



# Optimistic Futures

## Open Access Approach to Digital Product Passports for Boats

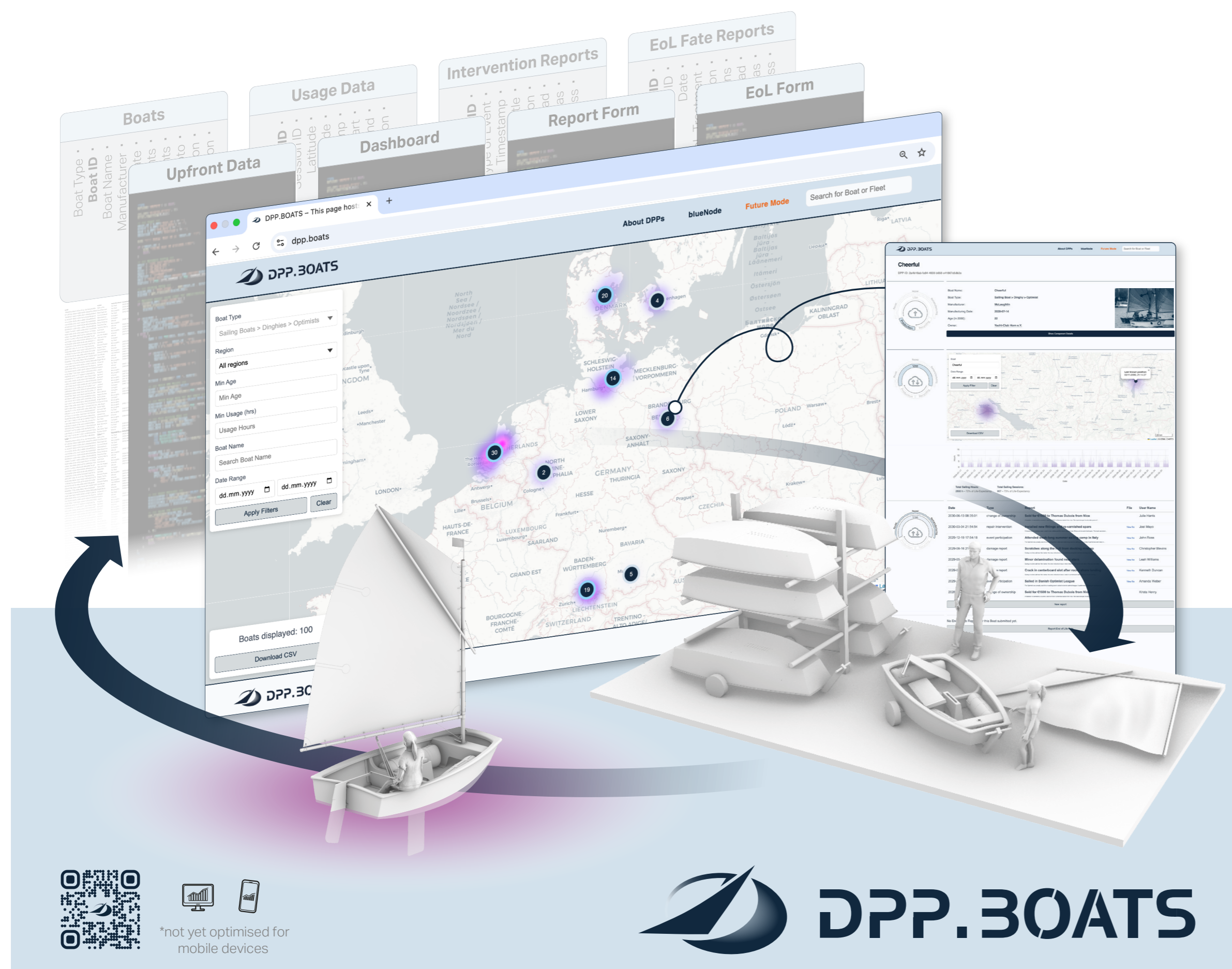
Sailing is widely regarded as a sustainable sport, it induces harmony with wind, water, and the environment. Yet beneath this image lies a growing problem: the materials used to manufacture modern sailing equipment cause significant environmental harm at the end of their life. Most sailing boats, for instance, are produced from glass fibre reinforced polymers - a material which currently cannot be recycled. As a result, many boats are sent to landfill or even abandoned, despite still being structurally sound or usable.

This thesis investigates how boat manufacturing, usage, and end-of-life practices can transition toward a circular economy. The Optimist sailing dinghy serves as the primary case study and a driver for sustainable change. A comparative Life Cycle Assessment (LCA) demonstrates that more sustainable and recyclable material alternatives exist, additionally offering advantages in both weight and durability. However, mapping the life cycle of Optimist dinghies reveals an even greater challenge: for 74% of these boats, essential product related information is lost during their lifespan, rendering recycling efforts highly uncertain.

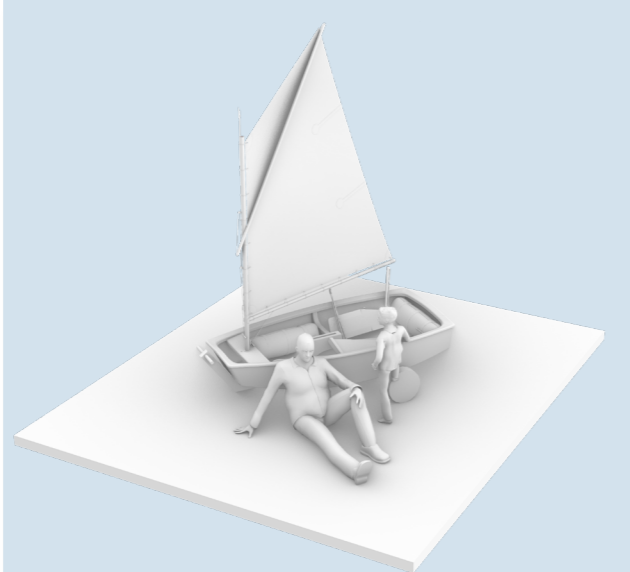
### To address this, the thesis proposes DPP.BOATS

It is a web-based platform for Digital Product Passports (DPPs) tailored to sailing boats. The system integrates both static technical specifications and dynamic data streams - automatically collected usage data to understand real-world usage patterns and life expectancy, as well as easily submitted maintenance histories, condition reports, and event participation. Crucially, the platform follows an open access approach, designed to reduce friction and avoid technological dependencies - essential in a sport largely run by volunteers and motivated parents. By allowing universal, barrier-free access, DPP. BOATS facilitates transparency in second-hand markets, supports preventive maintenance planning, and provides valuable insights for future boat design. It also ensures that final owners know the material composition and correct recycling procedures, enabling true circularity.

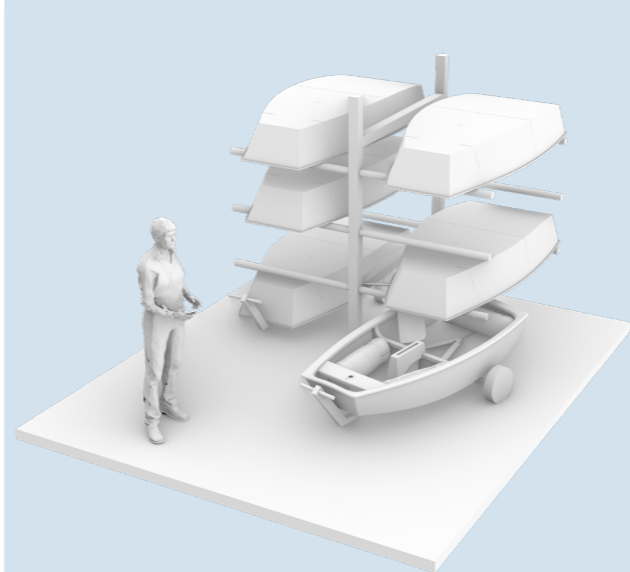
Ultimately, this thesis argues for integrating end-of-life considerations into product development and business strategies, emphasizing material consciousness and value preservation - critical steps in addressing the environmental crisis and cultivate optimistic futures.



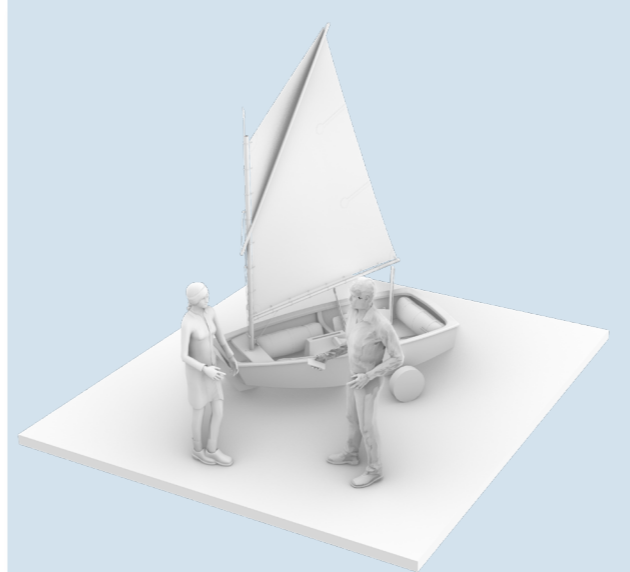

**Manufacturer**  
Insights for R&D



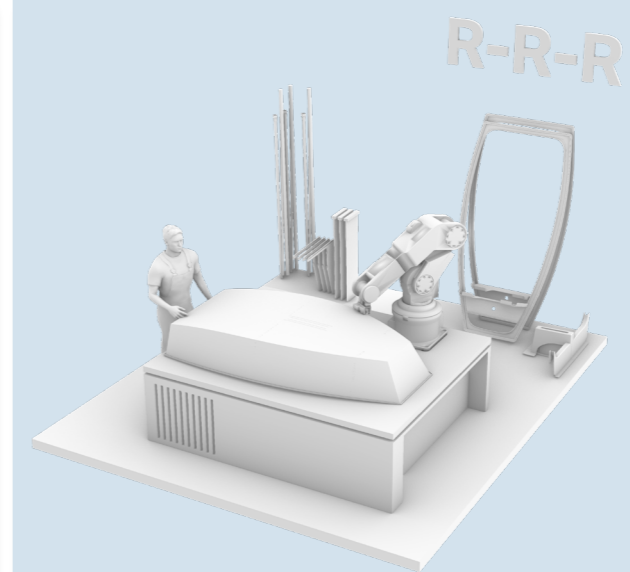
**Owner/Sailor**  
Sailing diary,  
maintenance  
recommendation



**Sailing School**  
Fleet overview and  
collected damages



**2. Hand Market**  
Transparency  
over the boats life  
expectancy



**R-Strategies, EoL**  
Condition, Material  
composition,  
construction



**Sailing Association**  
Usage patterns and  
equipment register

Optimistic Futures - Open Access Approach to Digital Product Passports for Boats

**Béla Steiner**  
19.08.2025  
Integrated Product Design  
Faculty of Industrial Design Engineering

**Comitee**  
Erik Tempelman  
Levon Amatuni

**Company**  
Khulula  
**External Supervisor**  
Holger Ambroselli



**TU Delft**  
Delft University of Technology