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# Project Presentation: MaMa – Sustainable Material Lifecycle Solution

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The "MaMa – Sustainable Material Lifecycle Solution" research project, part of the NEcOLEAP program, was completed in January 2025. The project examined the interior material management process of cruise ships and developed solutions to improve its efficiency. The outcome was a comprehensive knowledge base and a software demo that supports more environmentally friendly material choices, increases transparency, and promotes sustainable shipbuilding.

The primary goal of the MaMa project was to enhance understanding of the factors affecting the sustainability of interior materials in cruise ships. The second goal was to create a lifecycle solution for managing interior materials, which would help integrating sustainability aspects into existing processes.

"There was a clear need for our project, as the maritime industry currently lacks a shared operating model that comprehensively supports material management," explains **Jenni Jokiniemi**, Senior Specialist of Interior Architecture and MaMa's project manager.

The project began by mapping the current situation and investigating the requirements and sustainability criteria for interior materials. The team then focused on exploring ways to improve material management. The main partner in the research was Material Maintenance MaMa Oy, a company that develops material management software and has decades of experience collaborating with the Turku shipyard.
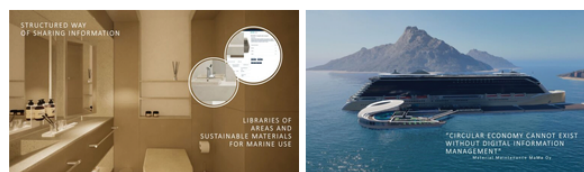
Centralized Material Library Brings Efficiency and Transparency

A single cruise ship contains thousands of interior materials, making it nearly impossible to track their properties without a dedicated software.

"Our vision is to create a shared, real-time database that gathers all product-related data and allows communication across departments. The software and the resulting material bank would be accessible to us, architects, turnkey suppliers, and clients alike, which would increase transparency and reduce overlapping work," Jokiniemi says.

A product lifecycle management (PLM) software offers several benefits, including:

- **Faster decision-making.** A centralized material library helps architects, designers, and buyers make optimal material choices.
- **Supports sustainability.** The software plays a key role in the circular economy by enabling material lifecycle tracking and effective sustainability data management for ESG reporting.
- **Easier maintenance and traceability.** With full lifecycle data available, maintenance and updates are more efficient. Proper care also extends material lifespan—for example, avoiding damage from incorrect cleaning methods or harsh chemicals.
- **Cost savings.** Better material management reduces waste, optimizes procurement, and improves resource efficiency.

"Ship interiors are strictly regulated and must meet many legal requirements. Depending on how the material is used, it must have the appropriate fire certification, for instance. A material management software would also help make those requirements easily accessible," Jokiniemi adds.

The availability and transparency of material data play a significant role in the cruise industry's green transition and in the development of carbon-neutral cruise ships. The software provides tools for more environmentally friendly material selection. When the origin, carbon footprint, and recyclability of materials are readily available, it is easier to compare alternative materials, calculate their emission impacts, and prioritize more sustainable options.

Marine MaMa – A Digital Lifecycle Solution for Product and Material Management

One of the project's most important outcomes was the development of the Marine MaMa software demo. Marine MaMa enables full lifecycle management of materials and products—from design and manufacturing to use and recycling.

In addition to supporting the architectural process of the hotel design department, Marine MaMa could serve multiple functions across the shipyard: it can act as a data platform for design, product development, sales, modularization, ESG reporting, and 3D modeling.

"Even though Marine MaMa is still in demo phase, it has huge potential. Our goal was to make it as easy and user-friendly as possible, and it received very positive feedback from test users," Jokiniemi notes.

Overall, Jokiniemi expresses satisfaction with both the project's process and its outcomes.

"Leading the MaMa project was both meaningful and rewarding. The best part was our core team's strong team spirit and the safe, fun working environment. We were highly productive—we worked hard, but the process felt energizing and inspiring throughout."

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