

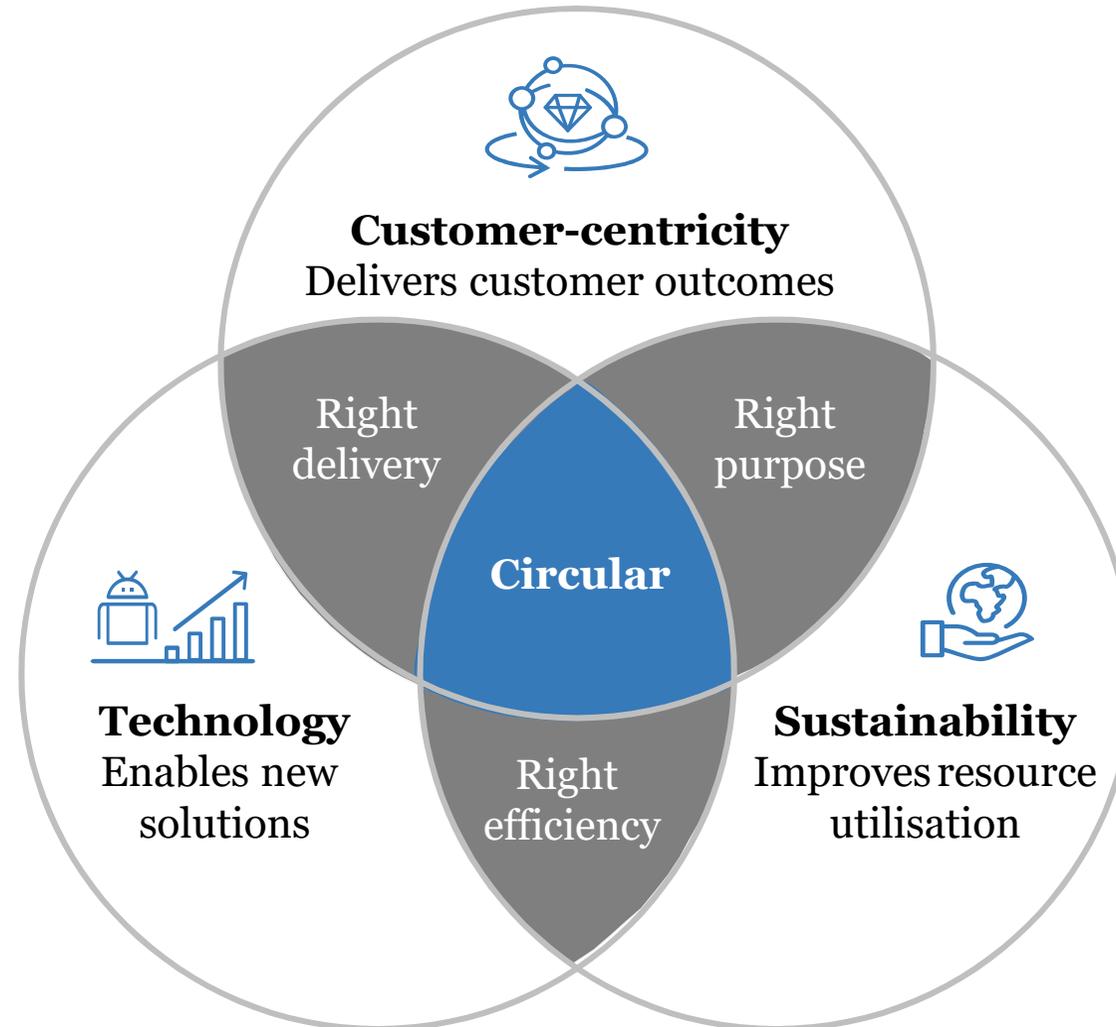
# **Kestävää kasvua kiertotalouden liiketoimintamalleilla, digitaalisatiolla ja asiakaskeisyydellä**

**[www.circularplaybook.fi](http://www.circularplaybook.fi)**

## **Mahdollisuudet - Hyödyt – Toteutus**

Jyri Arponen, Senior Lead, Finnish Innovation Fund Sitra  
Tenologiateollisuuden Kasvukiertue 2019

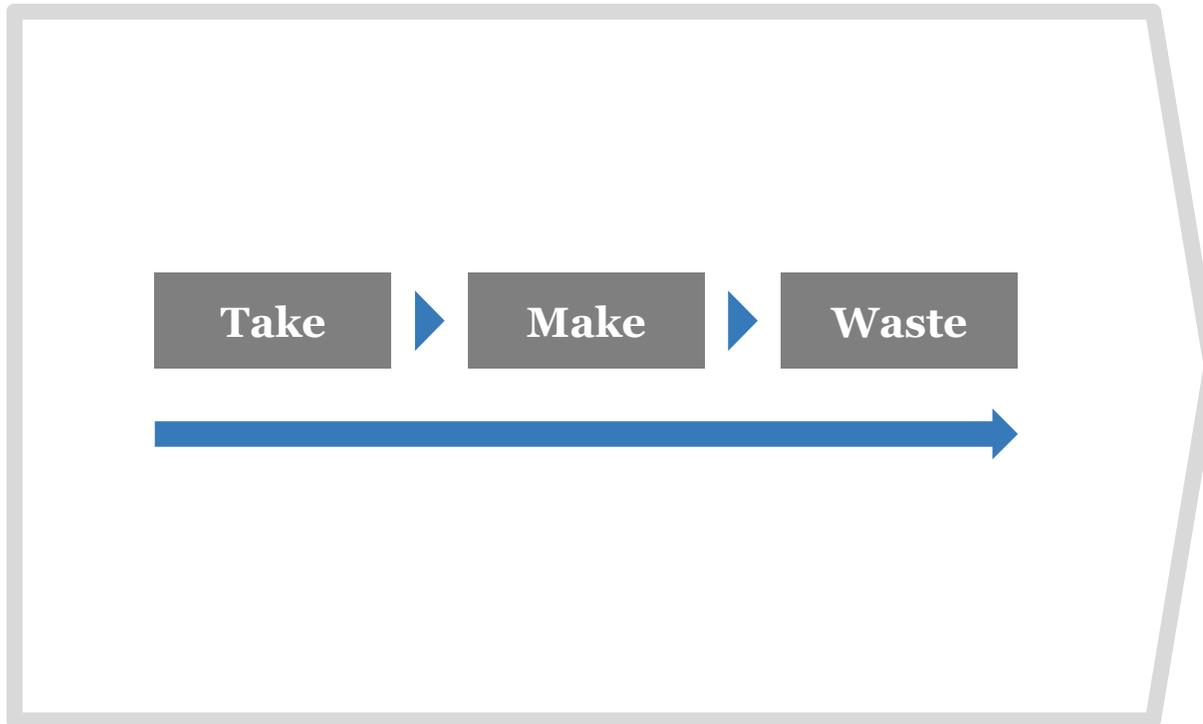
# Three drivers underpin the shift towards circular



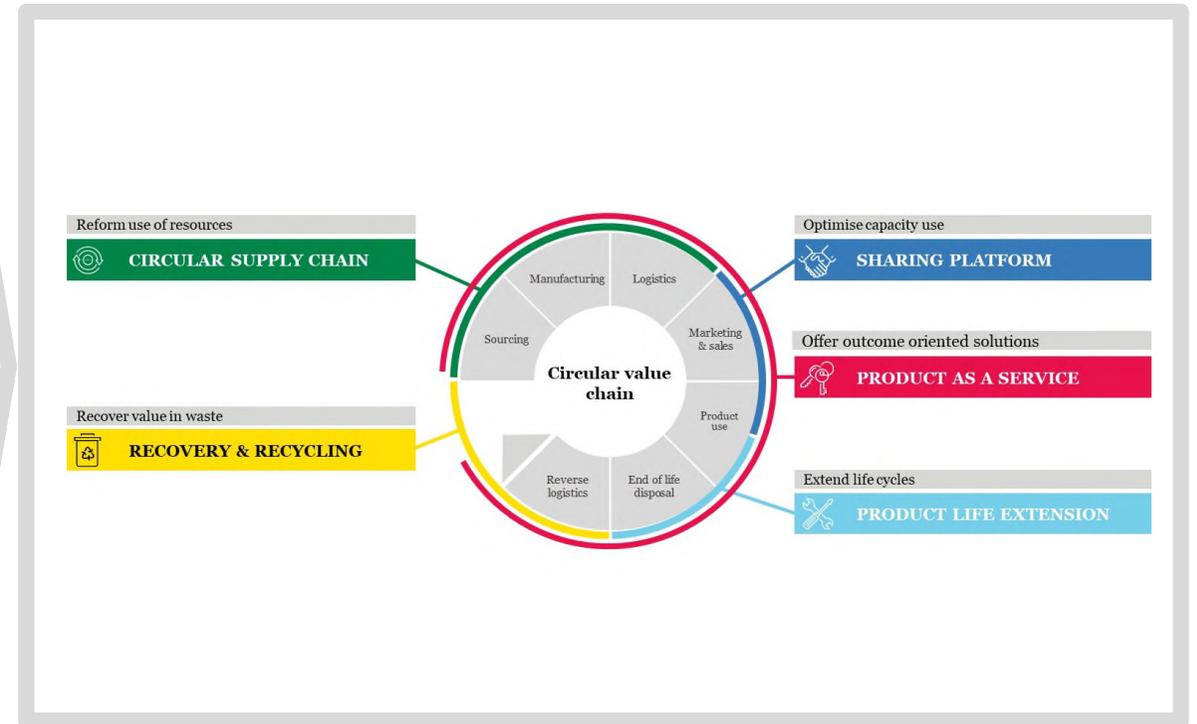
Source: Accenture, Appendix 2 for more details

# The programme was initiated to drive a shift from linear to circular business models in the manufacturing industry

From Linear...



...to Circular



Focusing on the change to customer-centricity and digitally enabled business models

# CIRCULAR ECONOMY BROADENS INDUSTRY SCOPE BEYOND TRADITIONAL BOUNDARIES

## NEW INDUSTRY BOUNDARIES

### Circular ecosystem actors



**Linear businesses**

- Typically more traditional industry actors operating in a value chain focused on maximizing output, e.g. products and services
- Contributing to a take-make-waste economy, with consumption as key growth driver

### Examples



*Manufacturer of automotive*



**Circular businesses**

NEW

- Businesses exploiting opportunities created by inefficient ways-of-working of a linear economy
- For example, selling renewable materials, capturing underutilized capacities and wasted product life-cycles, and turning waste into valuable materials



*Provider of automotive sharing platform*



**Enabling businesses**

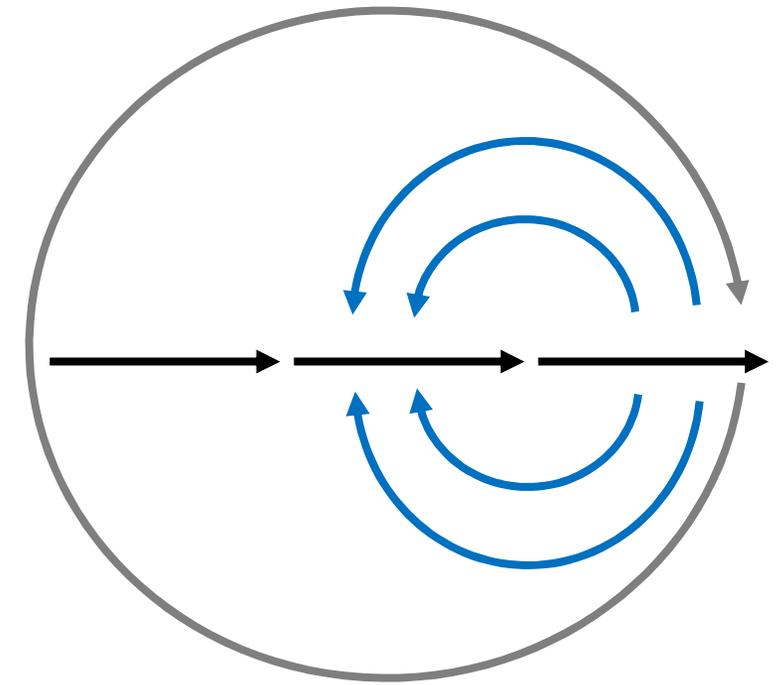
NEW

- Businesses supporting linear and circular actors to advance their business models towards a increasingly circular approach
- For example, technology providers, researchers, circular capital providers, etc.



*Connected car platform for services offerings*

### Illustrative example



— Linear businesses    — Circular businesses    — Enabling businesses

# As an outcome of the programme, a Circular Economy Playbook and tools. [www.circularplaybook.fi](http://www.circularplaybook.fi)

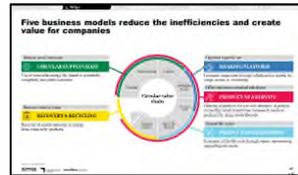
The playbook consists of 6 chapters with circular economy concepts, best practices and tools to guide your business to identify and define your circular economy opportunity and develop a plan to realize circular advantage

PLAYBOOK CHAPTERS

## 1. Why circular economy?



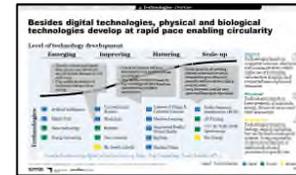
## 2. What opportunities exist?



## 3. Which capabilities are required?



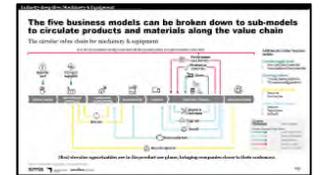
## 4. Which technologies can support?



## 5. How to design the transformation journey?



## 6. Industry deep dives

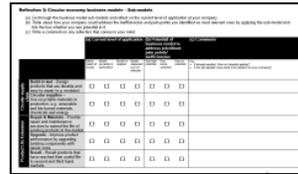


EXAMPLE TOOLS<sup>1</sup>

## Value case tool



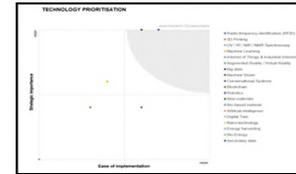
## Business model development toolkit



## Capability maturity assessment



## Technology maturity assessment



## Roadmap development



## Business model canvas



<sup>1</sup> Additional tools available in the playbook

# Circular economy is about turning inefficiencies in linear value chains into business value

## Inefficiencies of linear value chains



### UNSUSTAINABLE MATERIALS

Material and energy that cannot be continually regenerated

*– for example, direct and indirect material is not renewable or bio-based*

### UNDERUTILISED CAPACITIES

Underutilised or unused products and assets

*– for example, products are not operating full hours or full functionality is not useful*

### PREMATURE PRODUCT LIVES

Products are not used to fullest possible working life

*– for example due to new models and features or lack of repair and maintenance*

### WASTED END-OF-LIFE VALUE

Valuable components, materials and energy is not recovered at disposal

*– for example, not recycled or recovered at end of life*

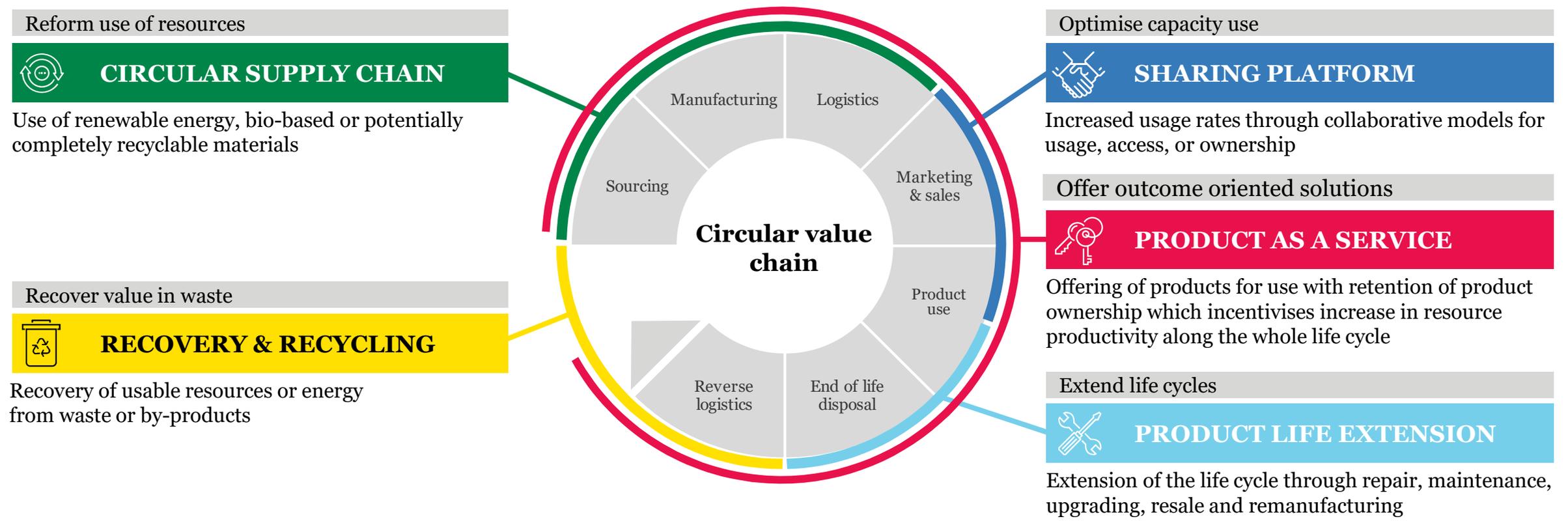
### UNEXPLOITED CUSTOMER ENGAGEMENTS

Sales organisation focus on selling functionality of product rather than the customer problem

*– for example, missing opportunities to engage customers throughout the product life-cycle to offer additional services and add-on sales*

Source: Accenture, Appendix 2 for more details

# Five business models reduce the inefficiencies and create value for companies



Source: Accenture, Appendix 2 for more details



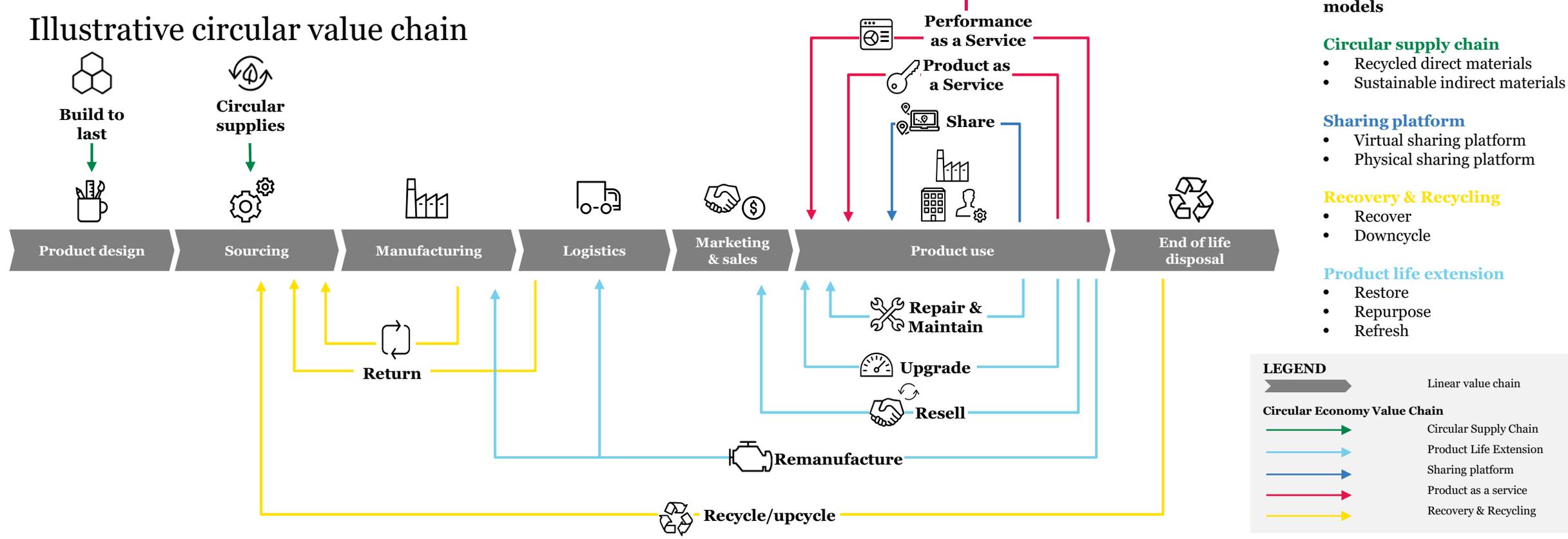
**Did you know?**

On the Circular Economy site, there is an exercise package called **Business model development toolkit**, where you can analyse the relevance of each circular business model for your company.

# Business model specific sub-models modify different steps of the value chain to make it circular

As a Service models are mostly concerned with the operation phase, but span across the value chain

## Illustrative circular value chain



**Most circular opportunities are in the product use phase, bringing companies closer to their customers.**

Source: Accenture, Appendix 2 for more details

### Did you know?

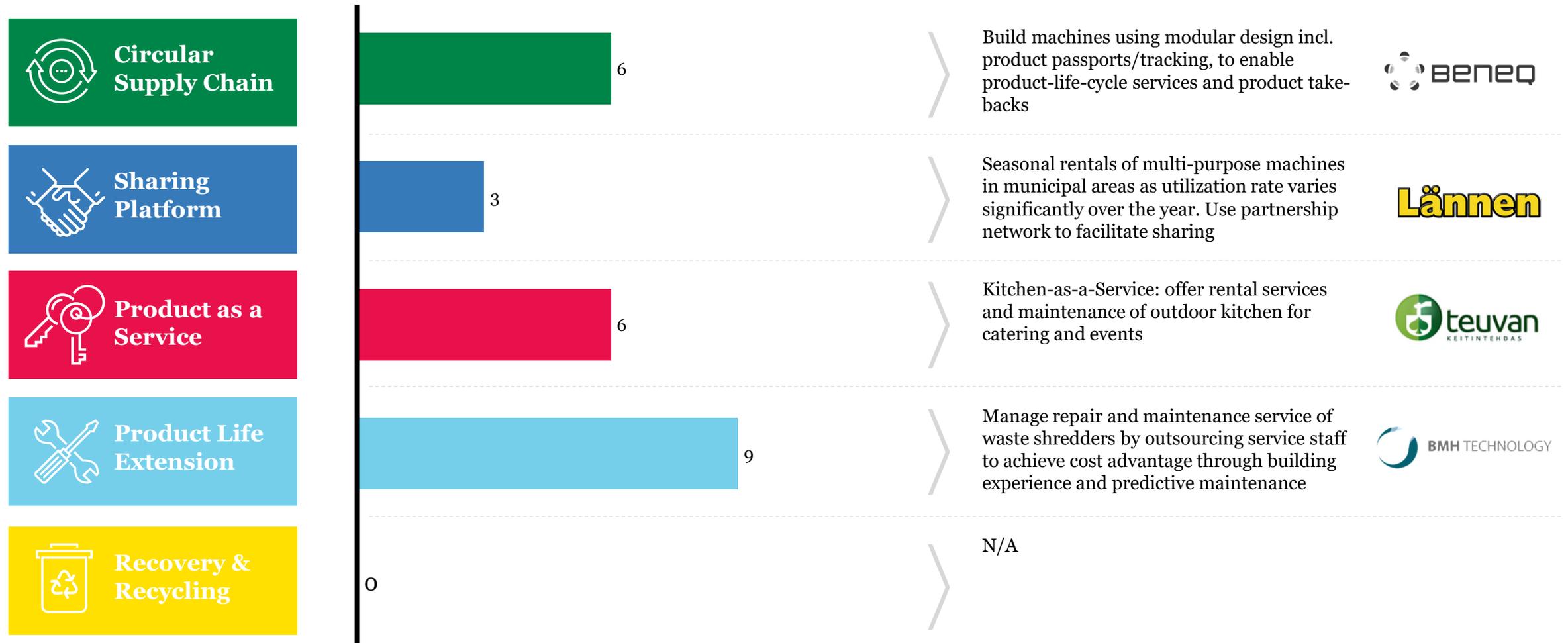
In **Chapter 6**, there is an industry-specific circular value chain illustration for Machinery & Equipment, Marine, Energy and Transportation industries.

# Overall, the programme engaged a large group of players in the Finnish manufacturing ecosystem



# Companies have developed circular ideas specific for their company, mainly focusing on Product Life Extension

Circular ideas identified during workshops



# Piironen: Meeting room as a service

# PIIROINEN

## Company description

Piironen is a Finnish family-owned company that operates in four different business areas. Besides designing, manufacturing, selling and marketing its own collection of furniture for use in public spaces, the company also manufactures high-quality metal components, undertakes metal plating and offers form pressing and upholstery services for the furniture industry.

Piironen's factory and headquarters are located in South-West of Finland, in Salo. The company has partners and clients around the world and one third of its turnover comes from exports.

## The circular opportunity

High costs make investments in high-quality meeting room furniture challenging especially for small companies. Furthermore, due to high costs, meeting furniture is typically upgraded with very long time intervals, not following changes in needs.

To tackle these challenges, Piironen is exploring the opportunity to offer complete meeting rooms as a service, with high-end design furniture and other equipment tailored to customer needs. To deliver the solution, Piironen has partnered with three other companies, and is piloting the solution with a hotel chain.

## Benefits

The meeting room as a service solution allows Piironen's customers to avoid large investments without compromising the quality of their meeting environment. At the same time, the solution facilitates upgrading and reusing furniture, extending the lifecycle of products. Overall, the solution brings Piironen closer to its customers, and enables the company to deliver on circular economy principles.



## Applied business model



# Sisu Axles: Predictive axle maintenance

## Company description

Sisu Axles is an independent axle manufacturer for heavy duty truck, military, container handling and industrial applications. The company specializes in heavy duty rigid planetary reduction axles and independent suspension systems.

Sisu Axles serves its international customers from its assembly plant located in the southern part of Finland, the town of Hämeenlinna. The majority of its products end-up being exported to various locations around the globe. The company’s axles can be found on virtually every continent, from the United States to Australia and Russia to Antarctica.

## The circular opportunity

The products of Sisu Axles are often used in applications where the operators are selling availability or a certain output per operating hours. In this type of operations it is crucial to be able to minimize vehicle downtime and especially eliminate unexpected maintenance needs.

To help its customers in their continuous effort to increase productivity and availability, Sisu Axles is now exploring opportunities of predictive maintenance.

## Benefits

Typically, customers of Sisu Axles are doing preventive maintenance based on a predefined maintenance regime. With predictive maintenance, operators can call vehicles into service only on a need to service basis, reducing unnecessary maintenance and allowing the vehicle to continue in operations. Furthermore, the operators can get early warning messages of commencing component problems, preventing potential catastrophic failures. As a result, vehicles have higher availability, and they can be kept longer in use.



## Applied business model



# Tamturbo

## **SUPREME AIR POWER**

100% Oil-less High Speed Turbo  
Compressors

Air as a Service €/m<sup>3</sup>



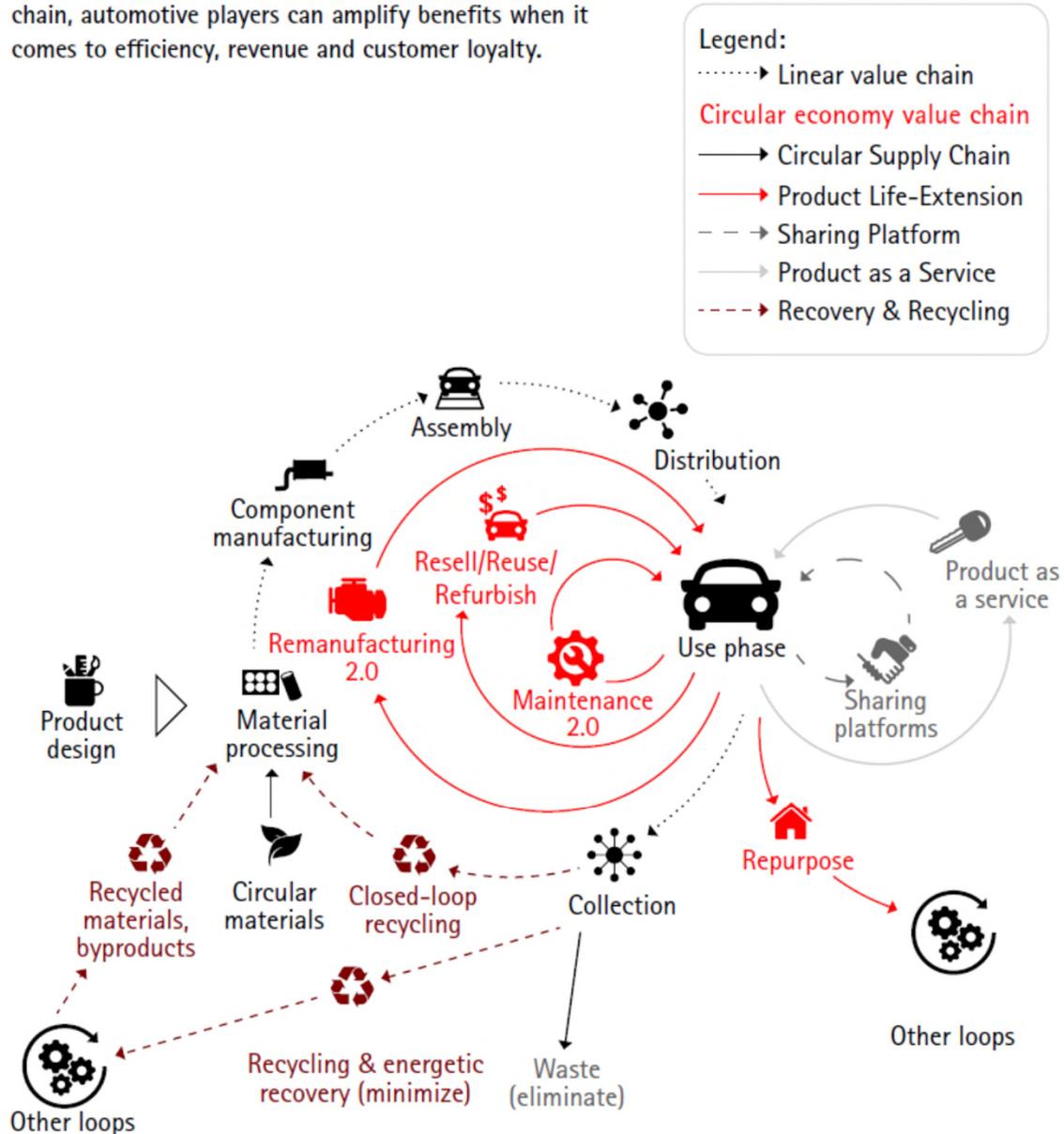
# EARLY MOVERS WITHIN MANUFACTURING INDUSTRY HAVE ALREADY STARTED

	Machinery & Equipment	Marine	Energy	Transportation
CIRCULAR SUPPLY CHAIN	Valmet, Outotec	WÄRTSILÄ, Rolls-Royce, Kavika, ABB	Danfoss	VOLVO, AGCO POWER
SHARING PLATFORM	EquipmentShare, Valmet, eRENT	AMMA, Cloud Shared Co-Living Platform	sonnen	UBER FREIGHT
PRODUCT LIFE EXTENSION	SRH, CAT Reman, KONECRANES, beneq, VATRA, PONSSE	SCHÖTTEL, Smedegaarden, Evac, ABB, WÄRTSILÄ, PIKKIO WORKS	Helvar, Schneider Electric, ABB, ALFA LOM	ALSTOM, SISU AXLES, AGCO POWER, SCANIA, RENAULT
RECOVERY & RECYCLING	NOKIA, Valmet, zenROBOTICS, PURKUPHA	WÄRTSILÄ, KONGSBERG, SEA 2 CRADLE, MAERSK	SIEMENS, Schneider Electric	NOKIA, RENKAAT, Ford, GM
PRODUCT AS A SERVICE	AMECO, metso, Tamturbos, GE	Rolls-Royce, WÄRTSILÄ	PHILIPS, Valmet, SOLNET, ABB	MICHELIN, VOLVO, IMANI

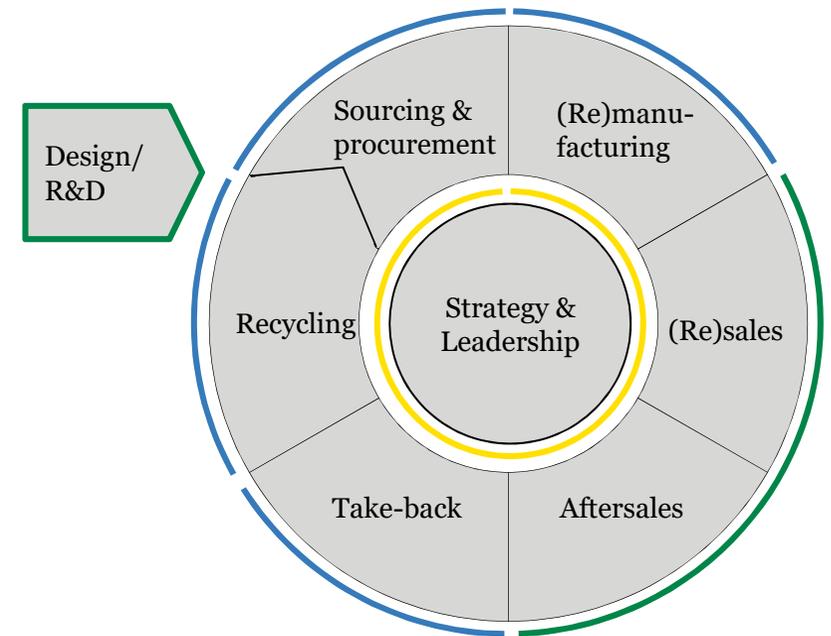
# Automotive's latest model: Redefining competitiveness through the circular economy

Source: Accenture

Figure 1: By driving circular principles throughout the value chain, automotive players can amplify benefits when it comes to efficiency, revenue and customer loyalty.



# 3 KEY AREAS OF DEVELOPMENT TO MOVE FROM LINEAR TO CIRCULAR ECONOMY



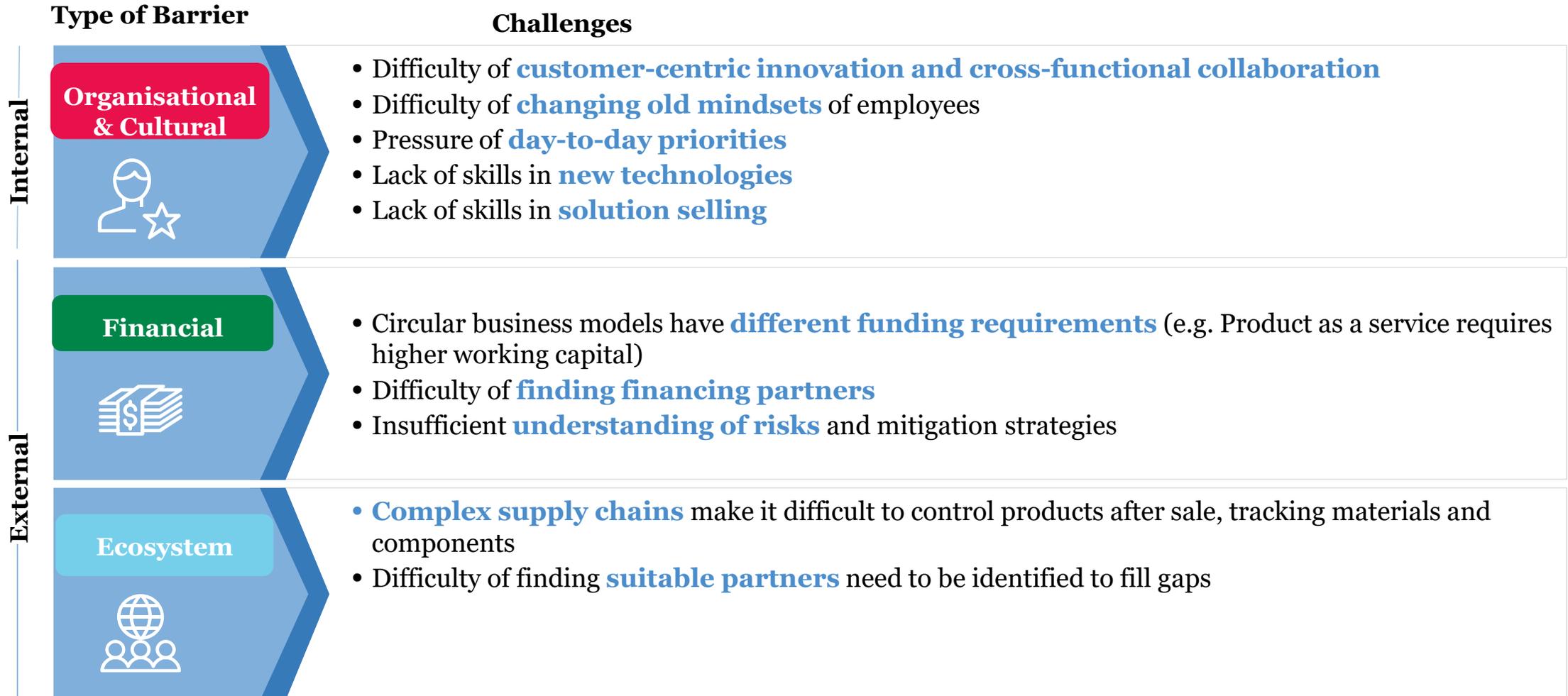
# Not all capabilities have to be build internally, ecosystem partners can support

Illustrative examples

<p><b>1</b> Design solutions to deliver customer outcomes</p>	<ul style="list-style-type: none"> <li>• Providers of digital technologies</li> <li>• Companies supporting on digital product life cycle management</li> <li>• Designers for customer centric and digital design</li> </ul>		<p><b>6</b> Take back products at end-of-life</p>	<ul style="list-style-type: none"> <li>• Logistic companies to jointly develop return scheme or draw on existing services</li> <li>• Companies with specialised return logistics offering</li> </ul>	
<p><b>2</b> Design products for circularity</p>	<ul style="list-style-type: none"> <li>• Companies and universities with know-how on e.g. circular materials</li> <li>• Designers assisting circular design</li> </ul>		<p><b>7</b> Deploy technology and data for delivering outcomes</p>	<ul style="list-style-type: none"> <li>• Technology providers for e.g. IoT solutions</li> <li>• Data-analytics companies and tools that help both gather and analyse data</li> </ul>	
<p><b>3</b> Source recycled or recyclable materials</p>	<ul style="list-style-type: none"> <li>• Raw material suppliers that already have circular economy initiatives</li> <li>• Recycling companies</li> <li>• Renewable energy companies</li> </ul>		<p><b>8</b> Orchestrate ecosystem of partners</p>	<ul style="list-style-type: none"> <li>• Knowledge and experience sharing networks and platforms</li> <li>• Public programs on circular economy</li> </ul>	
<p><b>4</b> Produce, remanufacture and recycle products</p>	<ul style="list-style-type: none"> <li>• Providers of innovative production or remanufacturing technologies (e.g. robotics, 3D printing, artificial intelligence)</li> </ul>		<p><b>9</b> Transform mindset and steering</p>	<ul style="list-style-type: none"> <li>• Companies promoting transparency and reporting</li> <li>• Networks offering guidance and good practices on transformation</li> </ul>	
<p><b>5</b> Sell outcomes and life-cycle service</p>	<ul style="list-style-type: none"> <li>• Partners that can assist in identifying customers (e.g. via Business Finland's <a href="#">search</a>)</li> <li>• Providers of sales intelligence and customer platforms</li> </ul>				

— Resource handling  
— Customer value delivery  
— Organisation and collaboration

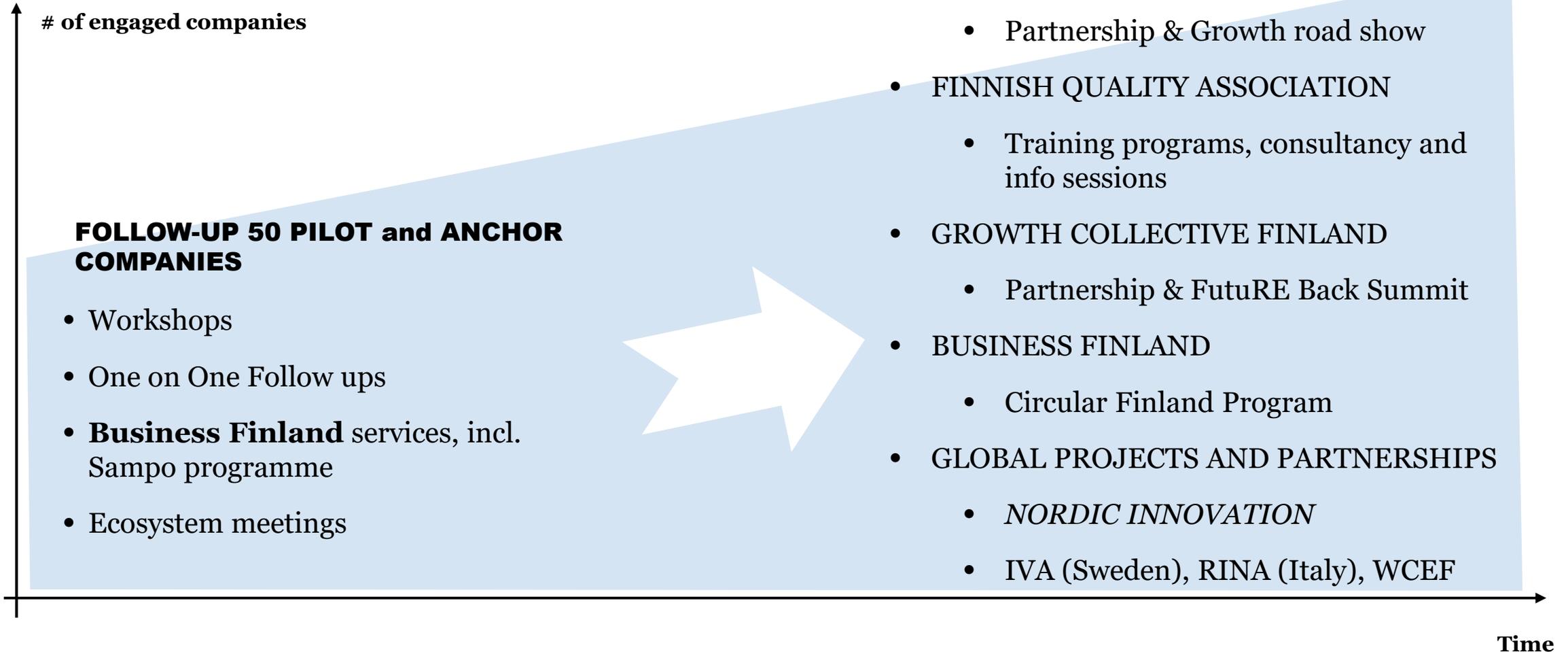
# IMPLEMENTATION PREPARE FOR BARRIERS



Source: Accenture

# Going forward, the ambition is to engage 500 more companies to start their circular transformation

## ENGAGE 500 NEW COMPANIES



# Kasvuryhmä



Projektin tavoitteena on luoda keskisuurten yritysten omistajille ja toimitusjohtajille selkeää ymmärrystä **kiertotaloudesta uuden kasvun lähteinä** sekä innostaa heitä kiertotalouden **muutosagenteiksi** omissa yrityksissään ja verkostoissaan.

# Business Finland

KIERTOTALOUESTA GLOBAALIA KILPAILUKYKYÄ  
Tavoitteenamme on tehdä Suomesta  
kiertotalouden edelläkävijä, joka tarjoa kestäviä  
ratkaisuja globaaleihin haasteisiin. Suomalaisten  
yritysten kilpailukykyä kiertotaloudessa  
vahvistavat biotalouden ja digitaalisuuden  
osaaminen. Näitä ja muita Suomen vahvuuksia  
hyödyntäen luodaan uutta arvoa tuotteiden ja  
materiaalien käytössä ja resurssitehokkaassa  
kierrossa. **Aloitus 27.2.**

Outi Suomi, Risto Huhta-Koivisto  
Ilmari Absezt

SAMPO OHJELMA – VALMISTETTU SUOMESSA  
Nuppu Rouhiainen, Pasi Raittila, Pasi Viitanen  
**Käynnistyy uudelleen pian**



**HUOM!**  
**Playbook Training 9.4. 8:30-12:00**  
**Business Finland talossa**

# Kiertotalouden kehitys- ja investointituki haettavissa (TEM)

- Hallitus varasi 4 miljoonaa euroa kiertotalouden ratkaisujen edistämiseen vuosiksi 2018-2019. Tämän vuoden rahoitushaku on nyt auki ja rahoitus on jatkuvasti haettavissa TEM:stä:
- [https://tem.fi/artikkeli/-/asset\\_publisher/kiertotalouden-kehittamis-ja-investointiavustus-jalleen-haettavana-vauhdittaa-kiertotalouden-ratkaisuja](https://tem.fi/artikkeli/-/asset_publisher/kiertotalouden-kehittamis-ja-investointiavustus-jalleen-haettavana-vauhdittaa-kiertotalouden-ratkaisuja)
- Rahoitus on suunnattu erityisesti kiertotalouden ratkaisujen saamiseksi kaupallisiksi ja siihen tarvittavaan kehitystyöhön ja ensimmäisiin investointeihin.

Lisätiedot ja vastuhenkilö:

*Tuula Savola*

Erityisasiantuntija

Biotalous, cleantech ja kiertotalous

Innovaatiot ja yritysrahoitus

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