



Capacity Building Webinar

17/06/2026

Circular Business Models & Digital Product Passports (DPP) for SMEs



Organised by:



About MANTRA:

MANTRA is a Horizon Europe–funded project supporting the **green, digital, and social transformation** of **50 traditional manufacturing SMEs** across **2 Open Calls**

- Sectors: food, ceramics, plastics, textiles, metal, and machinery
- **Financial support** up to €50.000
- Tailored **advisory services** delivered by the MANTRA consortium
- **Matchmaking with technology providers** selected through Expressions of Interest: Tech-savvy SMEs working on key advance enabling technologies
- Access to a EU-wide ecosystem – the **MANTRA community**

The Consortium:




2nd Open Call
15th June 2026!



 <https://mantra-project.eu/>

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 mantra@zabala.eu

About R3-MYDAS:

R3-MYDAS is a Horizon-Europe funded project that focuses on the development of a **multi-actor framework**, integrating innovative digital technologies, advanced mechatronics and newly developed approaches from social sciences and humanities, for functionally, environmentally and economically sustainable circular value chains for **remanufacturing of energy goods at the industrial level**.

• Innovative Digital Technologies

- Machine Learning
- Marketplace
- Digital product passport
- Graph models for defects

• Advanced Mechatronics

- Additive manufacturing
- Laser cladding
- Automatic assembly/disassembly

• Social Sciences and Humanities

- Social Models
- Legal framework
- Ethics

The Consortium:



Webpage



r3-mydas.eu

LinkedIn



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Agenda

- **Circular Business Models & Circular Value Proposition**
Speaker: Parnia Shafinejad (EIT Manufacturing South)



- **Q&A (short)**

- **Digital Product Passport (DPP) & Sectoral Use Cases**
Speaker: Abdelrahman Hesham Mohamed Abdelhalim Abdalla (Politecnico di Milano)



- **Q&A**





Circular Business Models & Circular Value Proposition

Parnia Shafinejad (EIT Manufacturing South)



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Agenda

Circular Business Models: From Linear Economy to Circular Strategy

1. CE and Circular Business Models
2. Capacity Gaps: What Implementation Actually Requires
3. Enabling Tools: Methodologies, Tools and Support
4. Circular Value Proposition: A thinking Framework
5. Short Q&A



1. **CE and Circular Business Models**
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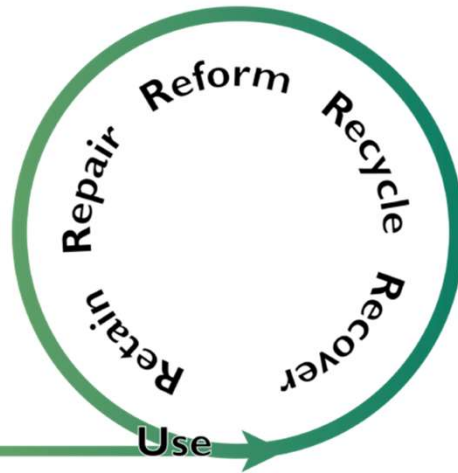
Linear Economy

Take — Make — Use —> Waste

- Value is extracted once
- Products are often designed for **short lifecycle**
- Waste becomes end points
- High dependency on resources

Circular Economy

Take — Make — Use —>



- The end of one product's life is **beginning of another's.**
- Material components **remain longer** in the system.
- If you can recover value that you throw away currently, your **base cost improves** and **resource dependency shrinks.**

“Circular Business Models are not about doing less harm, but they are about **capturing value** that the linear model throws away”

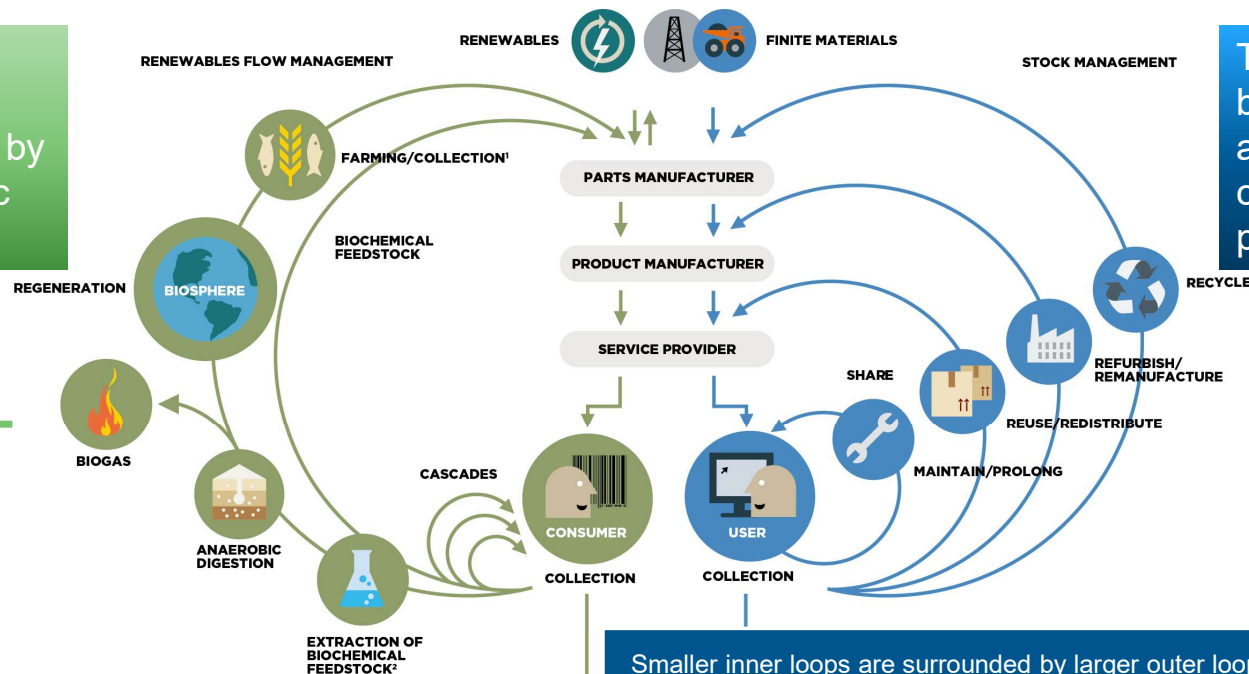


Four Business Pressure on Linear Manufacturing



The Butterfly Diagram: Visualising the Circular Economy

Biological cycle of the butterfly is for organics regenerating the materials by composting, and anaerobic digestion



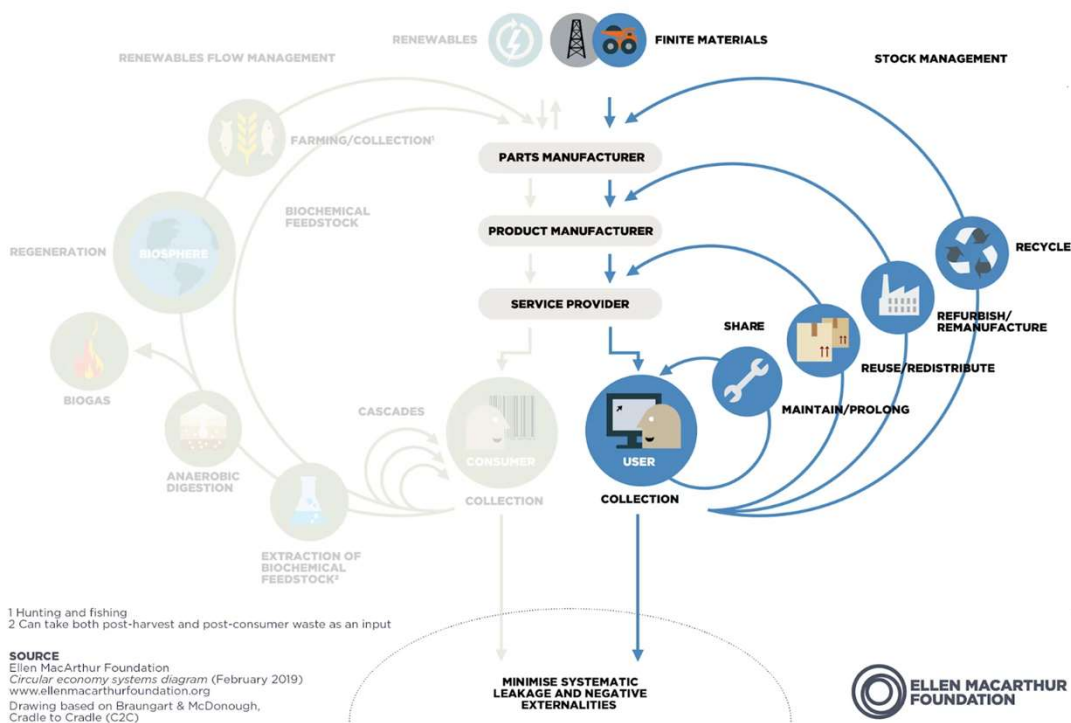
Technical cycle of the butterfly is for products that are used rather than consumed such as metals, plastics, wood.

1 Hunting and fishing
2 Can take both post-harvest and post-consumer waste as an input

SOURCE
Ellen MacArthur Foundation
Circular economy systems diagram (February 2019)
www.ellenmacarthurfoundation.org
Drawing based on Braungart & McDonough,
Cradle to Cradle (C2C)

The Butterfly Diagram

Smaller inner loops are surrounded by larger outer loops, where most value can be captured as they retain more of the embedded value of a product



Recycle

This is when a product can no longer be used and final way to keep in use the materials from which product is made. Retain the value of the materials

Reman

This is done when products cannot remain in circulation in their current state and need more intensive work to be used again. The re-engineered products that come with a warranty

Refurbish

Returning products to good work by repairing or replacing components, updating specifications and improving

Redistribute

It is another model to reserve the value of a product and keep it in use by diverting it from intended market to another customer

Reuse

Like sharing and maintaining, this step keeps products in use in their original form and for their original purpose. Reuse business are growing, like reuse packaging and clothing

maintenance

Help to prolong the usable life of the products by keeping the products at high quality and guards them against failure

Share

Has high power to increase the utilisation of many products. Examples: car-sharings, mechanical tools, cloths, platforms enabling businesses to gain

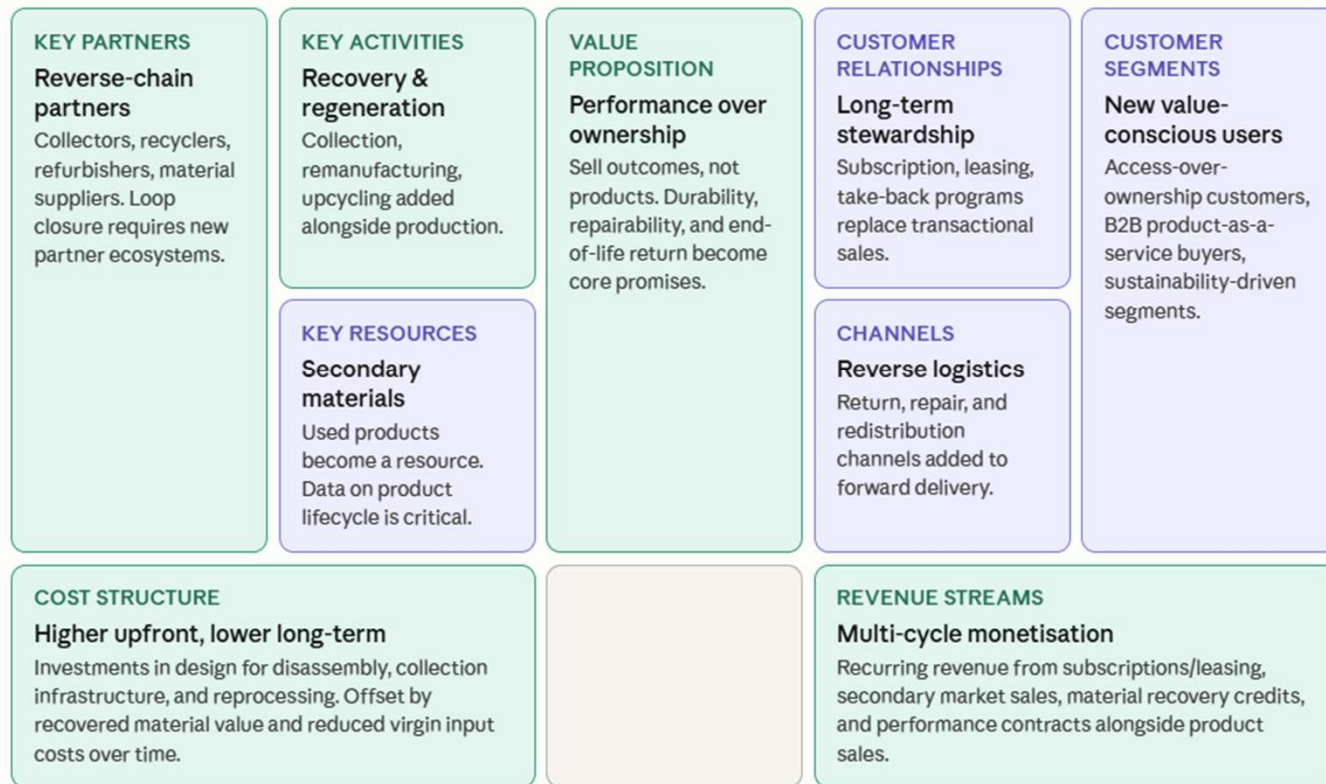


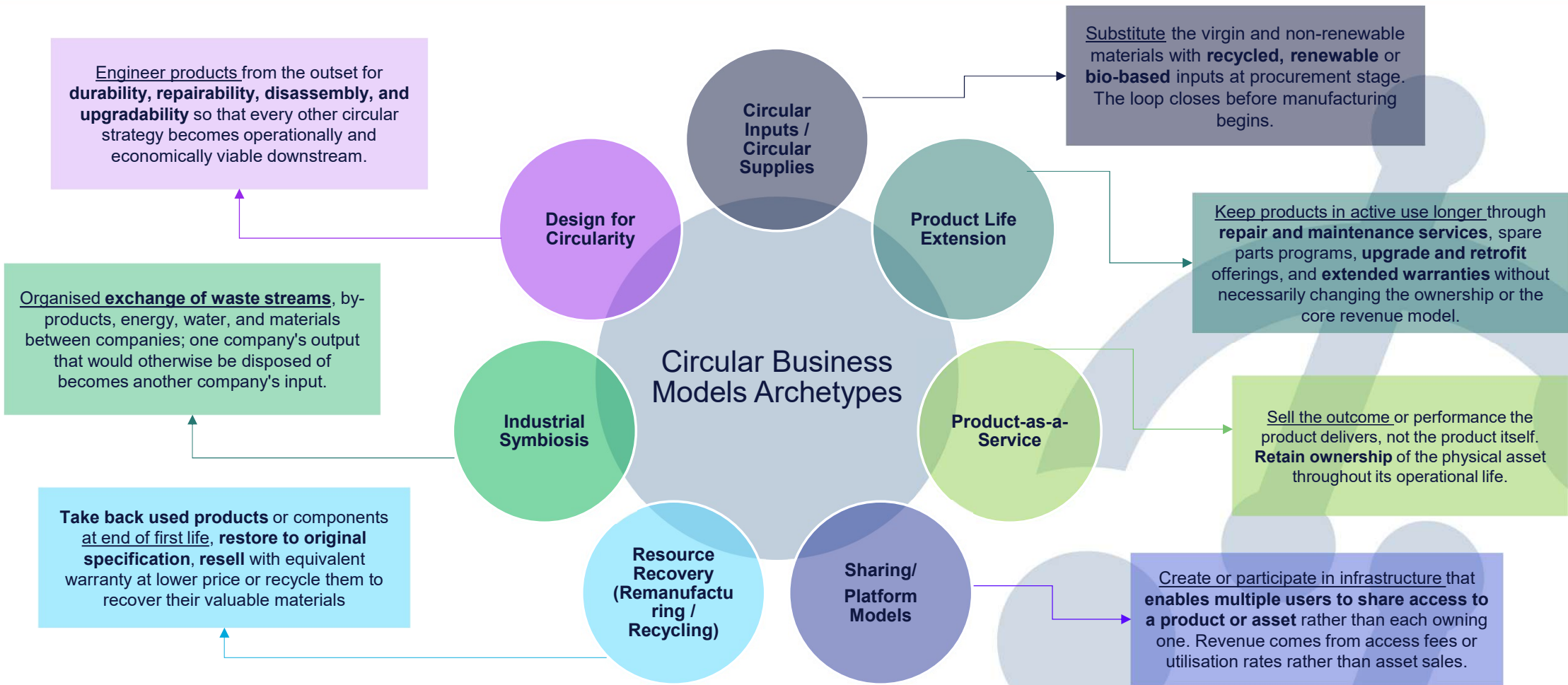
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What is a Circular Business Model?

“CBM is a BM that creates, delivers and captures value while extending the lifecycle of products, materials and resources”

■ Deeply transformed
 ■ Moderately adapted
 ■ Minor change

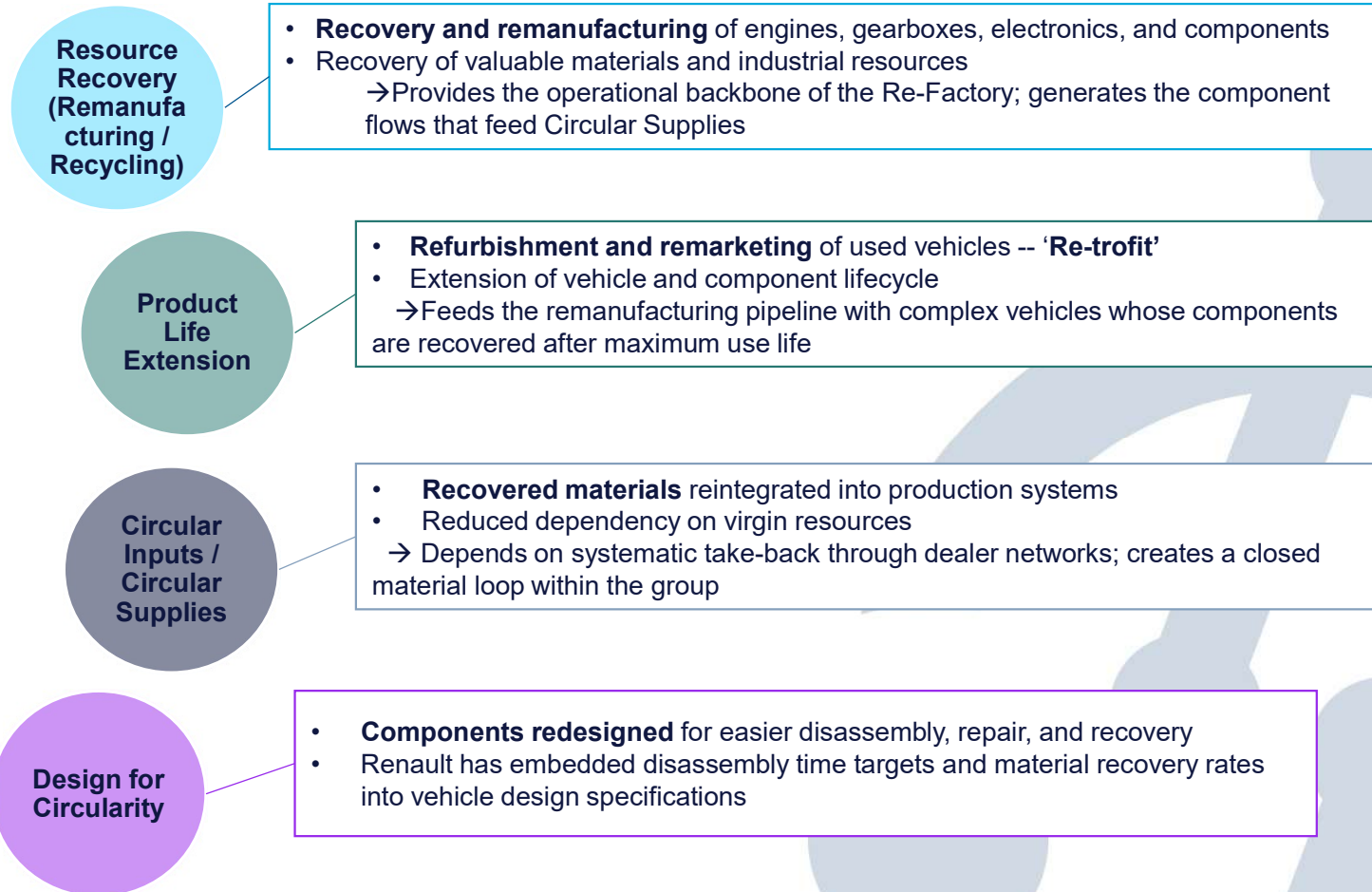




Circular Economy at Flins



In late 2020, Groupe Renault increased their ambition level and established “RE:Factory”, Europe’s first dedicated circular economy factory for vehicles and mobility.



Industrial Use Case



Caterpillar Inc. is the world's largest manufacturer of construction and mining equipment, diesel and natural gas engines, and industrial gas turbines. Revenue ~\$67bn (2023). Their circular model has been built incrementally over decades and now represents a fundamental part of their business architecture.

Resource Recovery (Remanufacturing / Recycling)

- **Takes back** used engines, hydraulics, fuel systems, and electrical components through the dealer network: disassembles, restores to OEM spec, resells with full warranty at 20% below new price

Product Life Extension

- **Certified dealer** rebuild programmes extend machine life by 10–15 years at 40–60% of new machine cost;
- **Comprehensive spare parts** network and **predictive maintenance contracts** keep machines in service for 20–30+ years

Circular Inputs / Circular Supplies

- Remanufactured cores re-enter the production chain as **verified recovered inputs**, partially substituting virgin raw material procurement across engine and drivetrain component families

Product-as-a-Service

- Cat Financial and dealer service contracts increasingly approach **performance-based models**



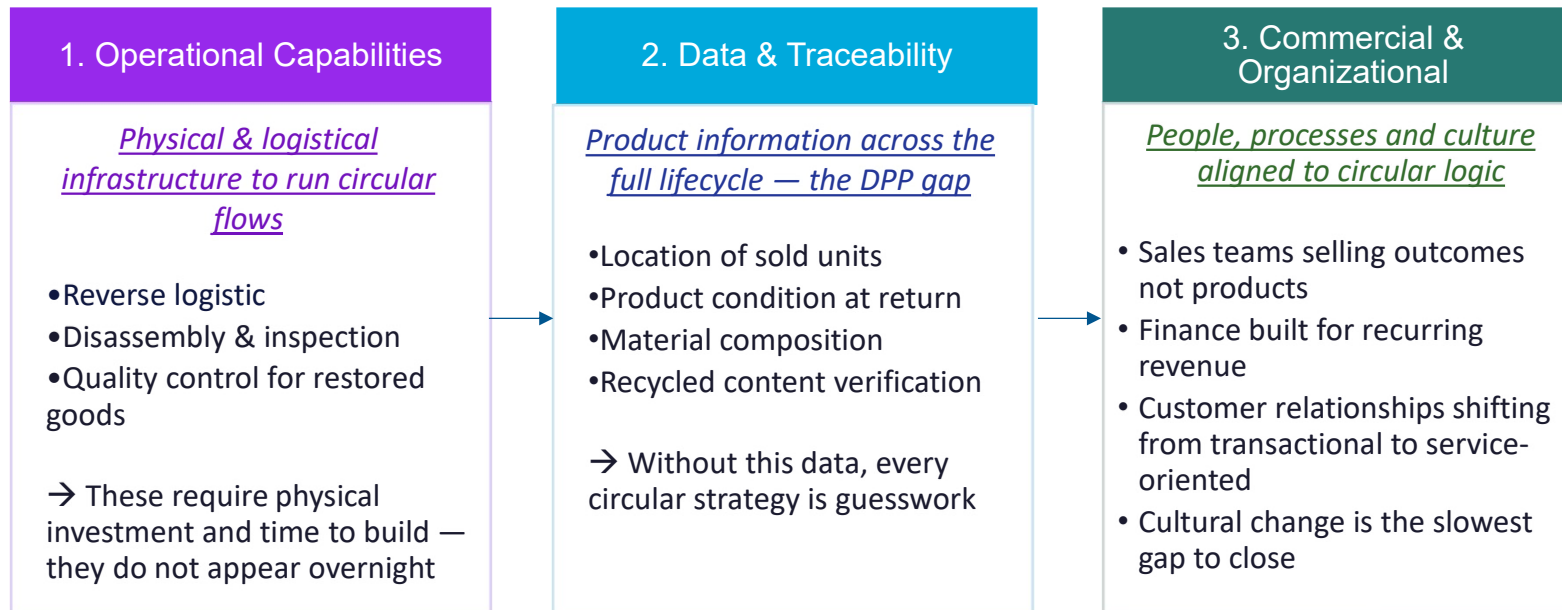
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- 2. Capacity Gaps: What Implementation Actually Requires**
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Capacity Gaps: What Implementation Actually Requires

Most SMEs understand circular models before they understand why implementation stands. The answer is almost always one of three gaps.

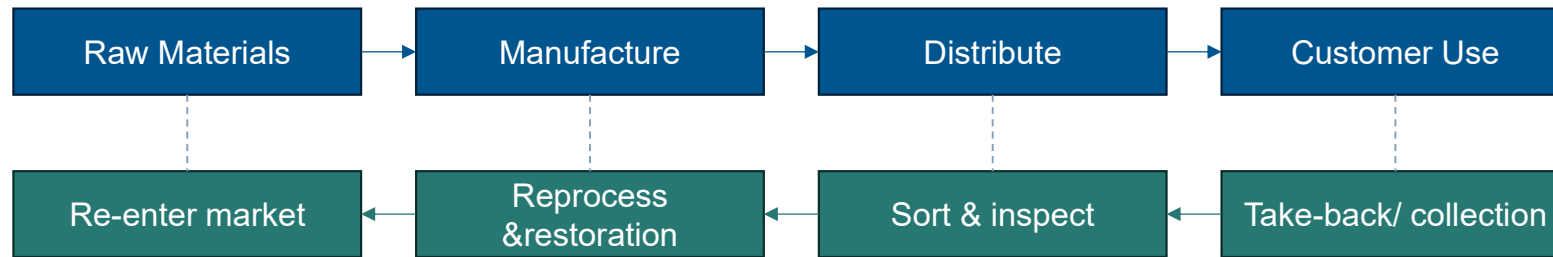
Understanding the concept is step one. Building the capability to act on it is step two — and it is where most transitions slow down or stop.



1. Operational Capabilities

The physical and logistical infrastructure that circular models require

FORWARD FLOW (existing)



REVERSE FLOW (what circular models require)

Reverse Logistics Infrastructure

- Contracts with carriers and logistics partners for product collection.
- Depot or consolidation points for returned units.
- Tracking systems for inbound flows.

Disassembly & Inspection Capability

- Trained technicians who can disassemble products systematically
- Condition grading protocols for returned components
- Decision logic for restore vs. recycle vs. scrap.

Restoration & Quality Control

- Processing lines adapted for variable input quality — unlike new production where inputs are standardized
- Testing and certification to warranty-equivalent standards
- Documentation for secondary market customers.

2. Data & Traceability

Circular models require continuous product information — most manufacturers have none after the point of sale



What circular models need to know — and currently cannot:

Where is the product?

Location and custody of sold units throughout operational life. Without this, take-back logistics cannot be planned and recall, or refurbishment campaigns are impossible to target.



What condition is it in?

Component wear, performance degradation, and failure history. Determines whether a returned unit is remanufacturable, refurbishable, or only recyclable — and therefore its economic value on return.



What does it contain?

Material composition at component level. Required for recycled content claims, compliance with ESPR material restrictions, and accurate LCA. Cannot be assumed — must be verified.



Can the recycled content be verified?

Proof of recycled input origin and percentage. Without verifiable documentation, circular supply claims fail customer audits and green claims compliance under EU Green Claims Directive.



3. Commercial & Organizational

The hardest gap — because it requires cultural change, not just process change

LINEAR ORGANISATION

- Sales approach**
Sell a product at highest margin per unit
- Revenue model**
Capital sale recognised at point of delivery
- Customer relationship**
Transactional — ends at point of sale or warranty expiry
- Engineering goal**
Meet specification at lowest production cost
- Waste mindset**
Waste is a disposal cost to be minimised

CIRCULAR ORGANISATION

- Sell an outcome or service over time; relationship is the asset**
- Recurring revenue over contract period; requires finance system adaptation**
- Service relationship; ongoing performance obligation and trust**
- Maximise durability and repairability; because your margin depends on it**
- Waste is a resource input or a cost signal to redesign away from**

The organisation must be as circular as the business model — starting with the conversation your sales team has with the customer tomorrow.



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Enabling Tool: Design & Business Model Methodologies

Tools that help companies design their circular approach before committing to operational investment

1 CIRCO Methodology

Developed in the Netherlands specifically for product companies and SMEs. Structured workshop process to design circular business models around your specific product. Covers all six archetypes with practical facilitation.

circodesign.nl

2 ReSOLVE Framework

Ellen MacArthur Foundation's six circular strategy levers: Regenerate, Share, Optimise, Loop, Virtualise, Exchange. A quick diagnostic tool for identifying which circular strategies apply to your product category.

ellenmacarthurfoundation.org

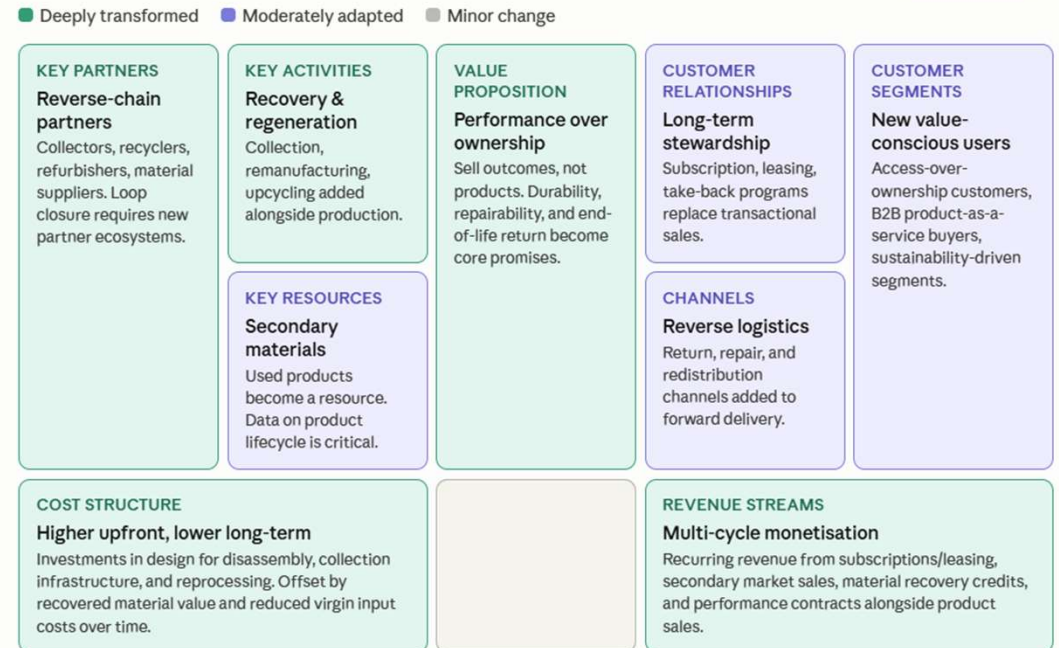
3 Lifecycle Assessment (LCA)

Quantifies the environmental and economic impact of circular versus linear options for your specific product. Makes the business case concrete with numbers rather than assumptions — essential for investment decisions.

ISO 14040/14044

Circular Business Model Canvas

Adapted from Osterwalder



Enabling Tools: Digital Infrastructure & Support Network

Closing the data gap and the organisational gap

Digital & Operational Tools

Design → Make → sell → use → return → restore

Digital Product Passport — data layer across the full lifecycle

IoT & Sensor Technology

- Track product location, usage patterns and condition in real-time across the customer's operations.
- Feeds the data layer that DPP formalises.

Digital Traceability Platforms

- Verify material origins, recycled content percentages, and supply chain provenance.
- Makes circular supply claims verifiable for customer audits and regulatory compliance.

ERP Adapted for Reverse Logistics

- Enterprise systems rebuilt to handle variable-quality inbound flows, asset ownership accounting, and recurring revenue recognition — the operational backbone of circular operations.

Networks & Funding Support

MANTRA Project

You are here

The network and knowledge transfer you are accessing right now. Co-funding, expert connections, and structured support for circular transition planning.

Industrial Symbiosis Platforms

Regional programmes matching companies with compatible waste streams. ENEA in Italy, WRAP in the UK, Kalundborg model in Denmark. Geography is your asset — proximity makes symbiosis low-cost.

EU Funding: Horizon Europe & LIFE

Dedicated funding streams for circular economy transitions including reverse logistics infrastructure, digital traceability systems, and industrial symbiosis network development.

Digital Innovation Hubs

Shared access to advanced manufacturing technology and digital tools. Equipment and capability SMEs cannot justify individually, available through network membership.



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Circular Value Proposition: A thinking Framework

Three questions that map circular opportunity onto your Business Model Canvas — and reveal your data gap

Q1 Where is value currently lost?

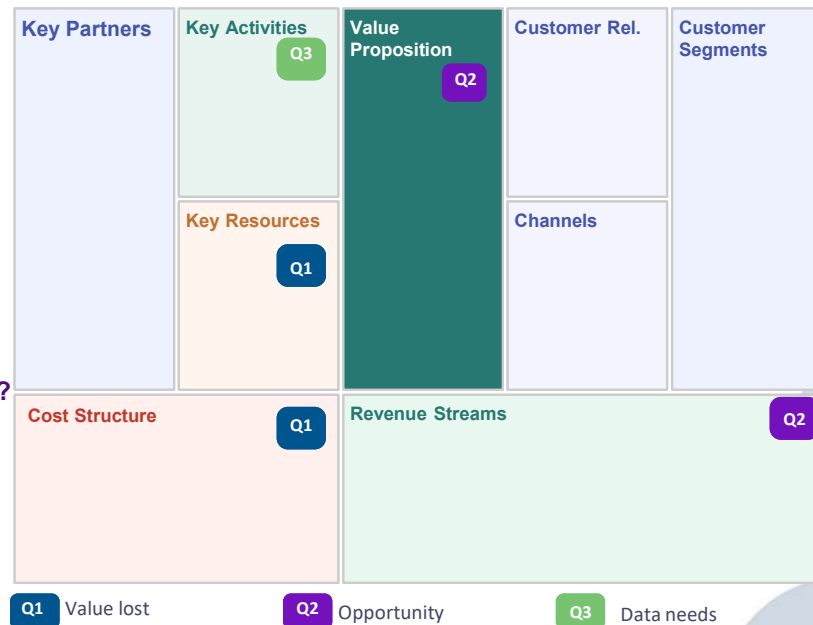
Identify the exit points in your product's lifecycle where value leaves your system unrecovered — production waste, end-of-life disposal, discarded warranty returns, materials sold as scrap.
→ Every exit point is a potential circular opportunity.

→ Maps to: *Cost Structure (disposal costs) and Key Resources (value being discarded)*

Q2 What circular opportunity does that loss suggest?

- Lost materials → Circular Supplies or Resource Recovery.
- Discarded returns → Product Life Extension or Remanufacturing.
- Low utilisation → Sharing Models.
- Neighbour's waste → Industrial Symbiosis.
- The pattern of loss tells you which archetype is relevant.

→ Maps to: *Value Proposition and Revenue Streams (new model type)*



Q3 What product or lifecycle data do you need?

- Location of sold units
 - Condition at return
 - Material composition and traceability
 - Component performance history
 - Recycled content verification
- This answer is your data gap — and your Digital Product Passport starting point.

→ Maps to: *Key Activities (data collection) and Key Partners (DPP infrastructure)*

Three things to carry forward

CBMs are not one model

They are a landscape of six archetypes:
start with the one that **fits your current capabilities**, not the most ambitious one

The gaps are real but closeable

-Operational, data, and organisational- gaps each have concrete tools and support structures addressing them.

Your data gap is your starting point

The question:
'what product data do I need?' is where circular strategy and Digital Product Passports meet.



Thank you for your attention

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