ITS Finlandin Syysseminaari 18.11.2021

Kestävää kasvua ja kilpailukykyä datapohjaisilla kiertotalouden liiketoimintamalleilla

Jyri Arponen, projektijohtaja, Sitra

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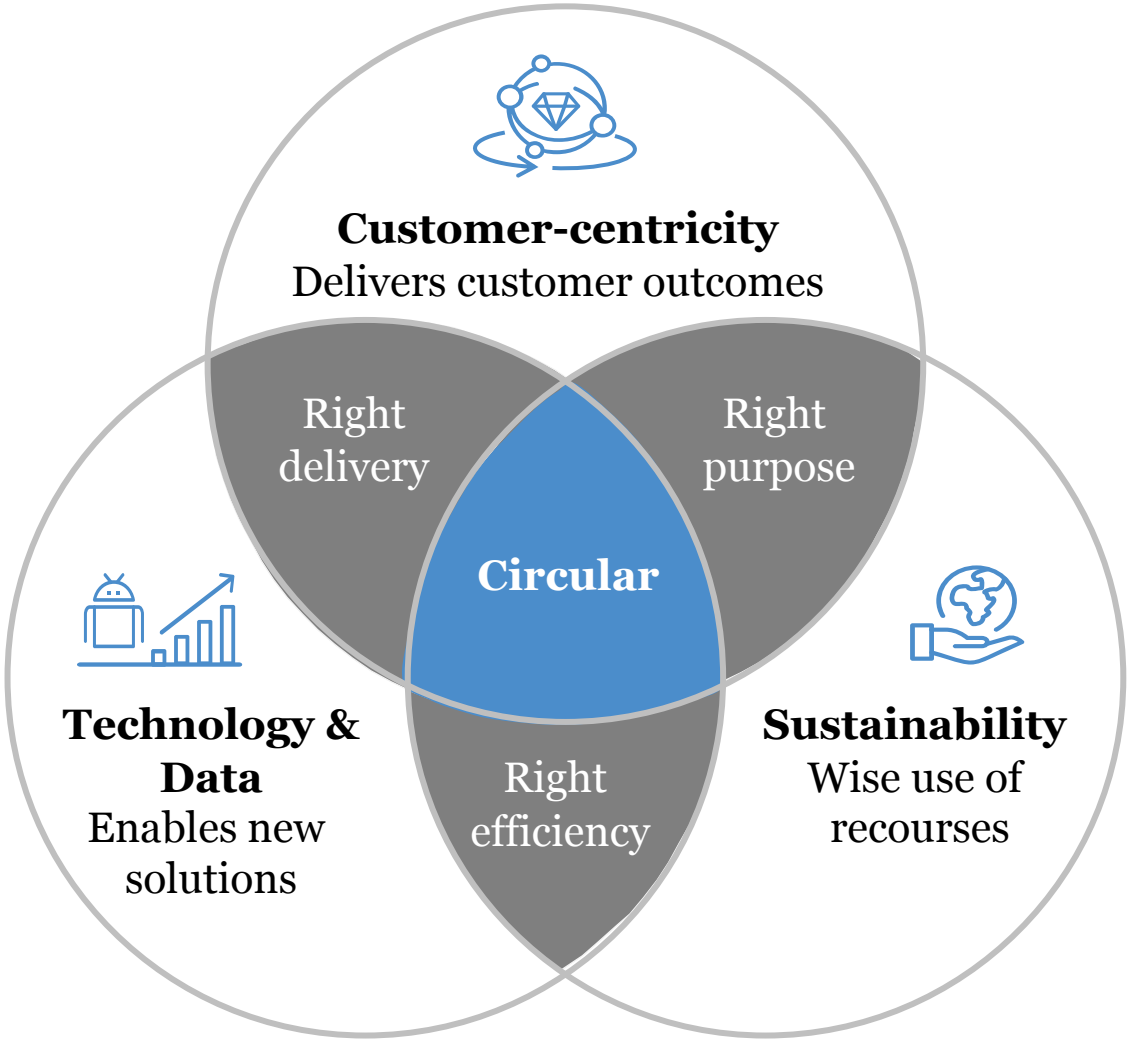
Three drivers underpin the shift towards circular



Source: Accenture

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Reilu Datatalous

Reilu datatalous -teema edistää talouden uudistumista entistä kilpailukykyisemmäksi noudattaen kestävän ja vastuullisen kehityksen periaatteita.

Tavoitteena on lisäksi luoda sekä yksilöille että yrityksille uusia työkaluja digitaalisen tulevaisuuden hallintaan ja siitä hyötymiseen.”

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Data, kestävän kasvun raaka-aine

- Data on yhä tärkeämpi raaka-aine talouden kasvulle, kuten myös kiertotalouden uusille ratkaisuille. Datamarkkina eli datatalouden koko kasvaa muita toimialoja nopeammin ja luo uudenlaisia liiketoimintamahdollisuuksia ja -malleja. Suomessa emme ole hyvistä datavarannoistamme ja toimivasta digitaalisesta infrastruktuurista huolimatta pystyneet luomaan riittävästi uutta innovatiivista, kestävää liiketoimintaa. Erityinen haaste on pk-yrityksissä.

- Datalähtöisten innovaatioiden, datan merkityksen ymmärryksen ja käytön puute sekä jakamisen haluttomuus innovaatioekosysteemeissä, yrityksissä ja organisaatioissa ovat uhka Suomen **kestävälle tulevaisuudelle ja yritysten kilpailukyvylle**. Digitalisaatio ja sen tuottama data ovat keskeisiä keinoja **vihreään siirtymään.**

- Suomi tarvitsee menestyäkseen **avointa datan jakamista, innovaatiosyklien ja uuden oppimisen ja omaksumisen kiihdyttämistä sekä innovaatioiden skaalaamista ja leviämistä.**

- Innovaatiotoiminta keskittyy globaalisti innovaatioekosysteemeihin. Ekosysteemeillä on keskeinen rooli digitalisaation ja vihreän siirtymän synnyttäjinä ja ratkaisujen tuottajina niin kansallisessa kuin EU-tason politiikassa. Ekosysteemeihin liittyminen ratkaisisi myös monia pk-yritysten haasteita datatalouteen siirtymisessä.

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THERE IS A STRONG BUSINESS CASE FOR CIRCULAR ECONOMY AND THE RIGHT TIME TO START IS NOW

From linear…

…to circular…

…creating opportunities

$4.5 trillion
Global growth potential to 2030

60 - 85%
Reduced environmental footprint

Up to 7x
Higher value in lifecycle revenues vs. new sales

Up to 100%
Reduced exposure to critical raw material

1/3
Of global CEOs already explore circular economy business models

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Focus on the change to customer-centricity and data enabled business models

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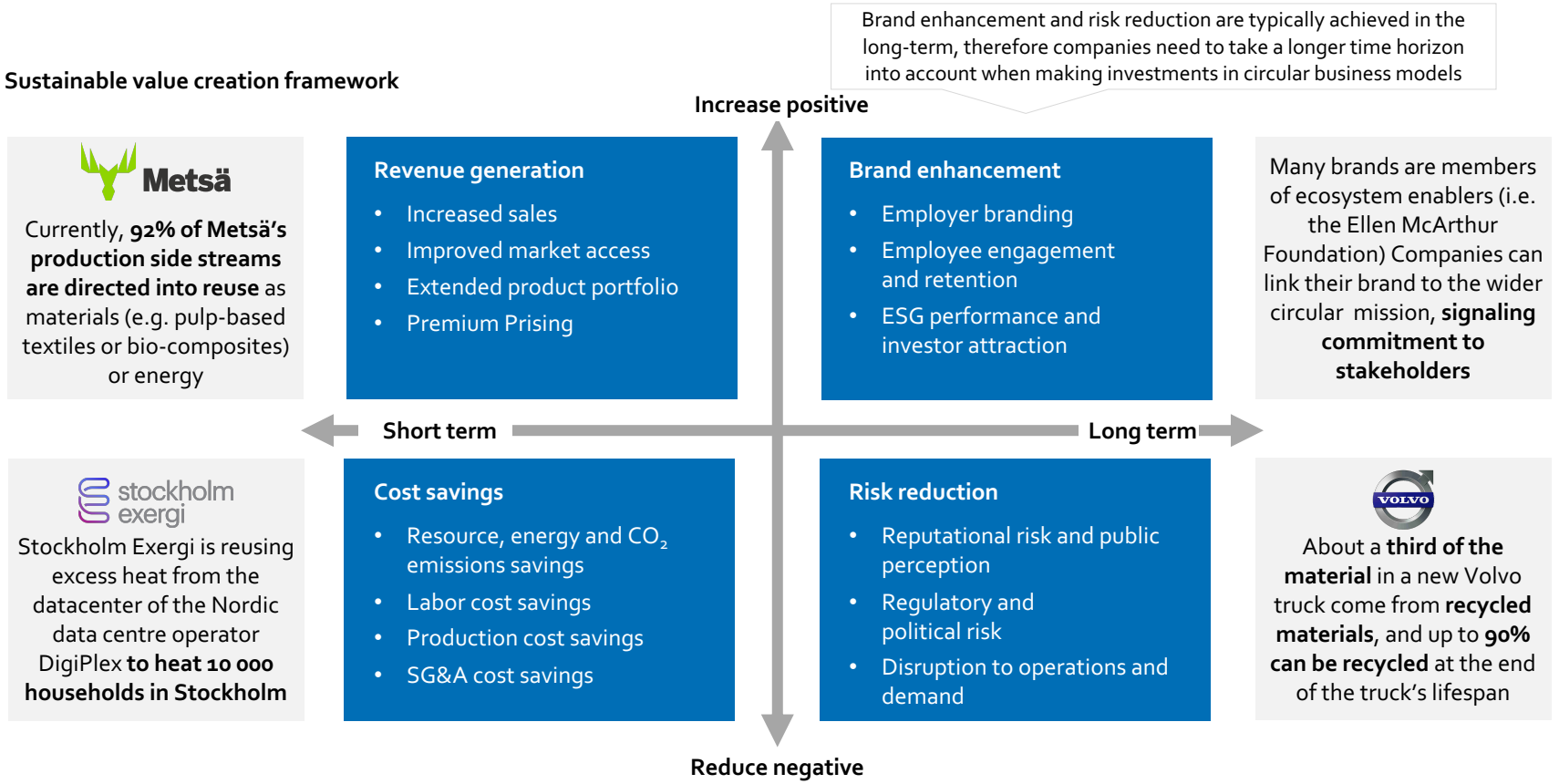
By sustainable and circular business models, companies can create value in four dimensions



Source: Company websites, Accenture – Appendix 2 for more details

Nordic Innovation

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With the Circular Economy Playbook and tools you achieve circular value and measurable business cases

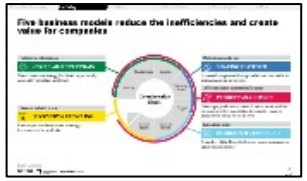
www.circularplaybook.fi www.nordicinnovation.org/nordic-circular-economy-playbook

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

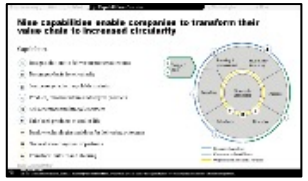
PLAYBOOK CHAPTERS

1. Why circular economy?

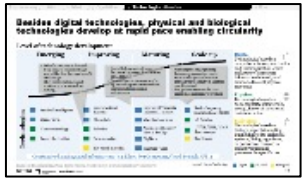
2. What opportunities exist?



3. Which capabilities are required?

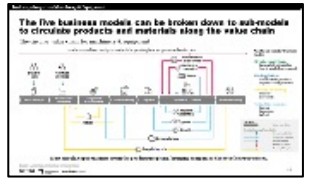


4. Which technologies can support?



5. How to design the transformation journey?

6. Industry deep dives

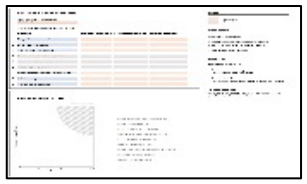


EXAMPLE TOOLS[1]

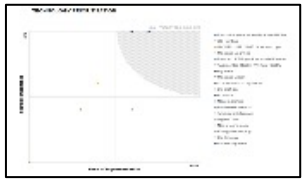
Value case tool

Business model development toolkit

Capability maturity assessment



Technology maturity assessment



Roadmap development

Business model canvas

[1] Additional tools available in the playbook

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The five business models can be broken down to sub-models to circulate products and materials along the value chain

Business model	*Sub-model*
Circular Inputs	Build to last
	Circular supplies
Sharing Platform	Share
Product as a Service	Product as a service
	Performance as a service
Product Use Extension	Repair & Maintain
	Upgrade
	Resell
	Remanufacture
Resource Recovery	Recycle/upcycle
	Return

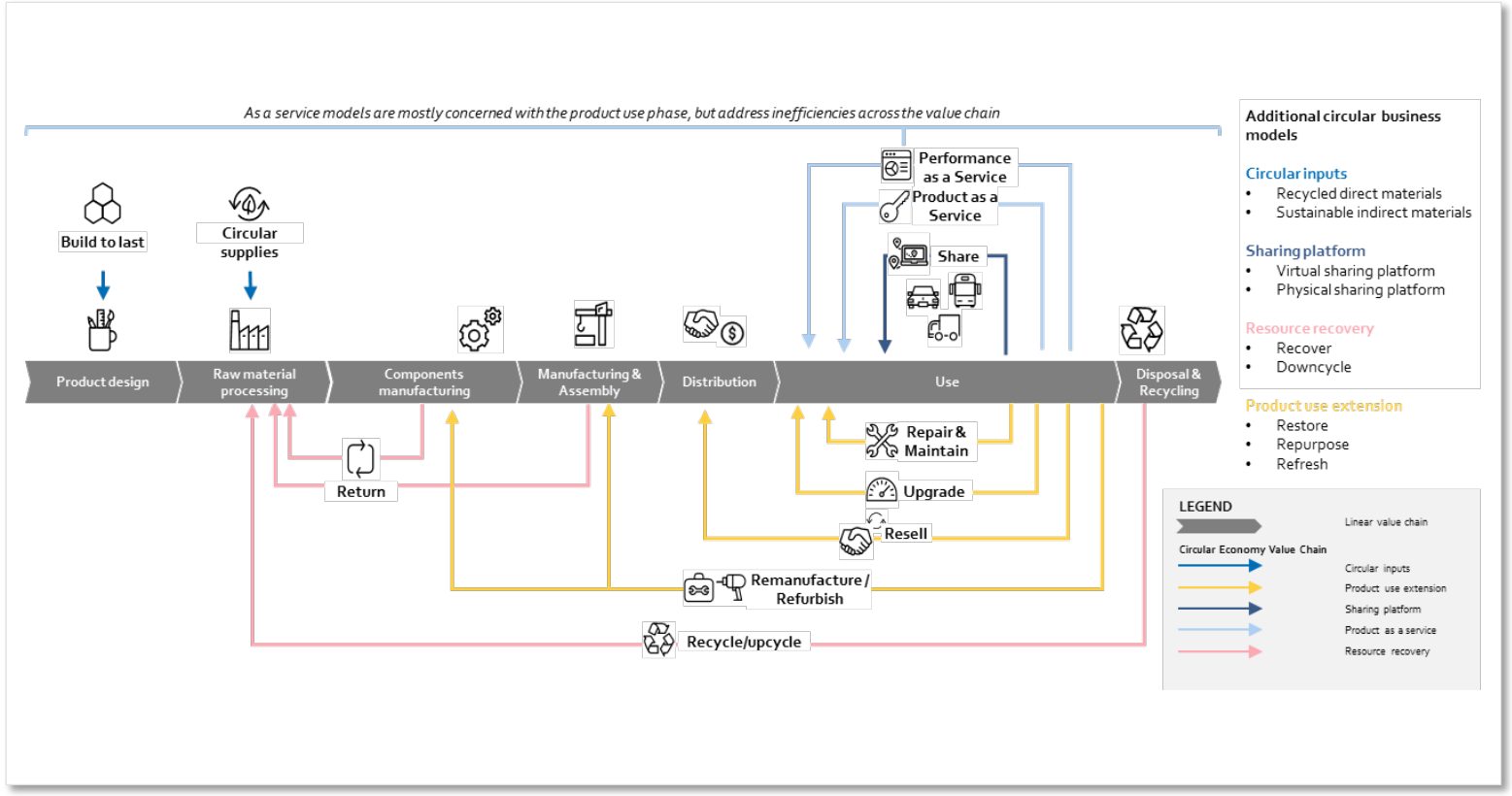
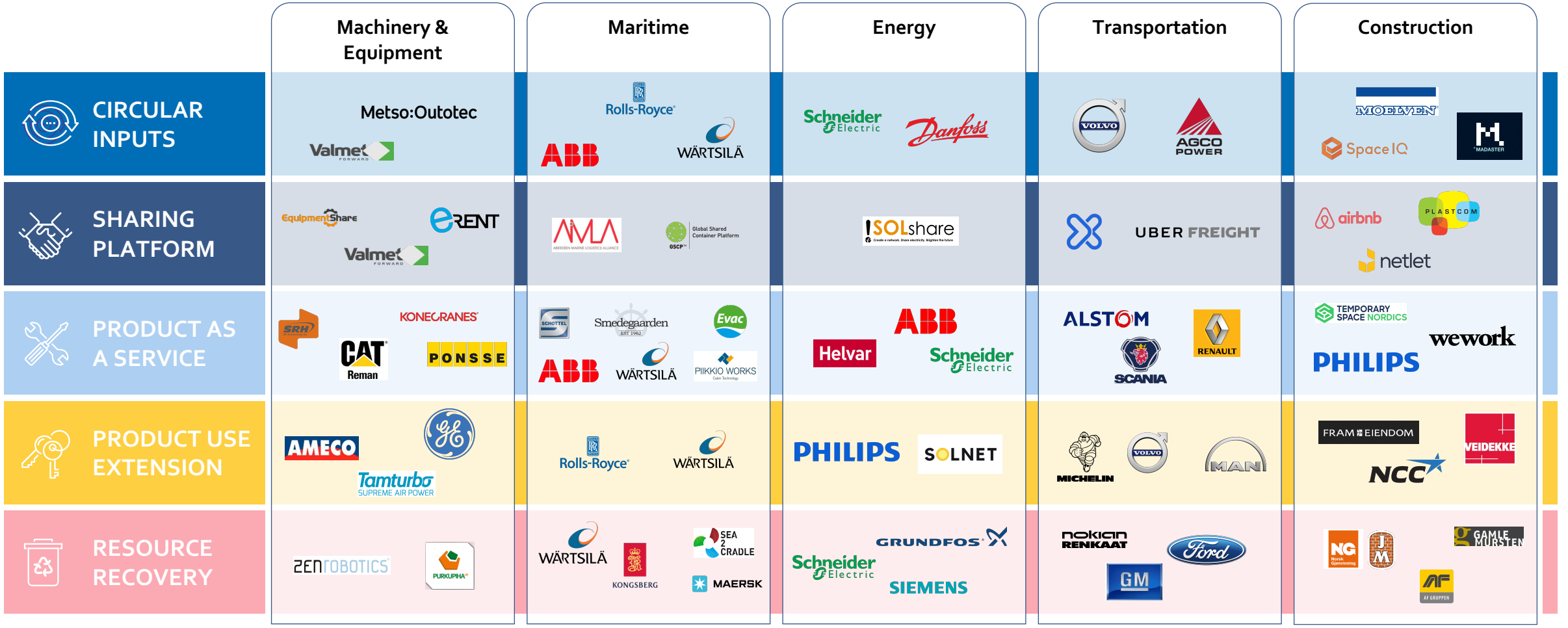


Figure: Circular business sub-models in the linear value chain

Source: Accenture, Appendix 2 for more details

Compelling examples from Nordic and global companies



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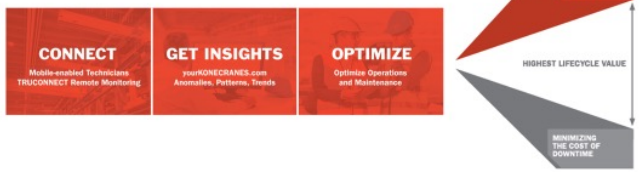
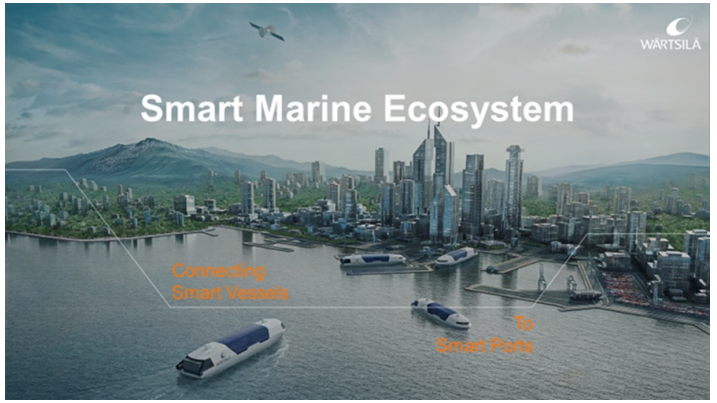
Konecranes Lifecycle Care aims to get more value from the existing products, **while decoupling value creation from resource consumption**



Outotec

VALTRA



ABB

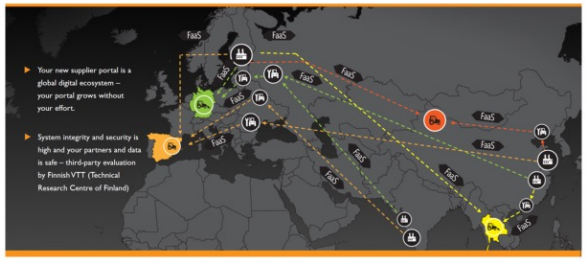
KONECRANES

SANDVIK

3 STEP IT

AIR FAAS

AIRFAAS
GLOBAL DIGITAL ECOSYSTEM



NOKIA

PONSSE

NESTE

WÄRTSILÄ

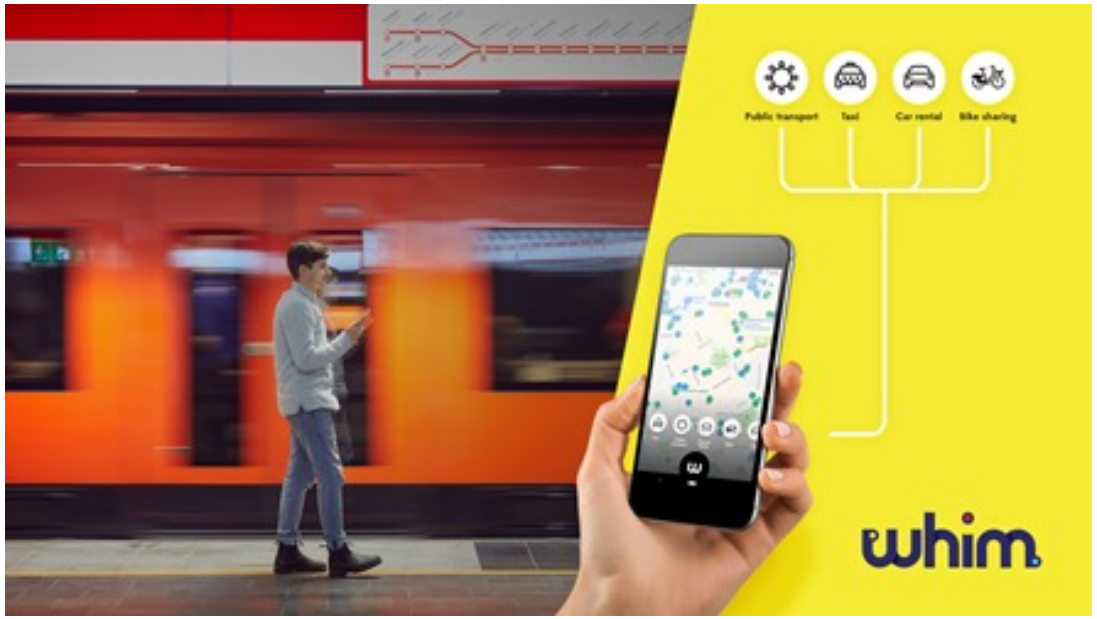
Valmet

The Biofore Company UPM

Swappie
BUY SMART. NOT NEW.

LEDiL

SITRA


Public transport
Taxi
Car rental
Bike sharing
whim


Nopia
electric ride
Go places.
With clear conscience.
Nopia
electric ride
KCR 254G

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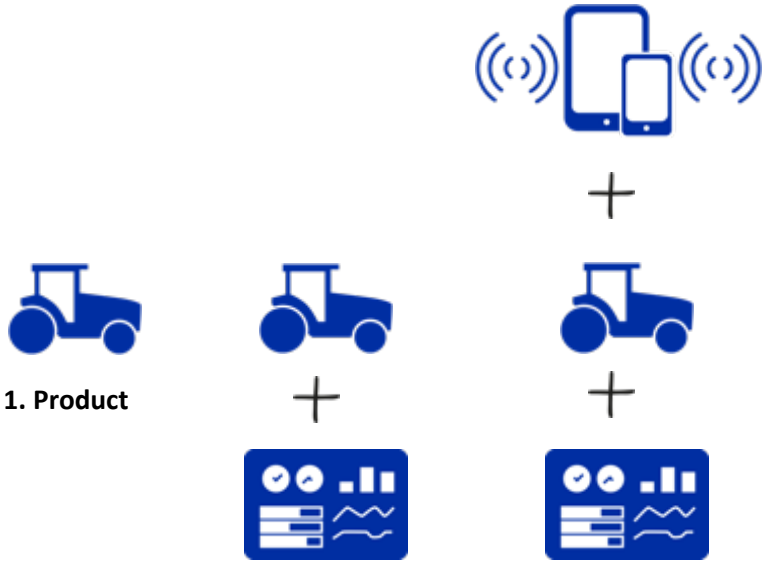
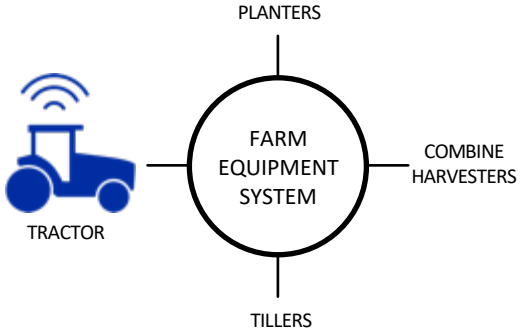
Redefining Industry Boundaries



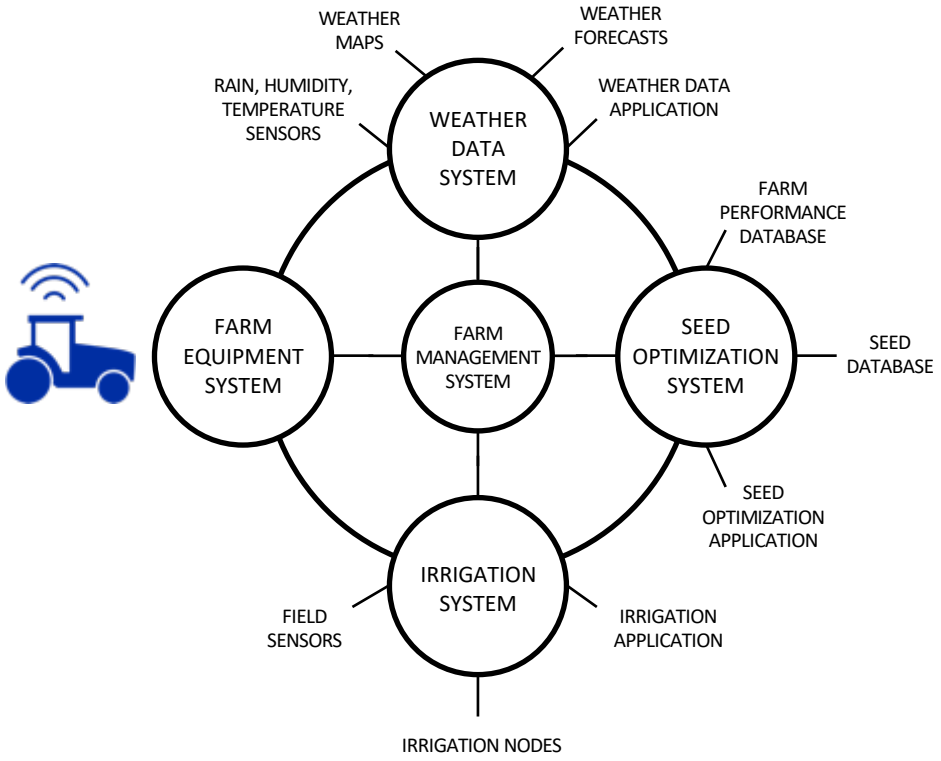
1. Product

2. Smart product

3. Smart, connected product



4. Product system



5. System of systems

Harward Business Review Nov2014: Porter-Heppelman

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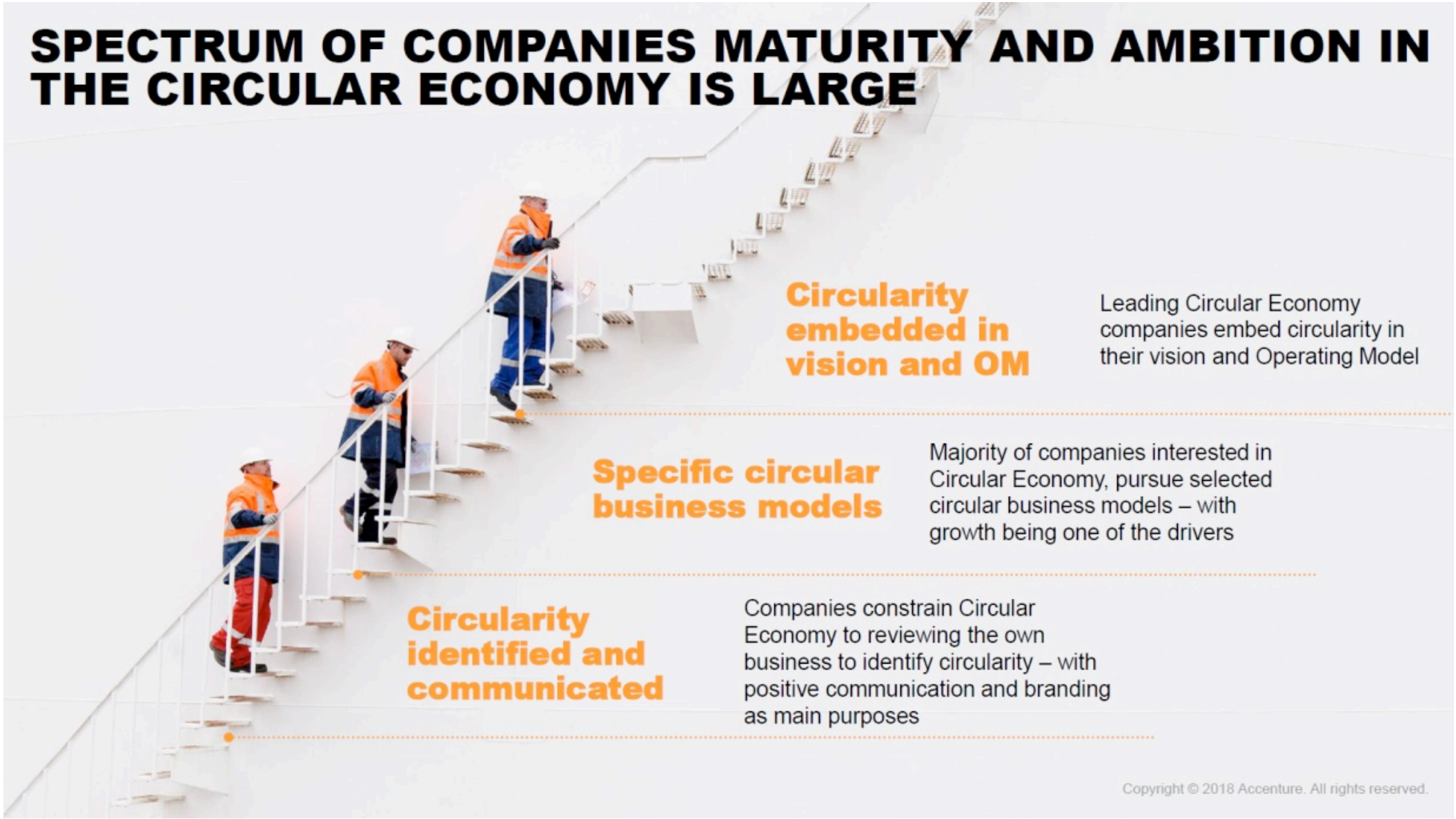
SPECTRUM OF COMPANIES MATURITY AND AMBITION IN THE CIRCULAR ECONOMY IS LARGE



Circularity embedded in vision and OM

Leading Circular Economy companies embed circularity in their vision and Operating Model

Specific circular business models

Majority of companies interested in Circular Economy, pursue selected circular business models – with growth being one of the drivers

Circularity identified and communicated

Companies constrain Circular Economy to reviewing the own business to identify circularity – with positive communication and branding as main purposes

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Sisu Axles: Predictive axle maintenance

SISU AXLES

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

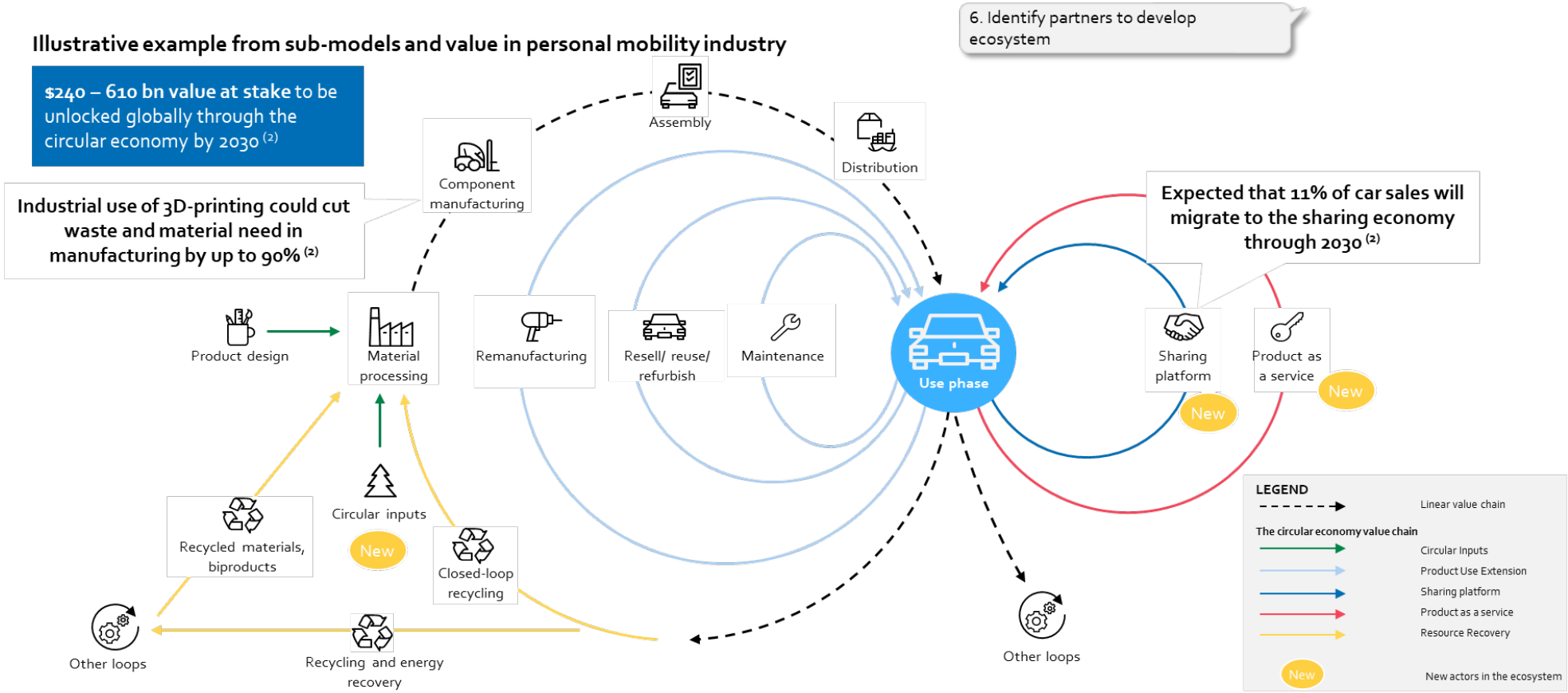
Typically, customers of Sisu Axles are doing preventive maintenance based on a predefined maintenance regime. With predictive maintenance, operators can call vehicles into service only on a need to service basis, reducing unnecessary maintenance and allowing the vehicle to continue in operations. Furthermore, 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

Circular Supply Chain	Sharing Platform	Product Life Extension	Recovery & Recycling	Product as a Service
☐	☐	☑	☐	☐

Michelin Case
MOVE FROM PRODUCTS TO SERVICES AND CIRCULAR ECONOMY
with a pay-per-kilometer program (Cédric Vatier, Accenture)

New circular business models redefine the business ecosystems



Source: (1) IEA 2020, Global EV Outlook 2020, Sustainable development Scenario, (2) Circular Economy Handbook - Appendix 2 for more details

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New technologies and data are key enablers for the circular business models

TECHNOLOGY	COMMENT
Big data	• Enables analysis of large data sets and data flows to reveal patterns, trends and dependencies • Big data supports the ability to drive descriptive and predictive analysis
IoT	• Enables exchange of data generated in wireless devices with embedded sensors • Supports remote monitoring and diagnostic as the devices interact and can trigger events and alerts
Carbon capture	• Capturing of carbon dioxide from large plants and securely storing it to avoid it from entering the atmosphere
New material	• Advances in material science can help design products and processes that minimize the use and generation of hazardous substances and develop materials with new properties

IDENTIFIED DATA CHALLENGES

Technologies enabling a more efficient data collection and technology enabling alternative materials are seen as the most promising

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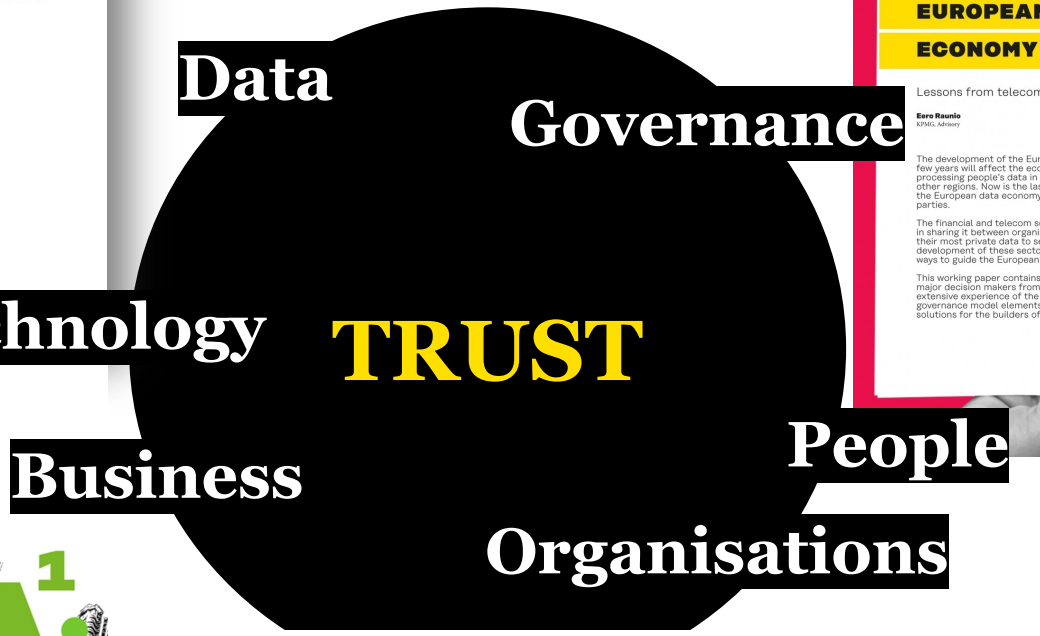
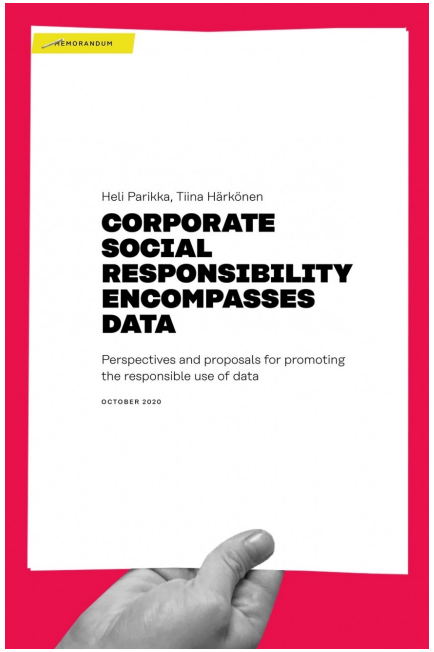
Building trust-based data sharing ecosystems





Finnish government rolls out digital projects to support SMEs ComputerWeekly.com

Source: Towards a European-governed Data Sharing Space, Enabling data exchange and unlocking AI potential
BDVA Position Paper, V2 11-2020
https://www.bdva.eu/sites/default/files/BDVA%20DataSharingSpaces%20PositionPaper%20V2_2020_Final.pdf

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To succeed in smart circularity, companies need to mature across four key dimensions and above all recreate the business model

Customer-centricity

Operations
Addressing the value lost through the operations and by-products of business processes across energy, emissions, water, and waste

Ecosystem
Collaborating and partnering with public- and private-sector actors to create an enabling environment for collective transformation

Culture & Organization
Embedding circular principles into the fabric of the organization through redefined working practices, policies, and procedures

Products & Services
Rethinking the design, lifecycle, and end of use of a product or service to optimize usage, eliminate waste, and closed product loops

Smart application of emerging and advancing technologies

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