Our circular future starts now!

Innovatieconferentie

20 mei 2025, Rijtuigenloods Amersfoort

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Dutch Institute for Advanced Logistics

Topsector Logistiek

LINCIT | LINear to CIrcular Transition, Transitioning to a Circular Business Ecosystem

May 20, 2025 – Néomie Raassens

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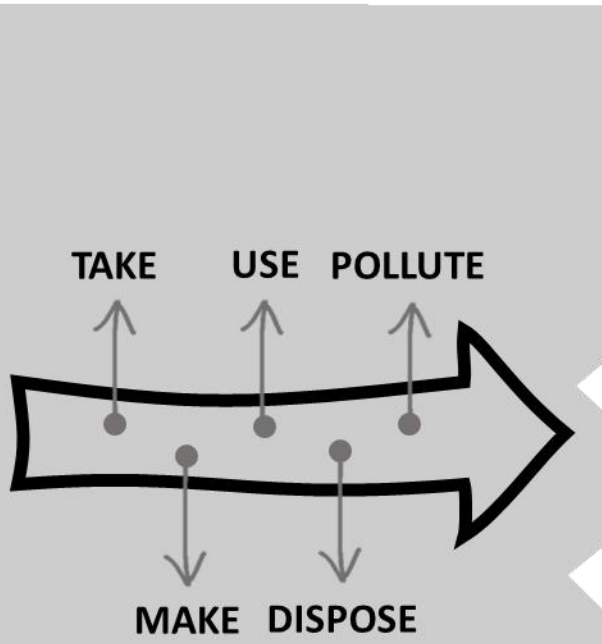
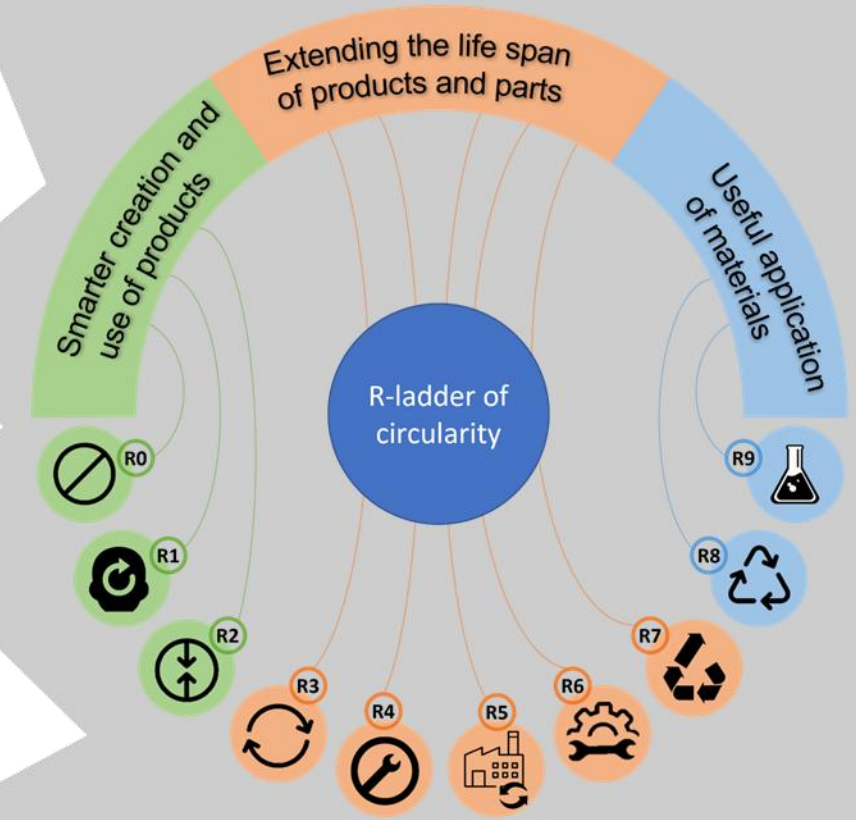
LINEAR TO CIRCULAR TRANSITION [LINCIT]





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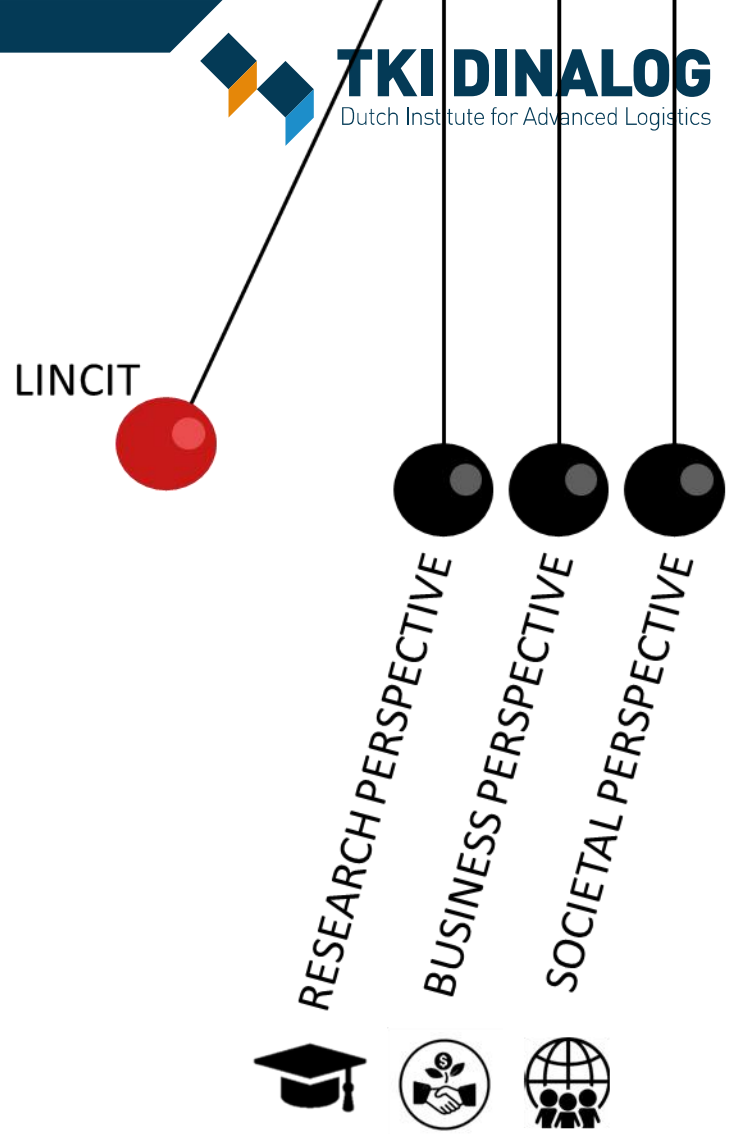

LINCIT's mission

Guide companies operating a linear supply chain to transition to a circular business ecosystem, and organize the associated logistics and operations

- Starting small
- Redrawing partnerships
- Scaling the ecosystem
- Measuring

LINCIT's main research questions

STARTING SMALL

How should companies rethink their business models and run two models in parallel?

Keywords: business model innovation, learning, digitalization

REDRAWING PARTNERSHIPS

How should companies set up partnerships to build a minimum viable ecosystem?

Keywords: partner selection, coordination mechanisms, tradeoffs

SCALING THE ECOSYSTEM

How should companies manage and scale their operations, and involve different stakeholders?

Keywords: ecosystem growth, governance mechanisms, institution

MEASURING

What interventions are possible to support companies in reaching circular objectives?

Keywords: KPI, dynamic performance management system

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www.dinalog.nl

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tkidinalog

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UNIVERSITY OF APPLIED SCIENCES UTRECHT

WAGENINGEN UNIVERSITY & RESEARCH

NHL STENDEN university of applied sciences

LogiCELL - Logistics in a circular economy living lab

Jan Heijns

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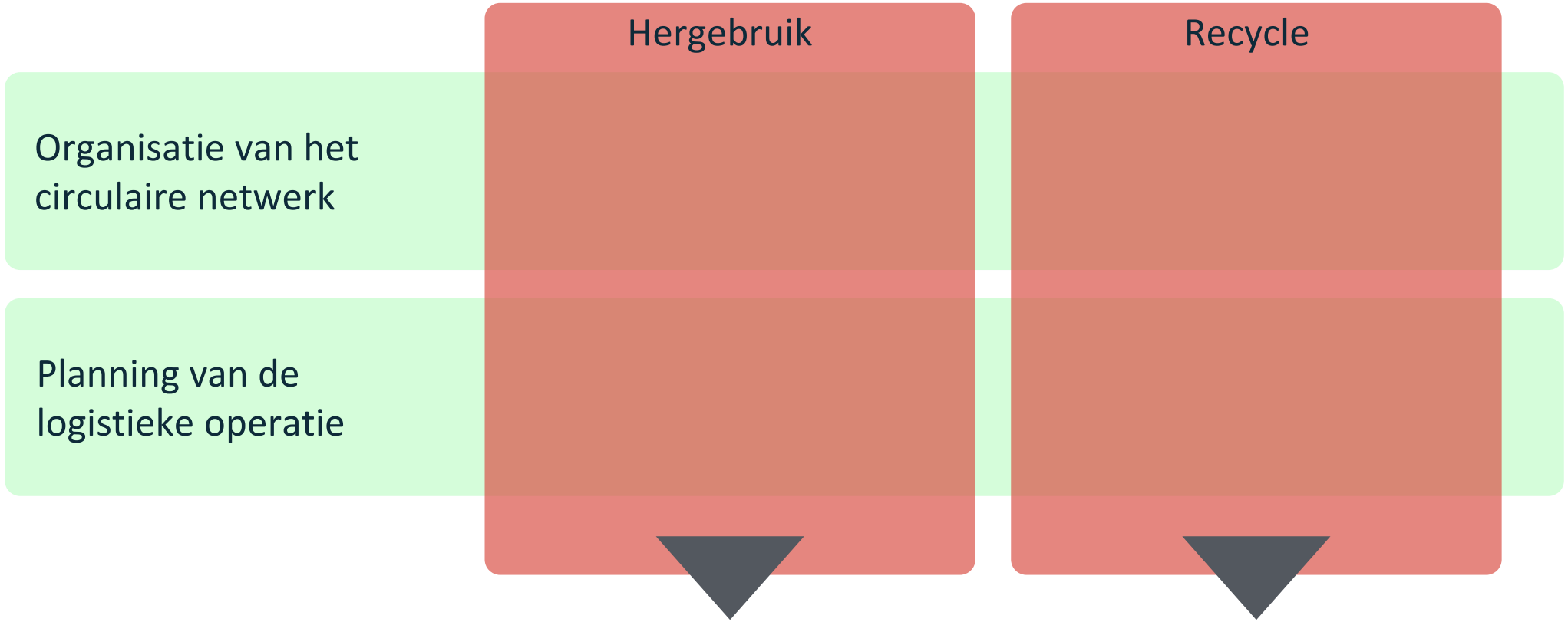
WAGENINGEN
UNIVERSITY & RESEARCH

Hogeschool
van Amsterdam

AMS
AMSTERDAM INSTITUTE FOR
ADVANCED METROPOLITAN SOLUTIONS

Het
Groene
Brein


Hergebruik
Recycle
Organisatie van het circulaire netwerk
Planning van de logistieke operatie
Onderzoeksvragen

CAMS- Modular prefabricated construction: A Circular Asset Management System for closed-loop supply and logistics chains

Dr. C. Fecarotti
Department of Industrial Engineering & Innovation Science, Eindhoven University of Technology

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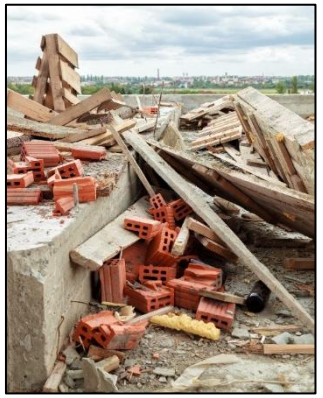
EU and Top Sector Logistics target for construction industry

TRADITIONAL CONSTRUCTION

CONSTRUCTION & DEMOLITION WASTE



HIGH ENERGY CONSUMPTION

RAW MATERIAL INPUT

- EU and Dutch target of Fully Circular Economy by 2050
- Top Sector Logistics by 2030
  - 0,4 Mton CO_2 reduction
  - 60% Nitrogen reduction
  - 75% health gain

EU and Top Sector Logistics target for construction industry

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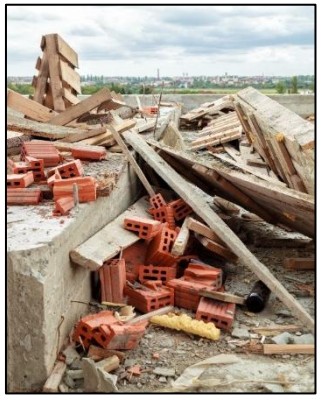
CONSTRUCTION & DEMOLITION WASTE



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INDUSTRIALIZED CONSTRUCTION & MODULARITY

REUSE (HIGHER "R")

CONTROL ENVIRONMENT (FACTORY)

LESS WASTE PRODUCED

SPEED AND LESS EMISSIONS

Fully circular prefab construction: Are we there yet?

Barriers:

Fragmentation of supply chain

Lack of efficient and transparent data tracking and sharing

Fully circular prefab construction: Are we there yet?

Barriers:

Fragmentation of supply chain

Lack of efficient and transparent data tracking and sharing

NOW:

Linear supply chain

Supported by:

Traditional Linear Asset Management
Take-make-dispose

Tools for analysis, (re)design and control of highly integrated supply chain

FUTURE VISION:

Digitally integrated circular supply chain

Supported by:

New Circular Asset Management System
Circular Strategies over multiple lifecycles

What can we do?

Prefabricated modular concepts as enabler for circularity

Project goals:

1. Develop a **Circular Asset Management System (CAMS) for syndicate of stakeholders** to accelerate the transition to a digitally integrated closed-loop supply chain for modular construction.

2. Enable the (semi) **automation of a circular construction process**.

Consortium

TU/e
VDL DE MEEUW
EQUANS EMPOWERING TRANSITIONS
VANDENBROEK SYSTEMEN
BAETSEN SINDS 1960
TiQiT
van gelder
ABB
Gemeente Haarlem
ESCF European Supply Chain Forum

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How? Expected deliverables and project's approach

Circular Asset Management Framework

- Roadmap "As-is" (linear) → "To-be" (closed-loop) (focus on integrative mechanisms to add value)
- Systematic and holistic approach for strategic, tactical and operational alignment of Goals/Requirements – Product – Organization (Syndicate) – Processes – Tools

Circular Supply Chain Digital Twin

€ CO_2 NO_x

- Simulation for quantitative scenario analysis
- Integrated planning for decision-making on coordinated offsite production – logistics – onsite operations

Distributed Peer-to-Peer Digital Product Platform

- Effective and timely data sharing across supply chain
- Distributed architecture with peer-to-peer connectivity

Field Lab Validation

- 2 Living Labs for outputs validation

VDL DE MEEUW

van gelder

Gemeente Haarlem

- Integrated functionality test and development of plugins for integration with BIM

Use Cases

- Technical service providers
- Logistics service providers
- I.C.T. service providers

Dissemination & Activation

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Project's contact

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Department of Built Environment

Information Systems Built Environment (ISBE)

Eindhoven University of Technology

Shared Connectivity in Mobility and Logistics Enabling Sustainability

dr. Berfu Ünal

Associate Professor Social and Environmental Psychology

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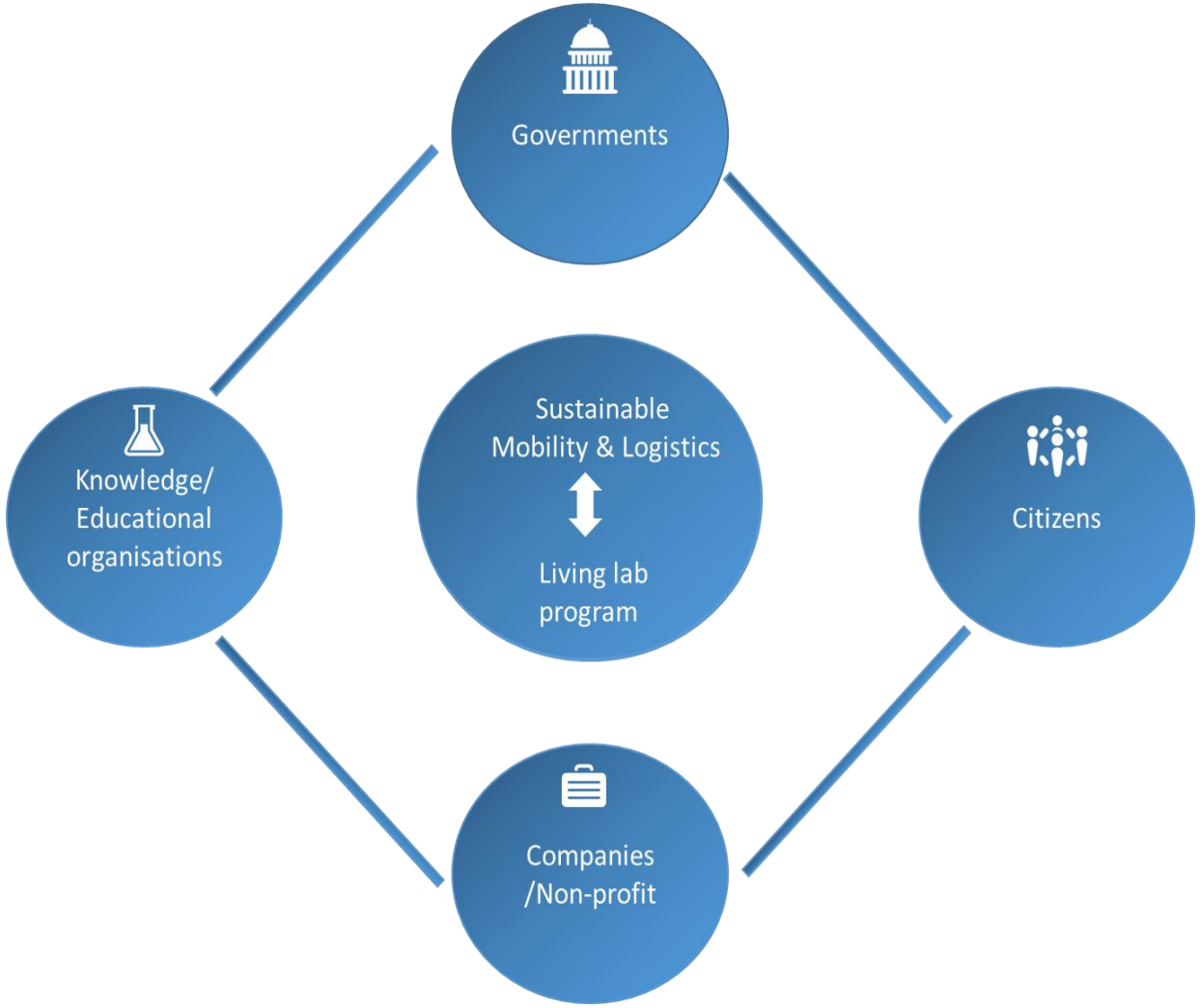
smiles

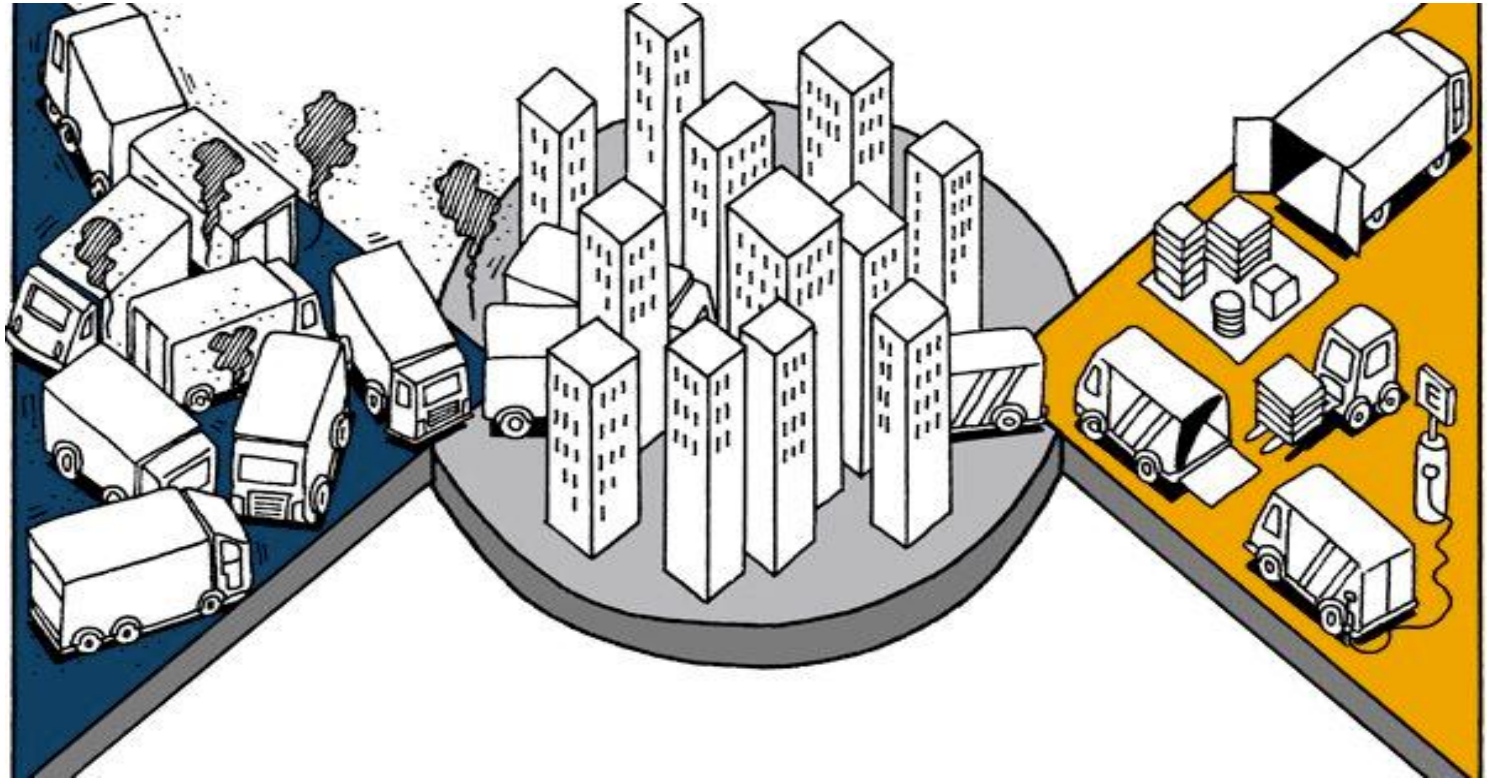
SMiLES


Governments
Knowledge/
Educational
organisations
Sustainable
Mobility & Logistics
Living lab
program
Citizens
Companies
/Non-profit

Case: Sharing resources

› To contribute to a circular economy in logistics

Delivery Bundling



Kees Jan Roodbergen & Ilke Bakir (UG)

Bidfood

Collaborative Vehicle Utilization Framework

- Sharing vehicles via borrowing and lending

- Favoured because:
  - Allows for keeping control of the process and customers while still offering flexibility in capacity

What drives collaboration to share?

- Interviews in 12 companies
  - Inquiring whether they already share certain resources
  - What they need to further increase collaboration

What hinders collaboration to share?

- Collaboration is often easier outside core business areas such as sharing knowledge, labour or software

- Trust issues, fear of losing customers, cultural mismatches or even a lack of time might hinder.

Conclusion

- Sharing resources for a circular economy in logistics is possible but companies need support
- Government or neutral mediators to enable data privacy and managing sensitive information
- Balancing sustainability with profitability

Interested in more?

2 July 2024 – Final Event

Email: smiles@rug.nl

Participants needed for our survey study!

Thank you!!!

a.b.unal@rug.nl

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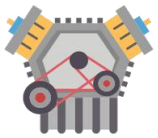
Companies see the importance of shared and circular logistics, but they also feel like the necessary conditions are not there. They need support in the form of necessary software, tools, know-how and clear legislation to go through the transition.

Redrawing partnerships

Remanufacturing can be **harmful** to the environment, depending on the business model

(a) Remanufacture by the original manufacturer

Manufacturer



New product

Remanufactured product

If the remanufacturer is

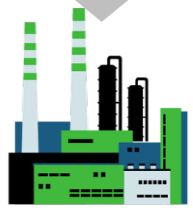
an original manufacturer, new products are less attractive

a third-party, new products will be more attractive

(b) Remanufacture by third-party remanufacturer

Manufacturer

Authorization



Third-party Remanufacturer

New product

Remanufactured product

Misalignment between sustainability goals or requirements - product (building and its assets) – processes - information - organization(s) hinder the achievement of circularity targets. Revealing and measuring these misalignments helps focusing efforts.

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Waste isn’t waste — it’s stock.

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