

Circular Economy Playbook for Finnish SME's

# **Circular Economy business models in the manufacturing industries**

Executive Summary

# Introduction

- The way we currently design, produce and use products is leaving a lot of value on the table, which is why we need to rethink the linear manufacturing industry
- The aim of circular economy is to maximise the time products, components and materials are kept in use – it is an endless cycle that captures untapped value potentials of the traditional take-make-dispose value chain
- Successful transition towards circular economy is critical to innovation and continued growth, and time is now right to drive the pace of adoption in the Finnish manufacturing industry
- Circular economy principles have been around for centuries, but it is not until recently that circular business models have gained increased traction as they are being powered by rapid technology development and increased focus on delivering customer outcomes
- Leading companies are focusing on customer outcomes and redefining their value chains to enable efficient delivery
- Circular business models can be applied across the entire value chain – however, the biggest value potential is typically achieved during the product usage phase, requiring increased forward integration from manufacturing companies
- Successful transformation into circular business requires a considerable shift in capabilities, mindset and collaboration as manufacturing companies will have to adapt their products and solution design, and continuously engage with their customers and ecosystem partners
- Business intelligence derived from IoT, sensors and analytics to improve life-time productivity can increase value by enabling high life-time revenues and increased profit margins on installed base
- Companies within the Finnish manufacturing industry are strongly committed to circular economy and see its connection to growth and profitability, and the supporting ecosystem is also starting to mature
- Circular economy cannot be achieved by one company alone, and collaboration between traditional and new actors in the ecosystem will be required to close the loops efficiently
- We invite you to use this playbook to find your role in the circular ecosystem



“It is great to see a systematic and thought provoking set of concrete tools and a process to assist companies moving towards circular economy. The sooner the corporate strategy and activities are steered towards circular economy, more competitive advantage and sustainable growth can be gained. This will attract financiers and in the long run it will become a requirement for their participation.”

*Jussi Hattula, Director, TESI*



“An eye-opening experience, with not only on path to follow, but several interesting avenues to pursue circular economy possibilities and opportunities. Circular economy is not only a case of recycling things, this is an opportunity to re-invent your business – an opportunity to re-think your business model.”

*Jouni Teppo, Managing Director, Sisu Axles*



“The circular economy playbook gave us a great framework for assessing where the best circular economy opportunities for our company would be. It also helped us to define the most attractive ideas and guided us think about the business cases behind them. The first projects that lead us to the right direction have already been started”

*Matias Impivaara, Vice President, Business Growth and Development, Beneq*

# 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**

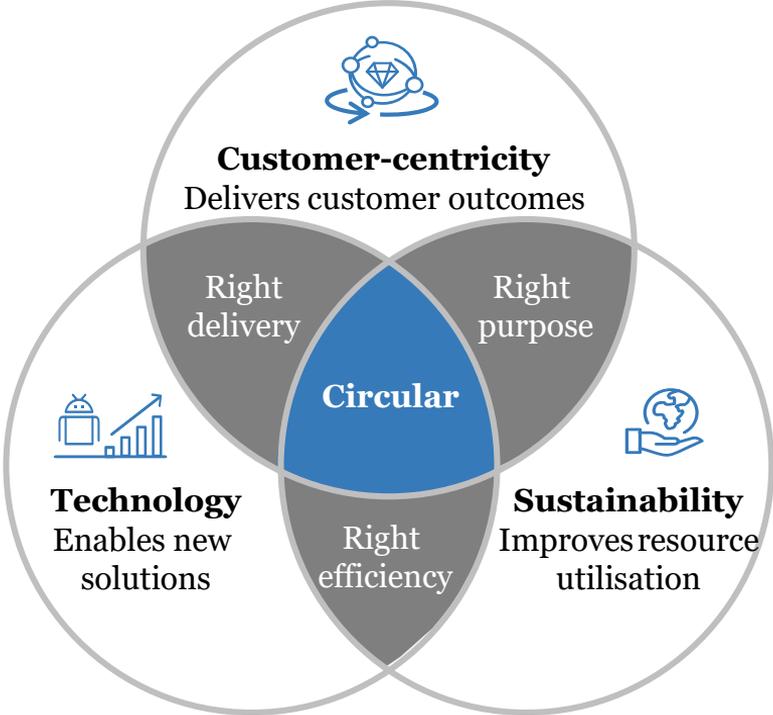
Sales organisation focus on selling functionality of product rather than the customer problem

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

Source: Accenture

# A shift to circular economy is underpinned by three drivers that can secure competitiveness in today's environment

Three drivers of circular economy



Source: Accenture

# Globally, early movers from manufacturing industry have already started addressing inefficiencies

Early adopters

## Inefficiency

## Illustrative examples from manufacturing companies



**UNSUSTAINABLE MATERIALS**



Volvo uses **one third recycled materials** in new trucks and designs them for recycling so that 90% can be recycled



Wärtsilä applies a **modular engine design** to enable increased commonality and backward compatibility of parts



**UNDERUTILISED CAPACITIES**



Caterpillar acquired Yardclub, a **platform facilitating equipment sharing**



**PREMATURE PRODUCT LIVES**



Bosch operates **remanufacturing** chains for high-quality components to ensure a high fraction stay in its loops



The Schneider Electric Circuit Breaker Retrofit-program **modernises and updates** electrical distribution centres



Konecranes provides a Lifecycle Care-program that includes consultation services, **modernisation & maintenance**



**WASTED END-OF-LIFE VALUE**



GM recycles 84% of its worldwide manufacturing waste and has **111 landfill-free facilities**



Maersk introduced a Cradle-to-Cradle Passport for vessels, a **database listing the material composition** of the main parts of the ship enabling better recycling of materials and parts



**UNEXPLOITED CUSTOMER ENGAGEMENTS**



Michelin offers **tire as a service** (pay per mile) and sensor-based data analytics for predictive maintenance

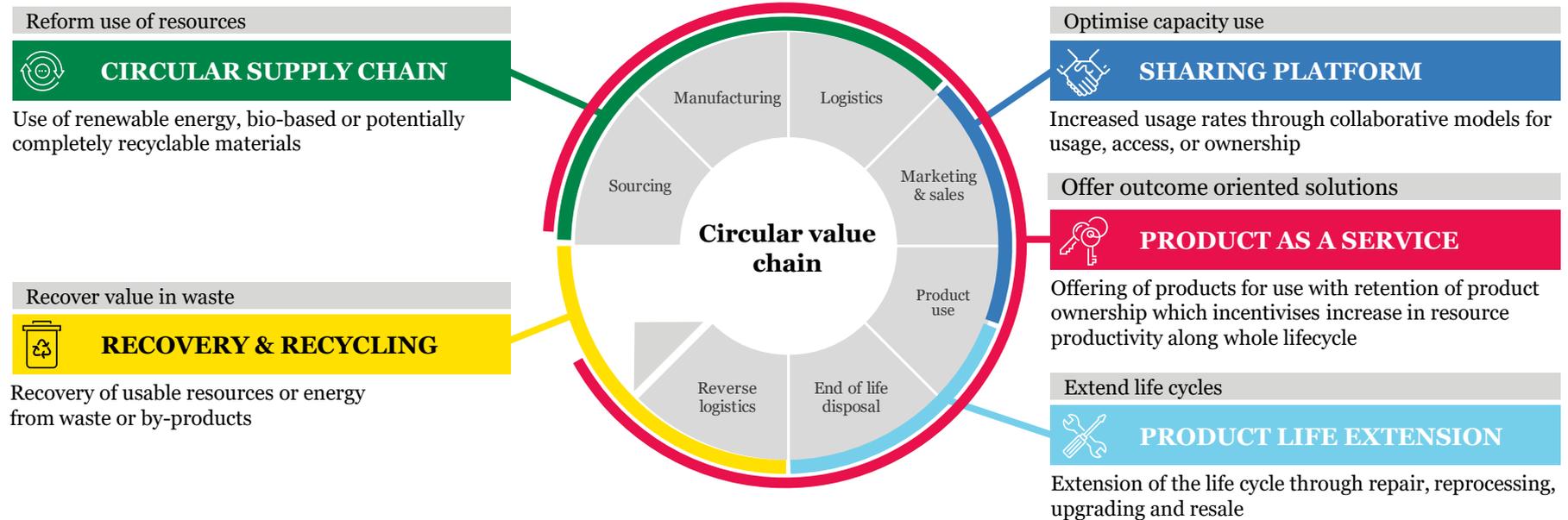


Philips has several contracts signed for providing **light as a service** on a pay-per-lux basis or monthly subscription

Source: Company websites

# Five circular business models reduce the linear inefficiencies and create bottom line impact for companies

## Five circular business models

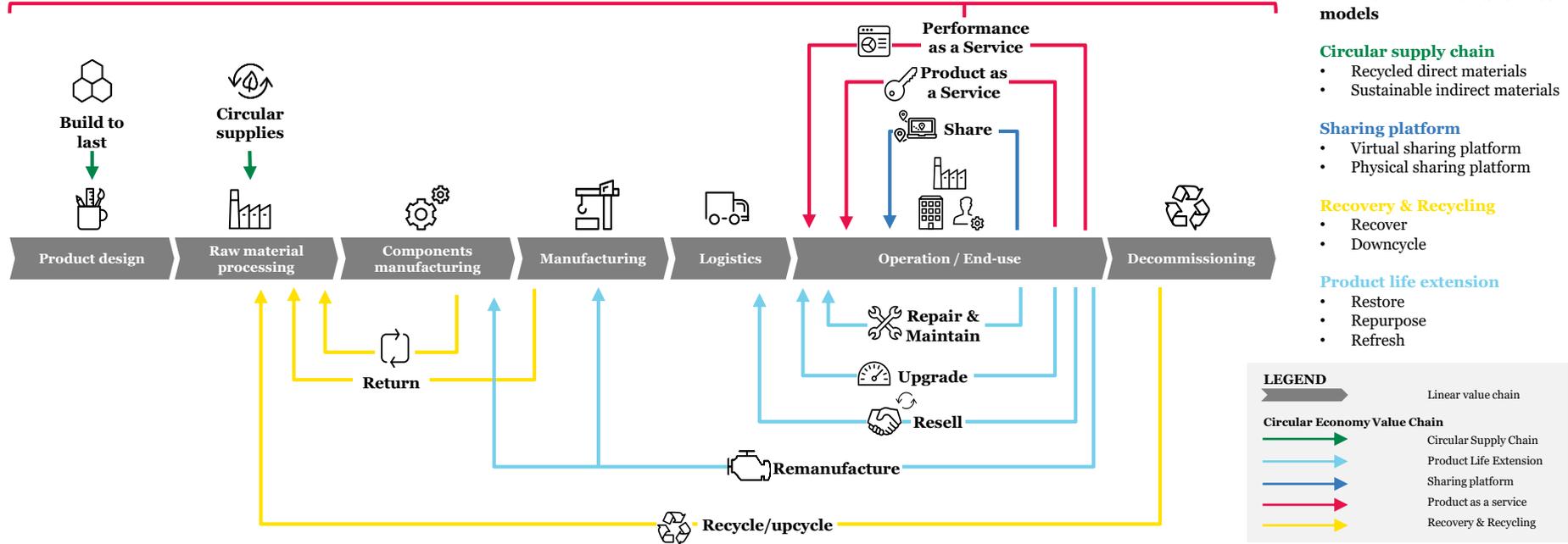


Source: Accenture

# Sub-models of the circular economy modify different steps of the value chain to make it circular

## Sub-models of the circular economy

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



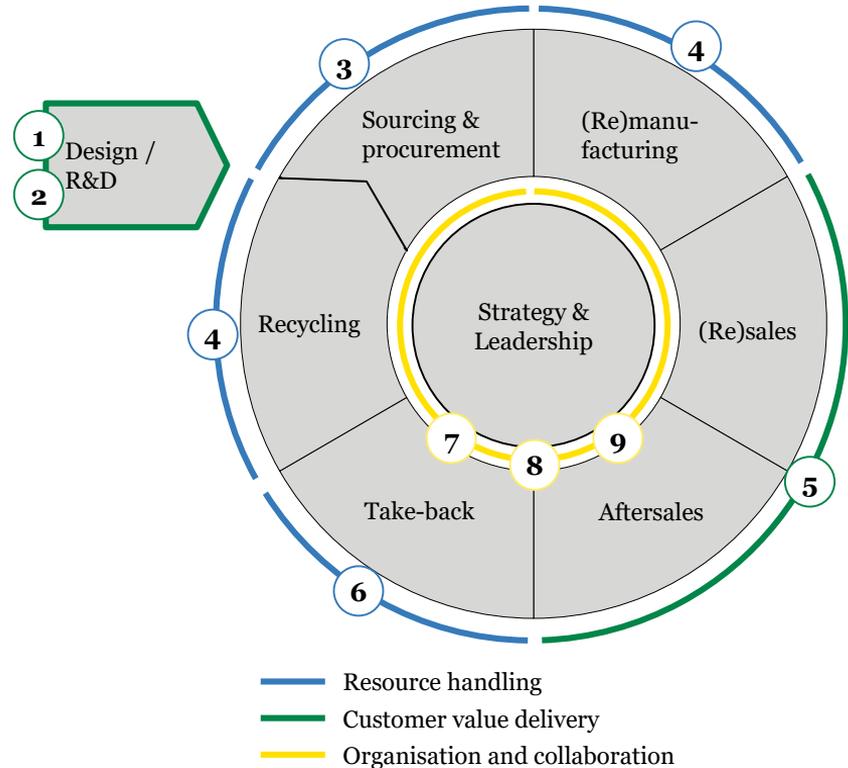
**Most circular opportunities are in the product use phase, bringing companies closer to their customers.**

Source: Accenture

# Nine capabilities enable companies to transform their value chain to increased circularity

## Nine circular capabilities

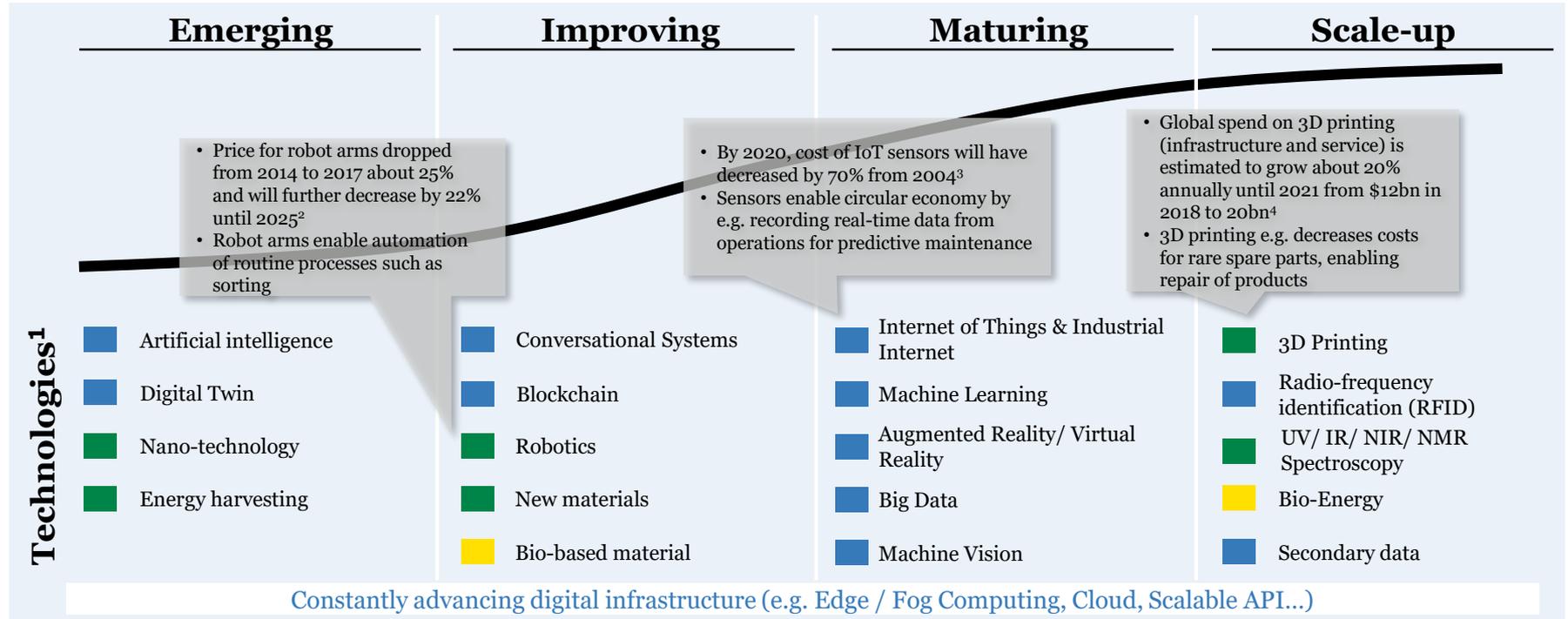
- 1 Design solutions to deliver customer outcomes
- 2 Design products for circularity
- 3 Source recycled or recyclable material
- 4 Produce, remanufacture and recycle products
- 5 Sell outcomes and lifecycle services
- 6 Take back products at end-of-life
- 7 Deploy technologies and data for delivering outcomes
- 8 Orchestrate ecosystem of partners
- 9 Transform culture and steering



Source: Adapted from earlier Accenture publication

# Technologies develop at a rapid pace, enabling companies to deliver on circular economy objectives

Technology enablers

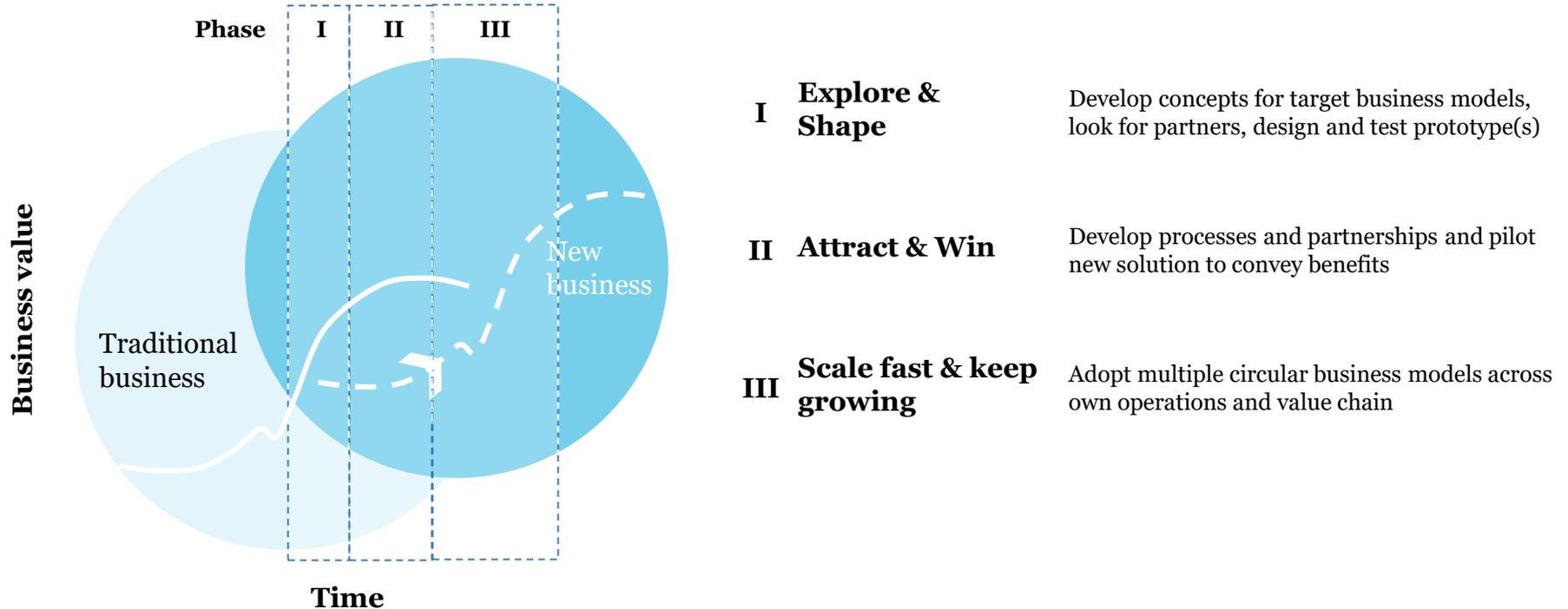


Sources: 1: Accenture, 2: IEEE Engineering360; 3: Bank of America, Merrill Lynch; 4: International Data Corporation (IDC)

Legend: Type of technology ■ Digital ■ Physical ■ Biological

# The transition from the traditional to the new business model is gradual and has three phases

Transformation journey



Source: Accenture

# During the transformation journey, companies typically face barriers – upfront consideration makes the journey easier

Typical barriers for achieving circular advantage

## — Internal —



Barriers related to required changes in **value, mindset and behaviour** of organisations to enable **cross-functional** collaboration and **customer-centricity**

## External



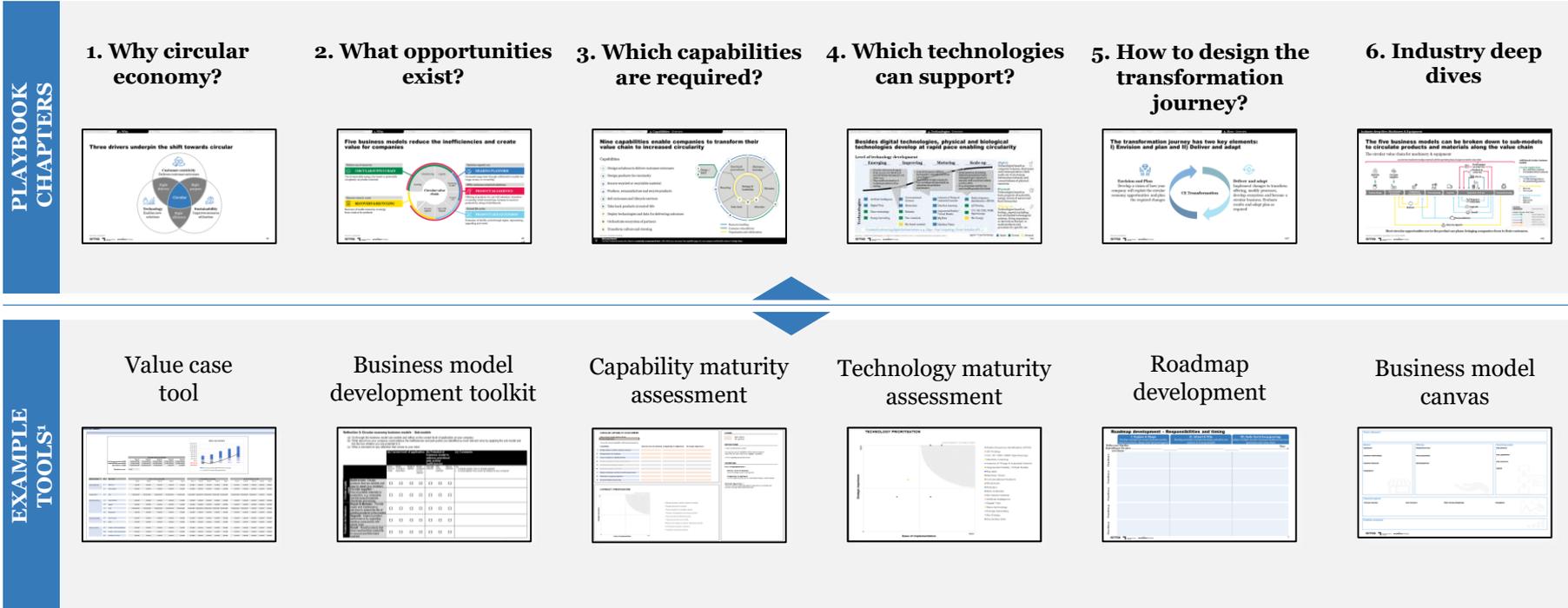
Barriers related to required **partnerships** to leverage the full circular potential of value chains and to shape the **framework conditions**



Barriers related to the different **funding requirements, risk** and **return structures** of circular business models that lead to challenges in **securing funding**

# Read the playbook chapters and use the tools to deepen your understanding and explore your business opportunities

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 realise circular advantage



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