

DIGITAL CIRCULAR ECONOMY

The information gap slow down the transition toward the circular economy. Digitalization can help.

Lack of information exchange along value chains is a major barrier to the transition to a circular economy

Digitalization is critical to circular business models

- Businesses leverage digital technologies, such as sensors, digital platforms or machine learning, to implement circular economy business models.
- For example, Michelin places sensors in its tires to measure pressure and temperature in order to extend tires' lifecycle.

But information doesn't travel along value chains

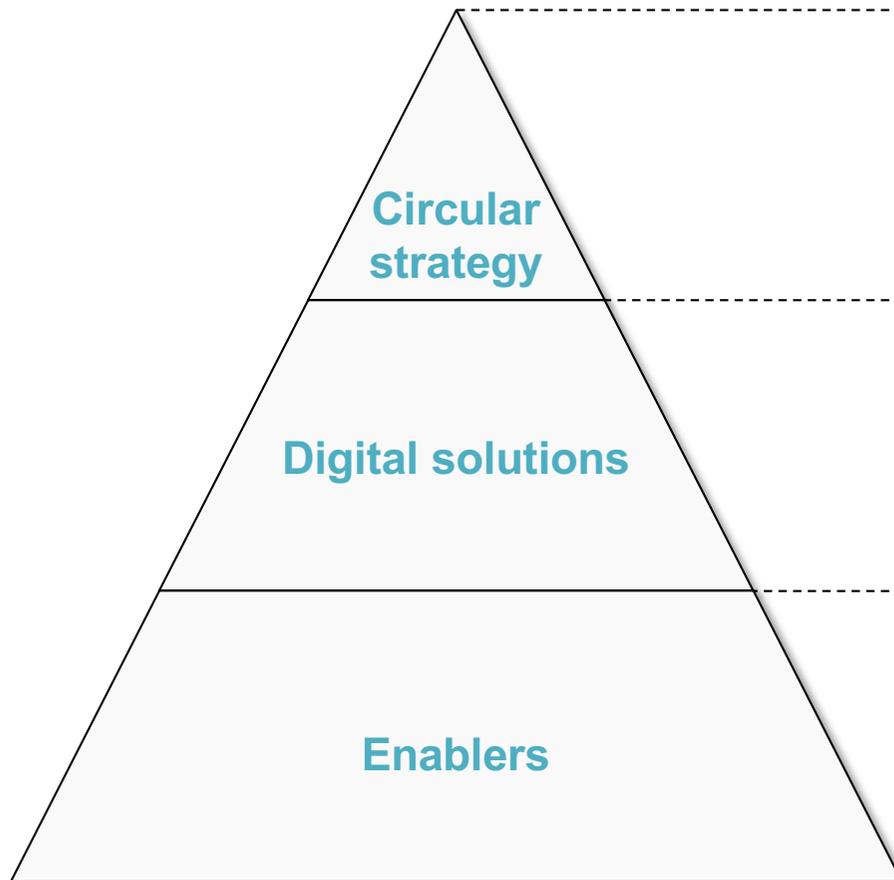
- Data managed by each business is barely exchanged along value chains.
- For example, tires producers, importers, collectors and processors don't share information to improve tire recycling outcomes or increase the uptake of recycled rubber in new tires.

The information gap remains a major obstacle

- Most value chain stakeholders don't have accurate information on the availability, location, composition and condition of a product, once distributed.
For example, almost half of collected tires in France are not recycled.

To close the information gap along value chains, stakeholders should define a digitalization roadmap

Questions to be answered by a digital roadmap

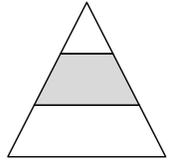


- What are the **information gaps** that prevent the execution of the circular strategy?
- What new **business models** are enabled by digital technologies?

- Which **digital solutions** close the information gap?
- Which **technologies** enable the digital solutions?
- What is the digitalization **return on investment**?

- Is there existing **open standards** and **data governance** to structure and share data?
- What gaps in **capabilities and organization** need to be filled?

Lessons can be learned from other value chains experience



Shipping value chain



With its suppliers, Maersk Line has developed a “**Cradle to Cradle Passport**” which lists and describes the materials used, their location, and how they can be correctly disassembled and recycled/disposed.

Maersk Line increased end-of-life vessels value by 10% (estimate).

Fashion value chain



Several brands, retailers, and stakeholders across the fashion industry have agreed to use a common protocol to share information on garment lifecycle. The protocol is supported by **IoT platform**.

By 2025, 400,000 clothing items should be digitally tagged.

The protocol will enable brands to adopt new offerings, like rental, resale, peer-to-peer exchanges, and recycling.

Organic value chain

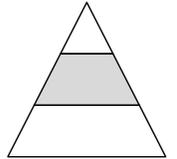


Sludge producers, carriers, farmers share information on the organic waste value chain using a **blockchain**.

The blockchain ensure the transparency of the organic waste value chain and, at the end, delivers traceability of fertilizer materials.

Wastewater treatment plant sludge can replace synthetic or mined fertilizers.

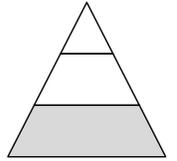
About twenty technologies enable circular economy business models



Layer	Enabling technologies	Predictive maintenance	Material or product passport
Identification	Sensors & Internet of Things	•	
	RFID tag		•
	Barcode & QR Code		
	Chemical tracer & molecular tagging		
	Digital watermark		
	Printed electronic		
	Computer vision		
Communication	Wi-Fi		
	Cellular network	•	
	Bluetooth & Near Field Communication		
	Satellite communication		
	Low Power Wide Area Network		
Data	Cloud		•
	Big data	•	
	Digital platform		•
	Distributed ledger		
Application	Advance analytics		
	Artificial intelligence	•	
	Apps		

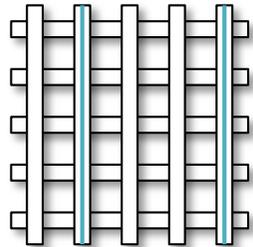
ILLUSTRATIVE ONLY

Platforms facilitate broad data sharing within the value chain, with pros and cons



INCOMPLETE

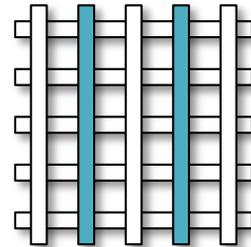
Product specific platform



Product-specific collection of services delivered on one or more platforms

- Skywise (Airbus)
- Cat Connect (Caterpillar)

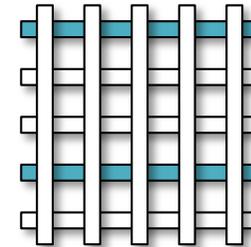
Vertical platform



Industry-specific collection of services delivered on one or more platforms

- Fleet Insight (Penske)
- Back Market
- BOMcheck.net
- I4R platform

Horizontal platform

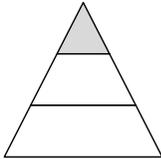


Collection of services bridging multiple industries and integrating data from multiple entities

- MindSphere (Siemens)
- John Deere Operations Center

To help our clients leverage digital opportunities, we provide a set of services

1

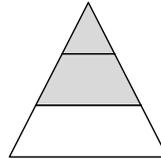


Share digital ambition

During conferences and workshops, we raise awareness on digitalization as an enabler for the circular economy.

We leverage more than 200 examples and cases studies.

2



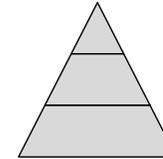
Assess digital opportunities

We explore and prioritize a broad range of digital opportunities based on value potential.

We review initiatives from ecosystem (start-ups, corporations, etc.).

We leverage experience from heavy-assets industries.

3



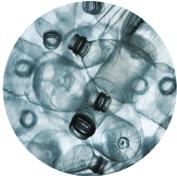
Design a digital roadmap

We design with our client a comprehensive digital roadmap for a circular economy.

We identify gaps (standards, data governance, capabilities, etc.) that need to be filled.

We evaluate the business case.

Examples of our work

Customer	Description	Impact	Scope
	For an industrial equipment manufacturer, we reviewed how digital technologies could support the remanufacturing and refurbishing of its used equipment.	We designed a digital roadmap for a circular economy.	
	For one of Europe's leading railcars leasing companies, we deliver a conference on digital opportunities to improve railcars lifecycle. The conference was intended to our client's clients and partners.	We raised awareness of more than 100 participants.	
	For a consumer-goods manufacturer, we facilitate a workshop on how digital technologies enable new business models (pay-per-use, rental).	We identified several digital opportunities that has been analysed afterward.	
	We delivered several conferences on the importance of digital technologies for circular economy business models (Waste + Information = Resource).	We raised awareness of more than 500 participants.	
	For a chemical company, we delivered a half a day course on digital technologies for a circular economy. We leverage hundreds of examples and cases studies.	We assessed afterwards several technologies for our client.	

A large teal circle is positioned on the right side of the page. Inside the circle, the text 'Gate C' is written in a bold, white, sans-serif font. Below it, the tagline 'a consulting firm helping its clients to capture the value of the circular economy' is written in a smaller, white, italicized sans-serif font. At the bottom of the circle, the website address 'www.gateconsulting.com' is written in a white, underlined sans-serif font.

Gate C

*a consulting firm helping its clients to
capture the value of the circular
economy*

www.gateconsulting.com