

VTT

A!

Aalto-yliopisto
Aalto-universitetet
Aalto University

**Welcome
to the launch of the
Circular Demouse concept**

Agenda

10:00 Welcome words

10:05 Key-note: Circular examples in built environment

Matti Kuittinen, Associate Professor of Sustainable Construction, Aalto University

10:20 Project goals

Tuija Pakkanen, Lead in Sustainable Built Environment, VTT

10:30 Panel discussion

Petri Suur-Askola, Peikko, Tessa Armour, Espoo,
Anne Kaiser, St-Gobain, Heikki Karppinen, Durat

10:50 Concept of the circular demonstrator "The Circular Drifter"

Antti Lehto / Havu Järvelä / Heljä Nieminen

11:25 Panel discussion

Raija Polvinen, Kiilto, Meeri Mäkihelmi Sweco,
Lotta Ruottinen, SSAB

11:45 How do we proceed?

Robert van den Brink, researcher VTT

12:00 Event ends



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Project goals

Tuija Pakkanen

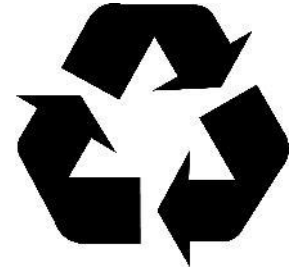
27/01/2025 VTT – beyond the obvious

Main goal of the project:

**To create Finland's first
contemporary reversible building**

Design goals

1. **Coherent, high-quality design:** not a collage of various materials, but beautiful
2. **Design for Disassembly:** Easier to disassemble than a log house
3. **100% of the weight is reused or reusable,** while aiming for a minimal carbon footprint
4. **Definition of circular connector interfaces,** allowing stakeholder independent connections and interoperability



Impact goals

1. To provide a **testing and learning playground** for circular innovations in products and buildings
2. To generate **exposure for all stakeholders** involved by showcasing their circular solutions
3. To provide a starting point for **changing industry practices and standards**

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Panel discussion

Petri Suur-Askola, Business Director,
Connections, Peikko

Anne Kaiser, Marketing and Sustainability
Director, St-Gobain

Tessa Armour, Senior Advisor – Sustainable
Development, City of Espoo

Heikki Karppinen, CEO, Durat

CIRCULAR DRIFTER

Demonstrating Design for Disassembly

18.12.2024

Core attributes

to be robust and
understandable

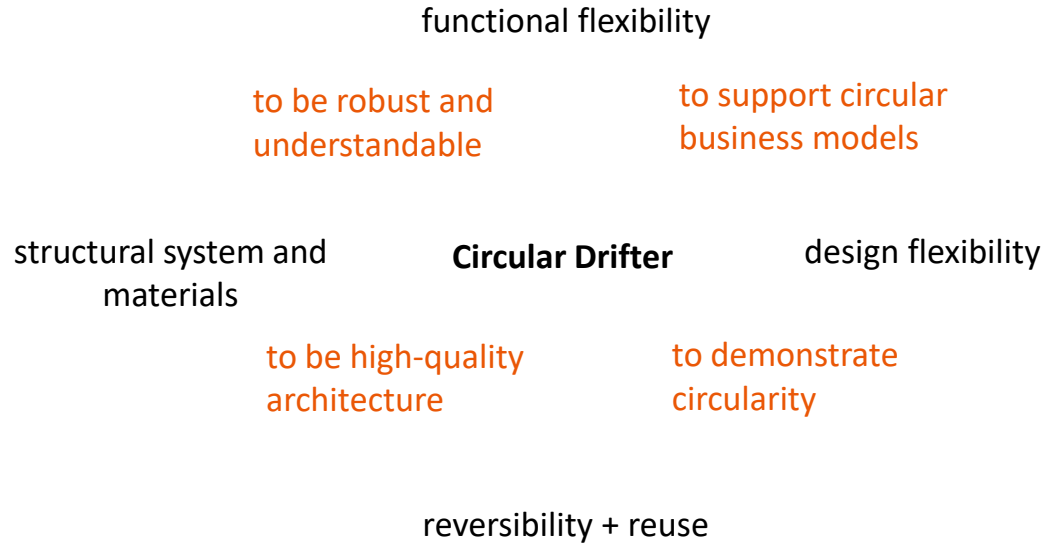
to support circular
business models

Circular Drifter

to be high-quality
architecture

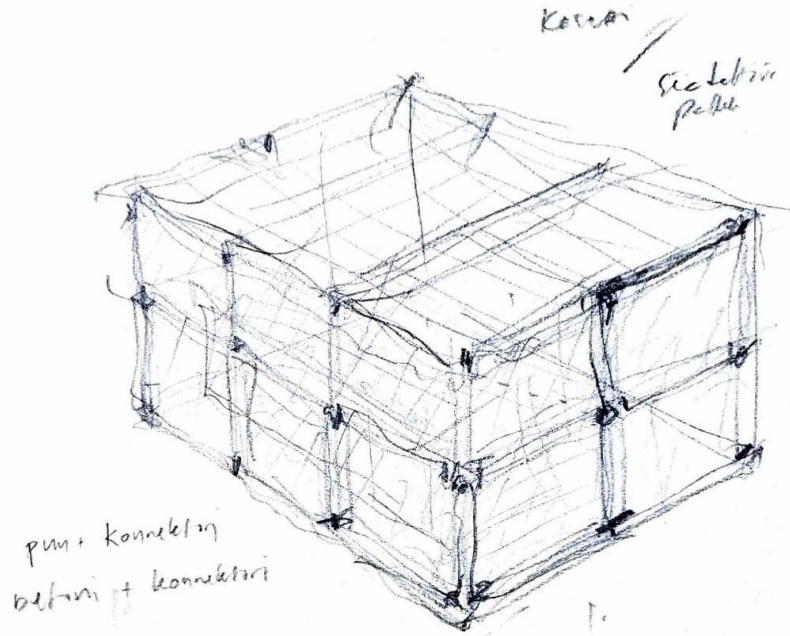
to demonstrate
circularity

Research scope

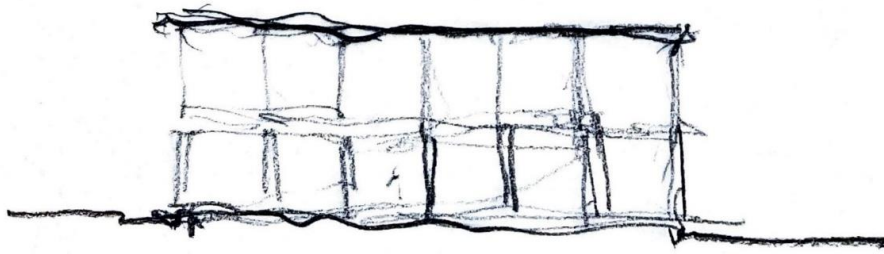


Structural system

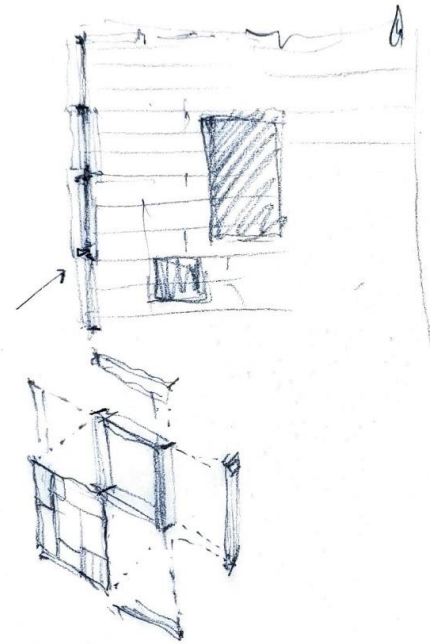
Adaptability, contribution to research and development



Concept

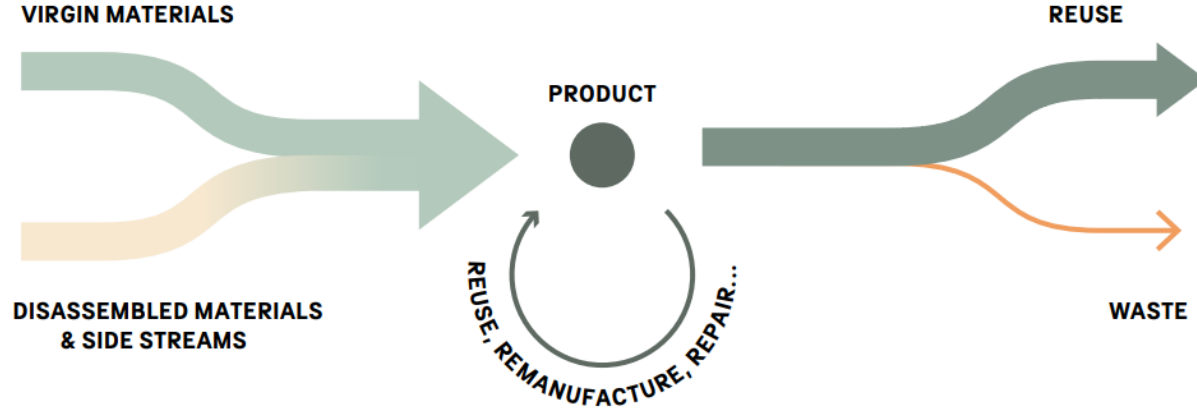


Stage



Design for Disassembly

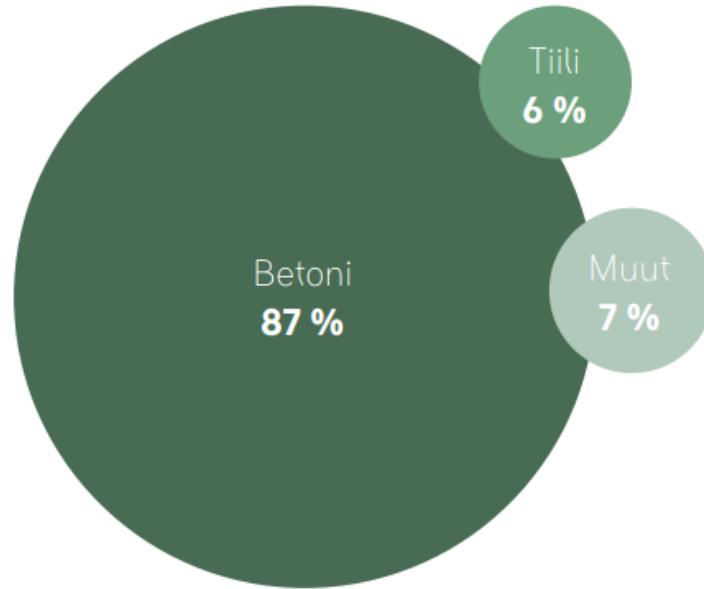
Concept



Secondary material flows and side streams integrated

Structural system

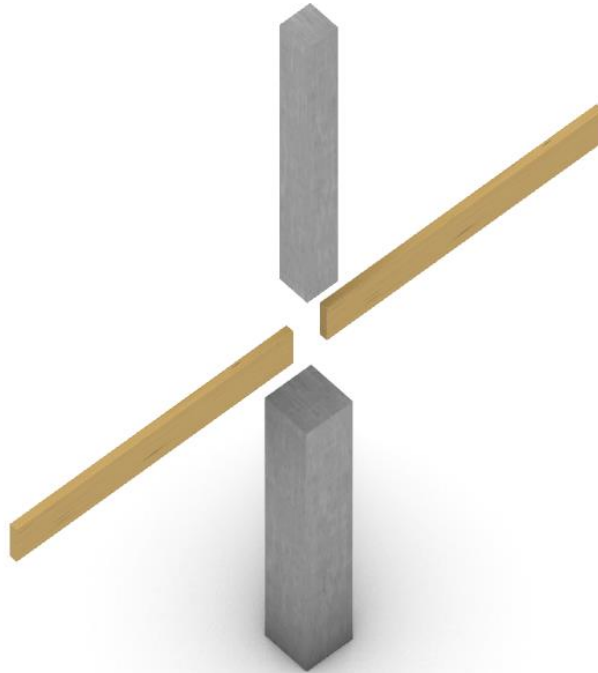
Contribution to research & development



Typical materials in Finnish (demolished) buildings

Suomela & Lehto (2022). Purkukartoituksesta arkkitehtisuunnitteluun

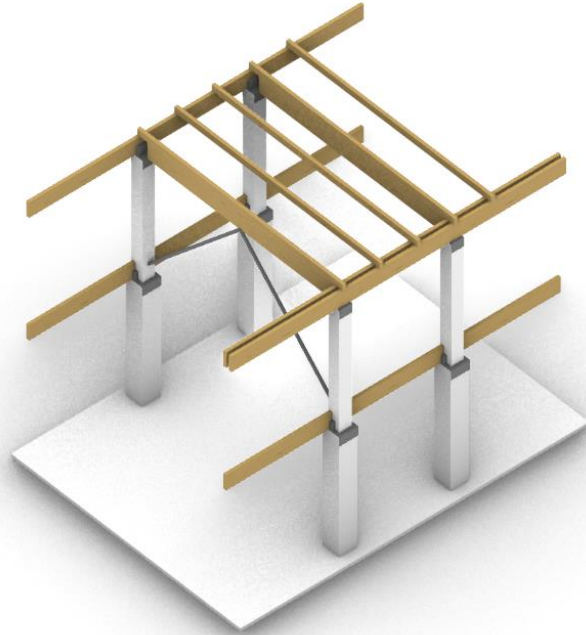
Structural system



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Demonstrating Design for Disassembly
18.12.2024
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Structural system

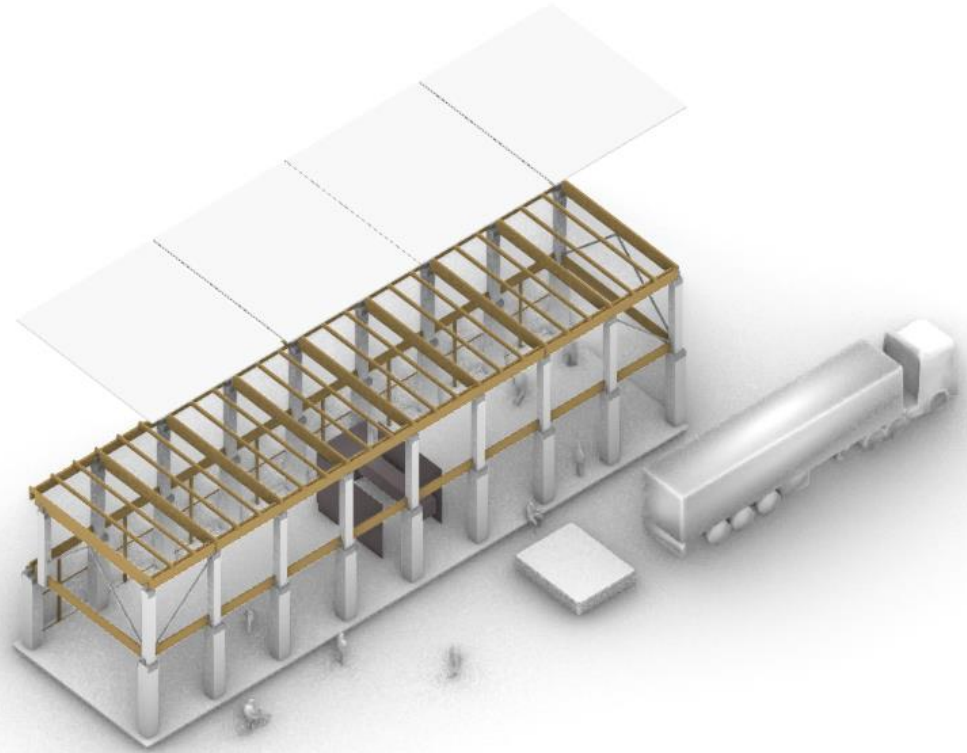


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Stage

the primary structure and roof.



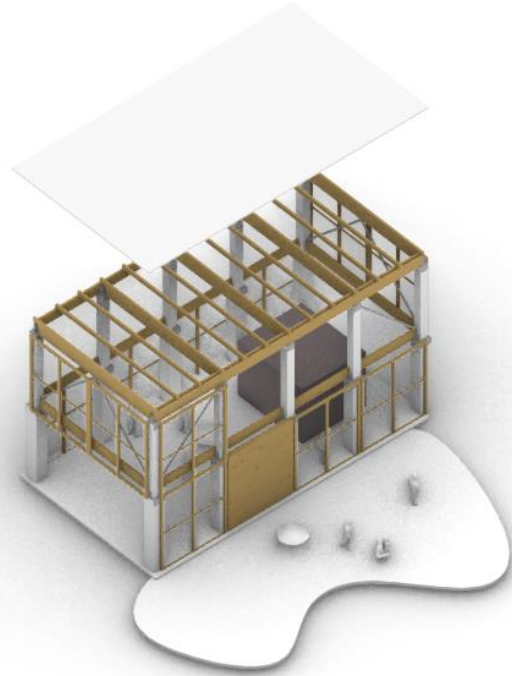
An opportunity to demonstrate circular construction for both professionals and the public.

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Demonstrating Design for Disassembly
18.12.2024
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Adaptability

Through the reversible construction system & careful dimensioning

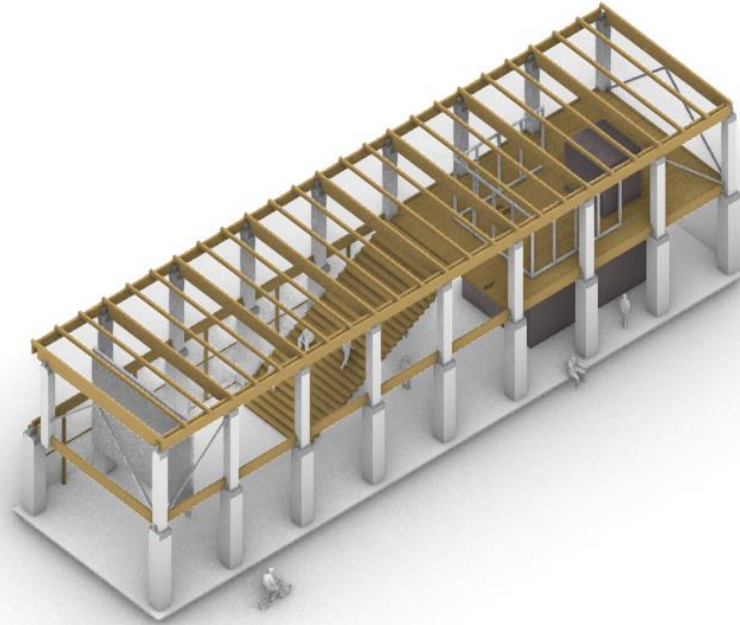


Adapting plan layouts & size of the building

From a cafeteria...

Adaptability

Through the reversible construction system & careful dimensioning

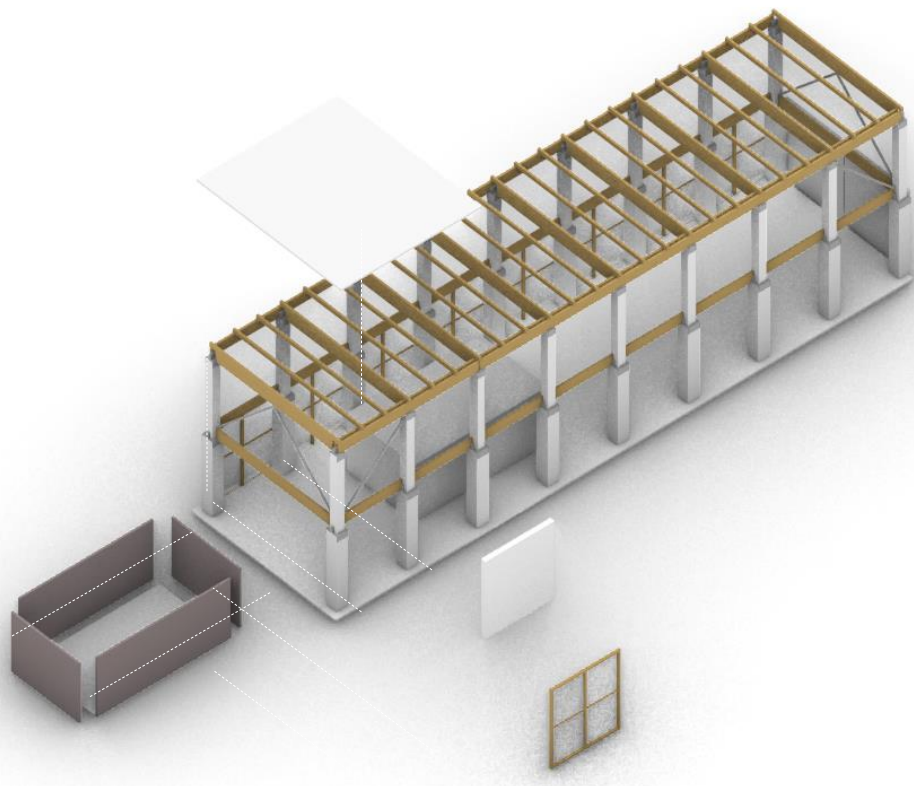


... to exhibition space, office as a circular platform, student housing...

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Business & product development Partners



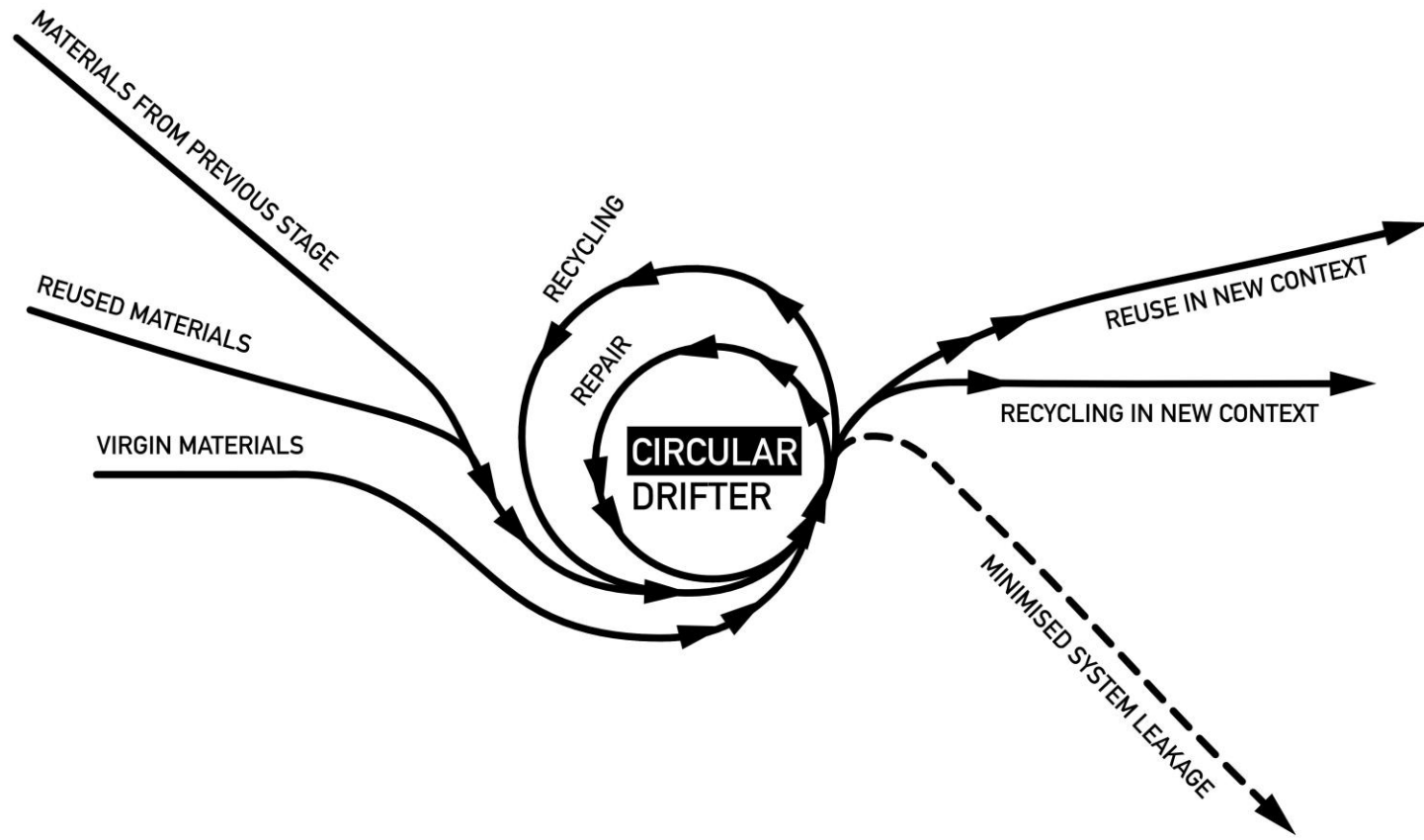
Reversibility + maintenance
Component as a service
Circular materials

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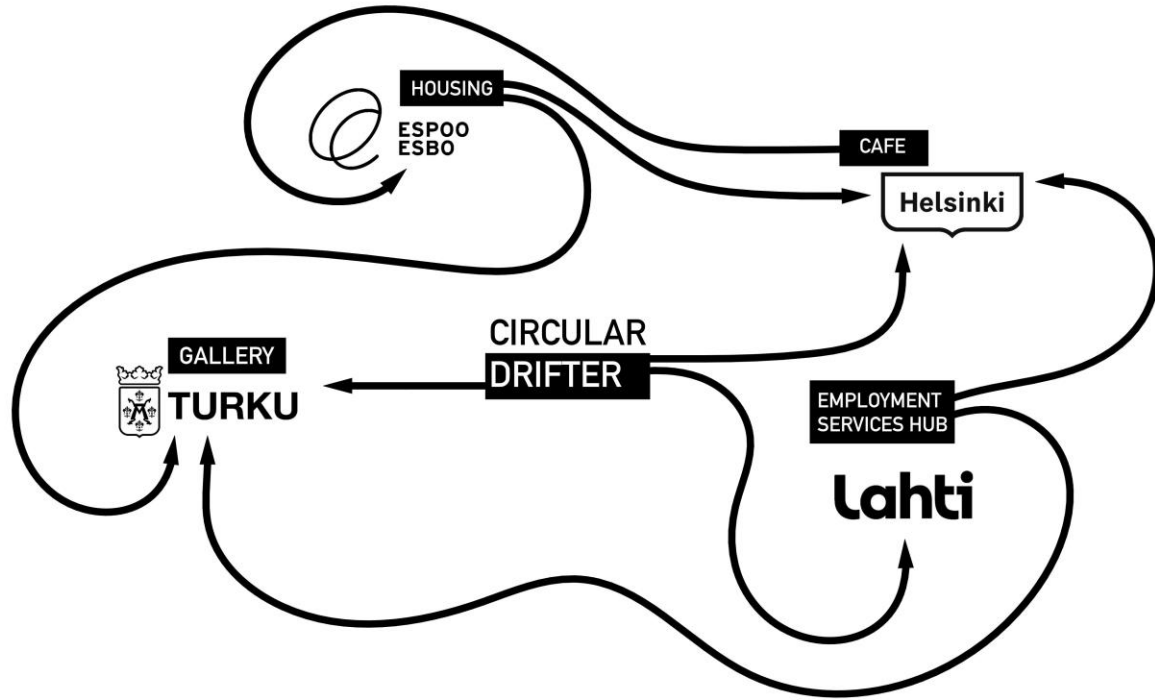
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Aalto University

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Demonstrating Design for Disassembly
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2 | 11



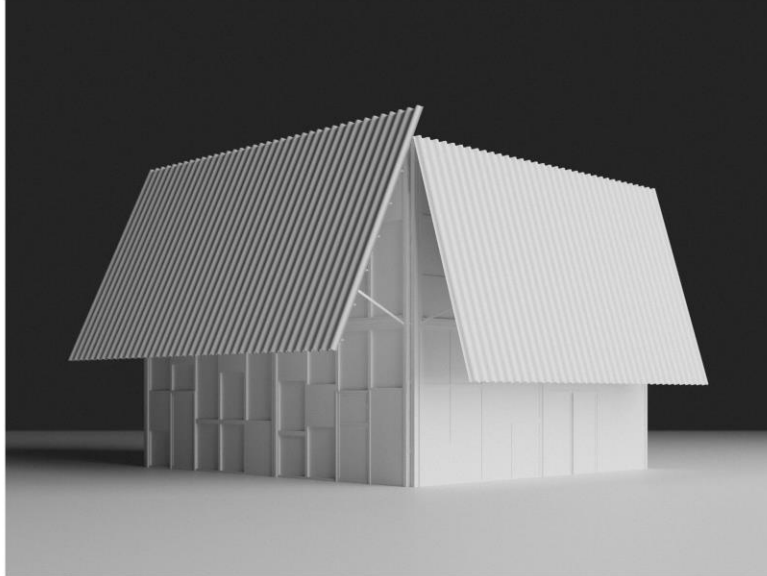
CIRCULAR DRIFTER

Demonstrating Design for Disassembly
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3 | 11



CIRCULAR DRIFTER

Demonstrating Design for Disassembly
18.12.2024
4 | 11

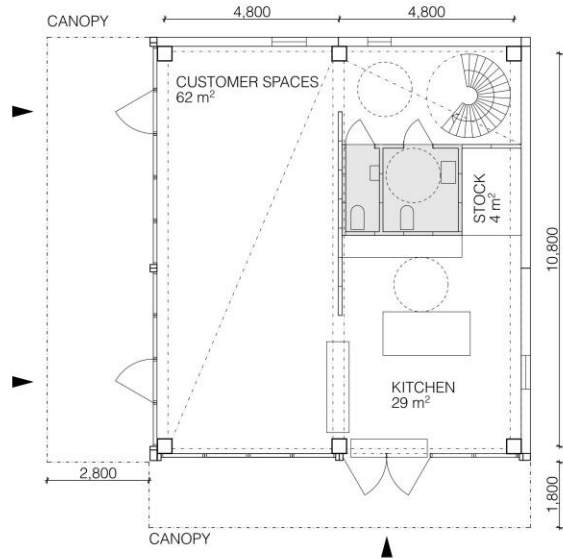


DRIFTER AS A CAFE

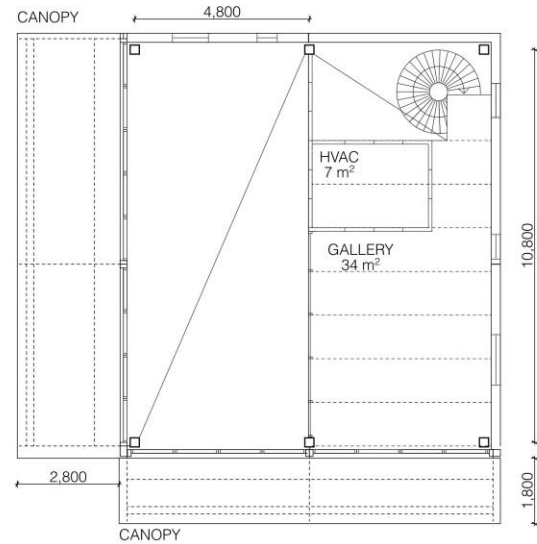
CIRCULAR DRIFTER

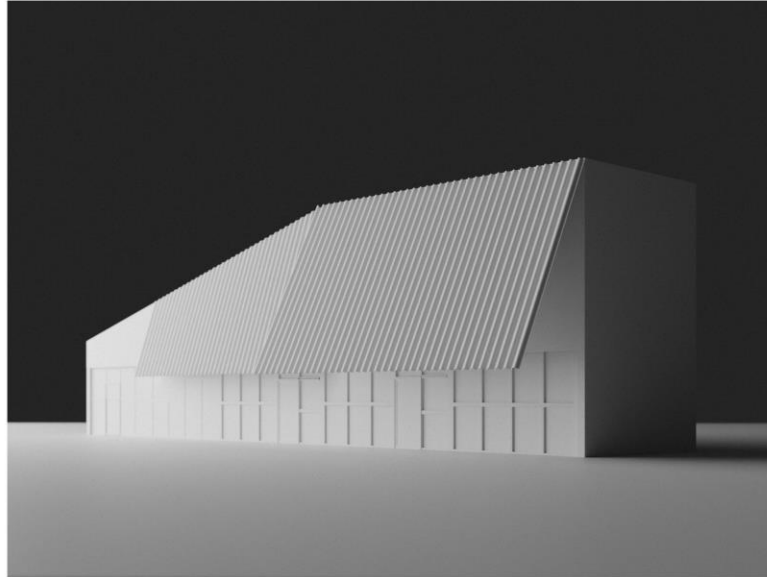
Demonstrating Design for Disassembly
18.12.2024
5 | 11

CAFE 1st. FLOOR



CAFE 2nd. FLOOR



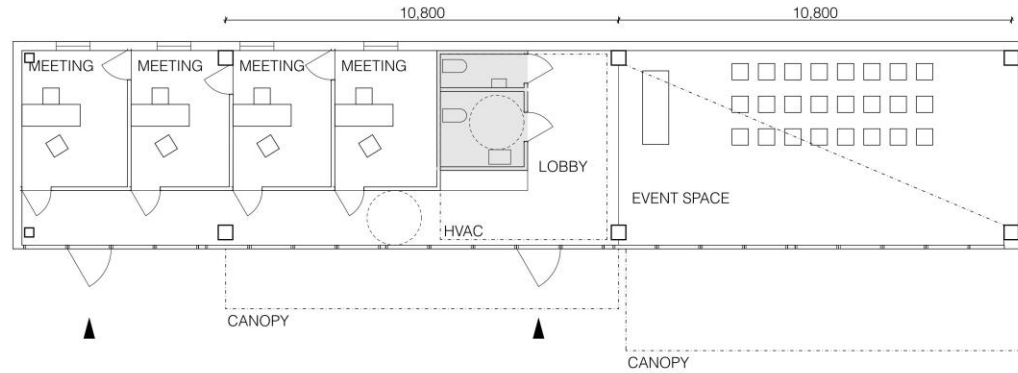


DRIFTER AS EMPLOYMENT SERVICES HUB

CIRCULAR DRIFTER

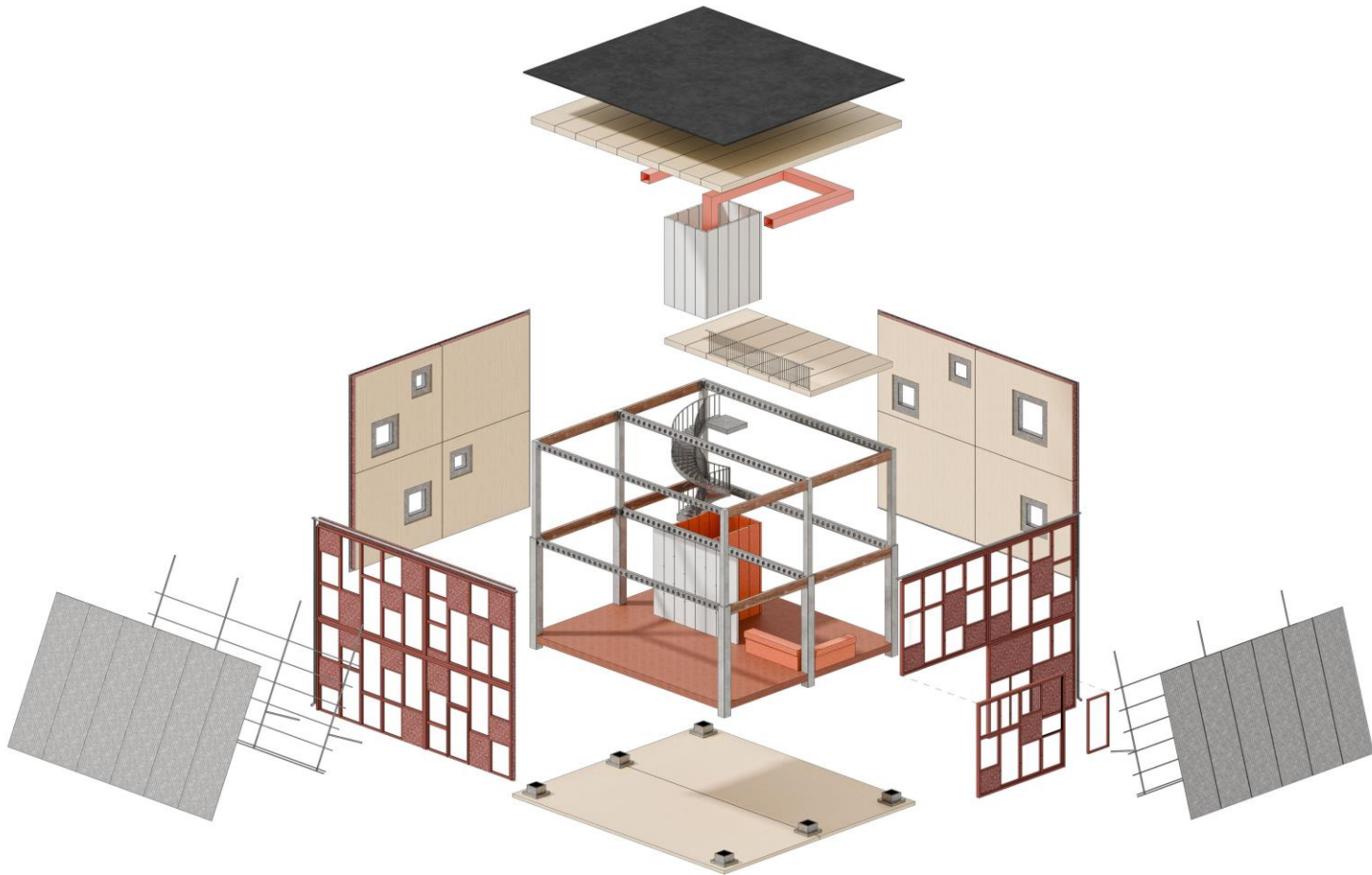
Demonstrating Design for Disassembly
18.12.2024
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EMPLOYMENT SERVICES 1st. FLOOR



CIRCULAR DRIFTER

Demonstrating Design for Disassembly
18.12.2024
8 | 11



CIRCULAR DRIFTER

Demonstrating Design for Disassembly
18.12.2024
9 | 11

CONNECTOR FOR A STRUCTURAL SYSTEM
COMBINING REUSED & VIRGIN MATERIALS



PREMANUFACTURED WALL ELEMENTS
WITH BIO-BASED / REUSED INSULATION



OPENABLE GLUES
AND SEAMS



STRUCTURAL
ENGINEERING



CIRCULAR WET SPACES AND
FURNITURE FROM RECYCLED PLASTIC

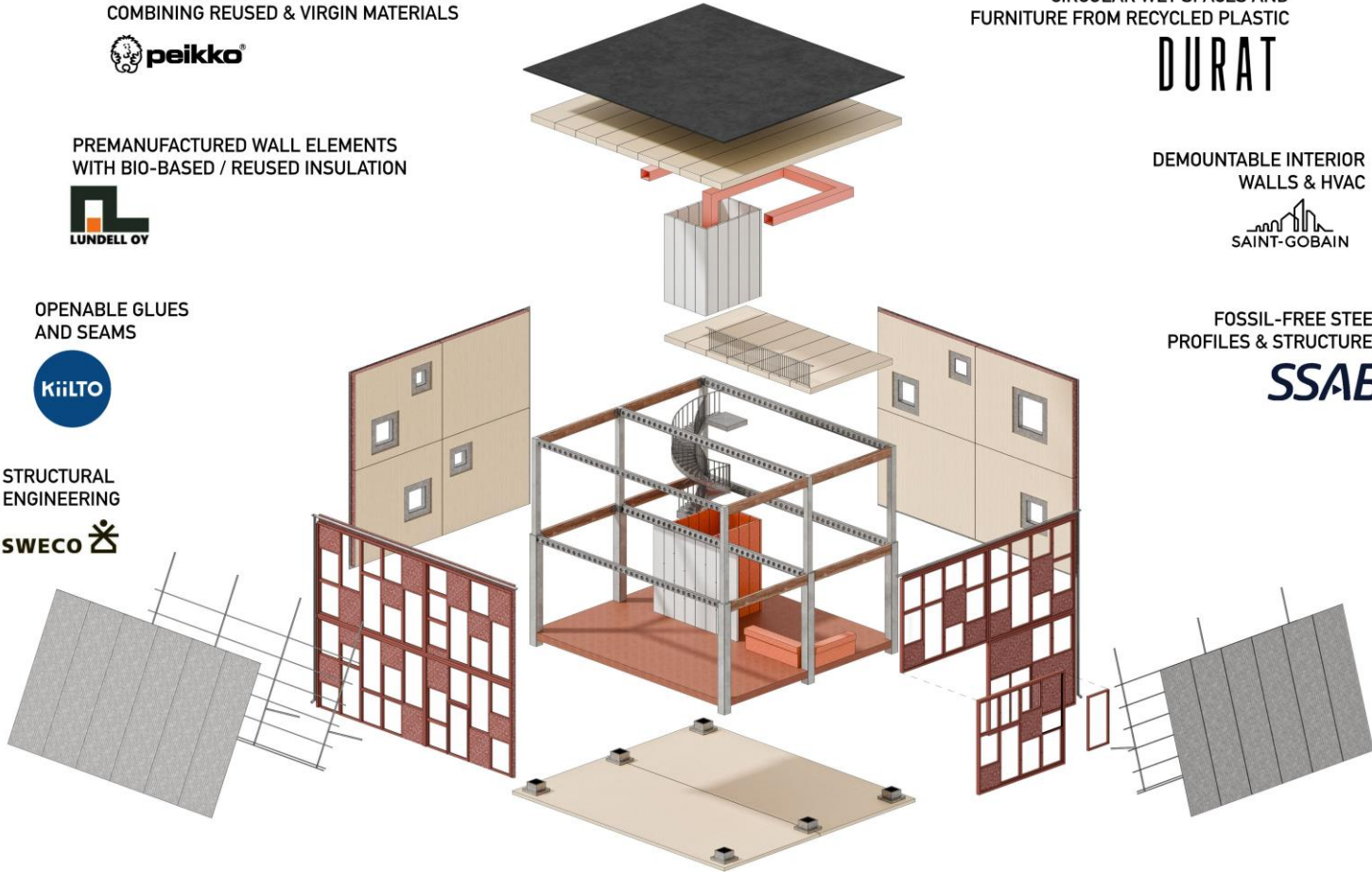
DURAT

DEMOUNTABLE INTERIOR
WALLS & HVAC



FOSSIL-FREE STEEL
PROFILES & STRUCTURES

SSAB



CIRCULAR DRIFTER

Demonstrating Design for Disassembly
18.12.2024
10 | 11



THANK
YOU!

Q & A

The image is a high-quality architectural rendering of a modern interior space, likely a cafe or a lounge. The room is characterized by its bright, airy atmosphere and clean lines. The floor is made of reddish-brown bricks laid in a traditional pattern. On the left, a long, low counter with a matching brick top is visible, where a person in a red top and patterned skirt is standing. A white folding chair is tucked under the counter. The walls are a mix of light-colored panels and large windows. The windows are framed in dark wood and feature decorative panels with a textured, reddish-brown pattern. A balcony with a white railing is visible on the upper level. The right side of the image shows a large glass wall that looks out onto an outdoor seating area with white tables and chairs. The overall aesthetic is contemporary and minimalist.

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12:00 Event ends

Panel discussion

Raija Polvinen, Chief Ecosystem Officer,
Kiilto

Lotta Ruottinen, Sales Director, SSAB

Meeri Mäkihelmi, Head of Circular
Economy, Buildings, Sweco



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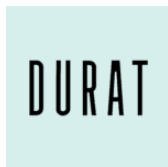
The Circular Drifter

Funding Mechanisms & Next Steps

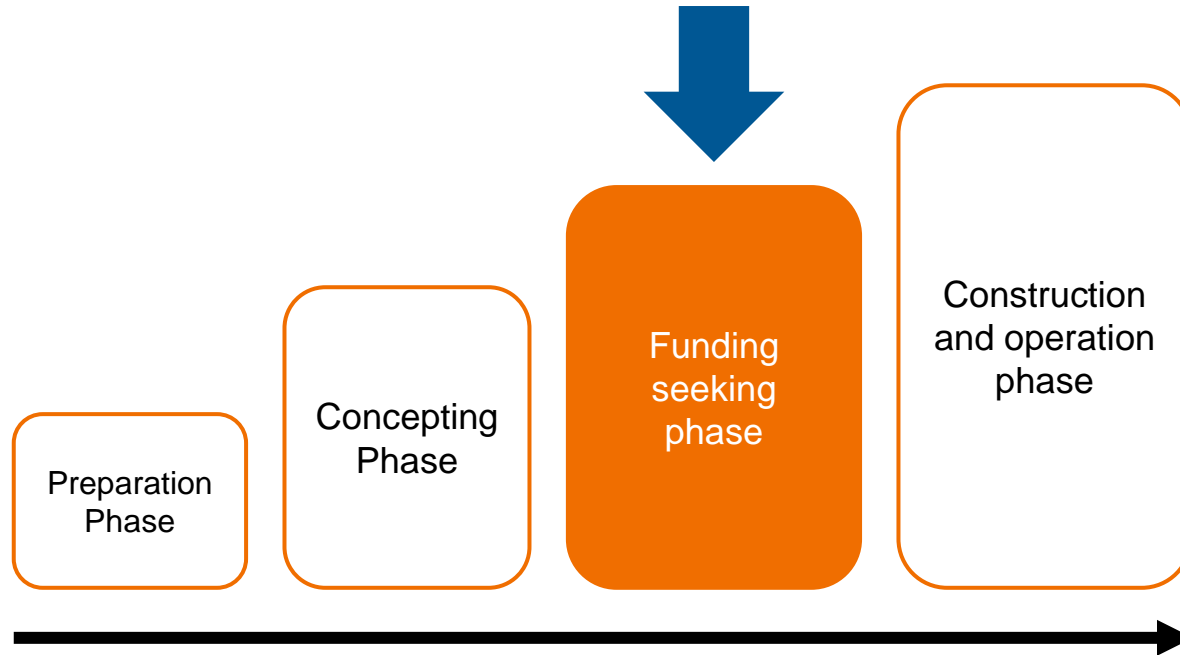
Robert van den Brink

27/01/2025 VTT – beyond the obvious

Participants in the Concept Phase

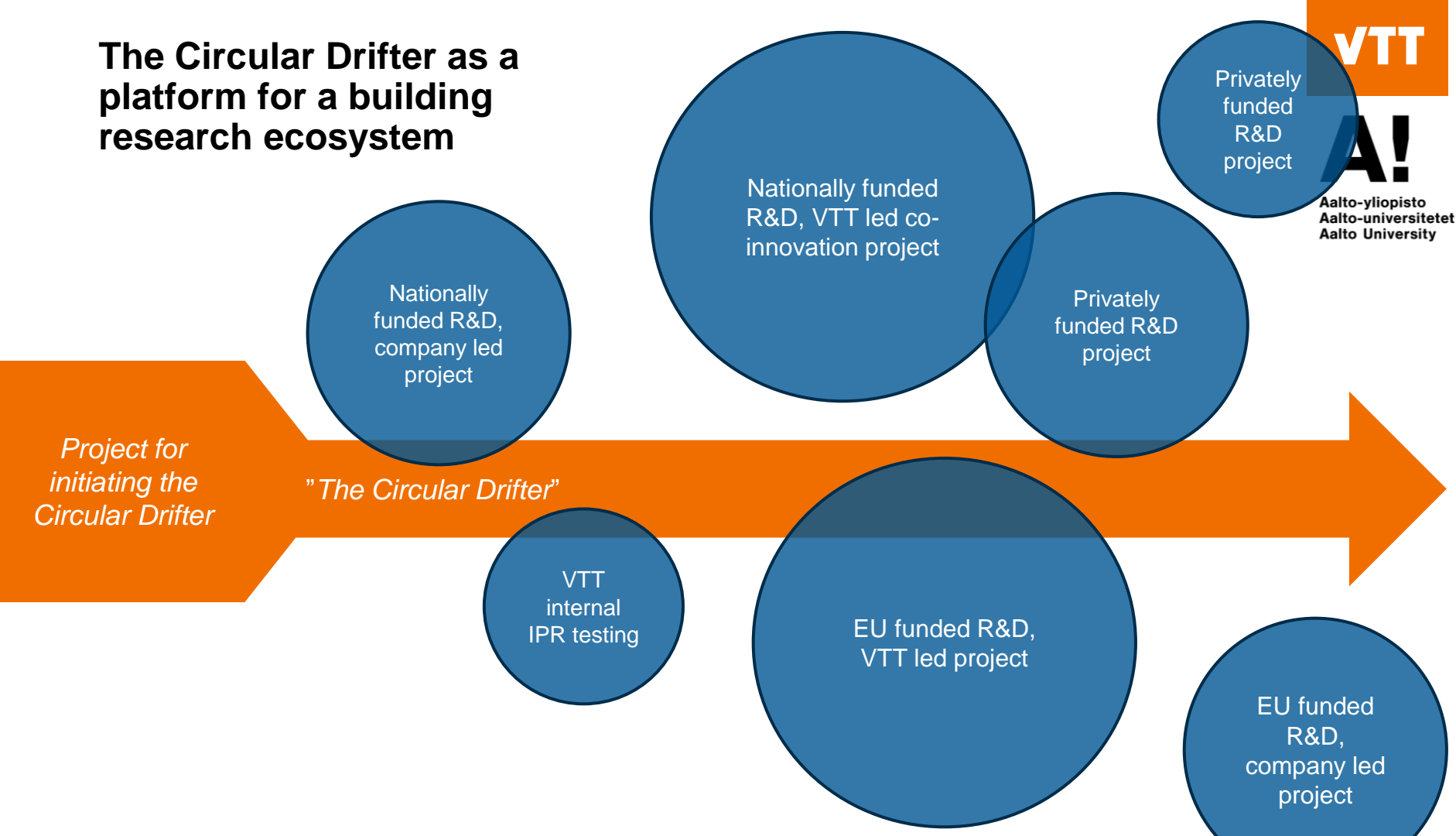


Moving to the funding seeking phase



**The Circular Drifter is not only
another random house but...
a platform.**

The Circular Drifter as a platform for a building research ecosystem



*Project for
initiating the
Circular Drifter*

"The Circular Drifter"

Nationally
funded R&D,
company led
project

Nationally
funded R&D,
VTT led co-
innovation project

Privately
funded
R&D
project

Privately
funded R&D
project

VTT
internal
IPR testing

EU funded R&D,
VTT led project

EU funded
R&D,
company led
project

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Project for initiating the Circular Drifter

Covers the construction and operational costs

- These include secondary material sourcing, design, engineering, etc.
- The platform will include not only the physical structure (house) but also its digital twin.
- The sole purpose of the initiation project is to get the platform built.

Does not cover research and development work

- For this, separate projects will be initiated (e.g., privately funded, BusinessFinland, or EU (New European Bauhaus or Horizon) projects)
- The Circular Drifter can be used as the platform for data collection, real-time experimenting, etc.

*Project for
initiating the
Circular Drifter*

"The Circular Drifter"

Suitable EU funding programs for R&D

New European Bauhaus, deadline 12.11.2025	Type	EU funding/project (EUR million)	Projects to be funded
HORIZON-NEB-2025-01-BUSINESS-01: Renovating the built environment through design for adaptability and disassembly	IA	4	2
HORIZON-NEB-2025-01-BUSINESS-03: Reverse local construction supply chains for the beautiful re-assembly of reclaimed secondary materials and resources	RIA	2.7	3

Horizon Europe, Cluster 5, deadline 17.02.2026	Type	EU funding/project (EUR million)	Projects to be funded
HORIZON-CL5-2026-02-D4-05: Optimal combination of low embodied carbon construction products, technical building systems and circularity principles for climate neutral buildings (Built4People Partnership)	RIA	4	3

Other public funding sources

- **Cities** have an access to EAKR and HEVi-funding sources
 - Suitable programs are examined by the participating cities
 - Lahti, Turku, Espoo and Helsinki are interested in collaboration making an own project aligned to the testing environment.
- **Ministries** (YM and TEM)
 - Currently too few channels available
- **Business Finland**
 - Co-research or co-innovation project types are both considered. The Drifter can be used in these as a platform.

Next steps

1. Further definition of the ownership

- Project funding terms will define legal ownership.
- VTT leads the initiation project.
- Aalto university's role as a partner is still undefined.

2. Budget of the initiation project will be defined by VTT.

3. Funding seeking

- Also private investment sources are sought.

4. Negotiation about the plots #1 and #2

- Discussions going on with Helsinki, Espoo, Turku and Lahti

5. Further investigation of the participation model

- We investigate possibilities to participate by different ways like in-kind, fees, donations etc.

**Participation will be
easy, accessible, and
worthwhile for different
companies and organizations.**

Our aim is to initiate permitting process by the end of the 2025 including detailed plans of the building.

If all goes smoothly, we will be constructing *The Circular Drifter* by the summer 2026.



VTT

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Robert van den Brink
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Aalto university

Matti Kuittinen
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Antti Lehto
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If interested, contact us!

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