that cross traditional industry boundaries.

Increased traceability through digital product passports, blockchain, and similar technologies can offer a secure and transparent way to track transactions, product origin, and interactions in the supply chain across different ecosystems.

A shared commitment to sustainability and social responsibility can drive connections between ecosystems

Advanced digital platforms and application programming interfaces (APIs) will enable seamless exchange and integration of data between different business ecosystems

Local and international policies and standards can encourage or require interoperability and collaboration between different business ecosystems.



Ex. of continuations

**Application: Focus on user experiences
and insights for DPP development**

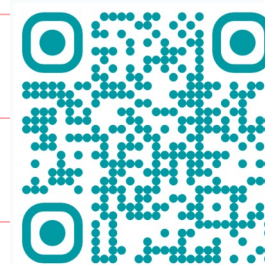
“Innovation Policy for Sustainability:
System and User-Centered Exploration of
DPP”

Awaiting response...

SWEPASS

Overall goal: To contribute to the competitiveness of Swedish business through the wise and early introduction of solutions for traceability in general and digital product passports in particular.

The project is a continuation and expansion of the ongoing collaboration within the project **Trace4Value**, traceability for sustainable value chains.



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