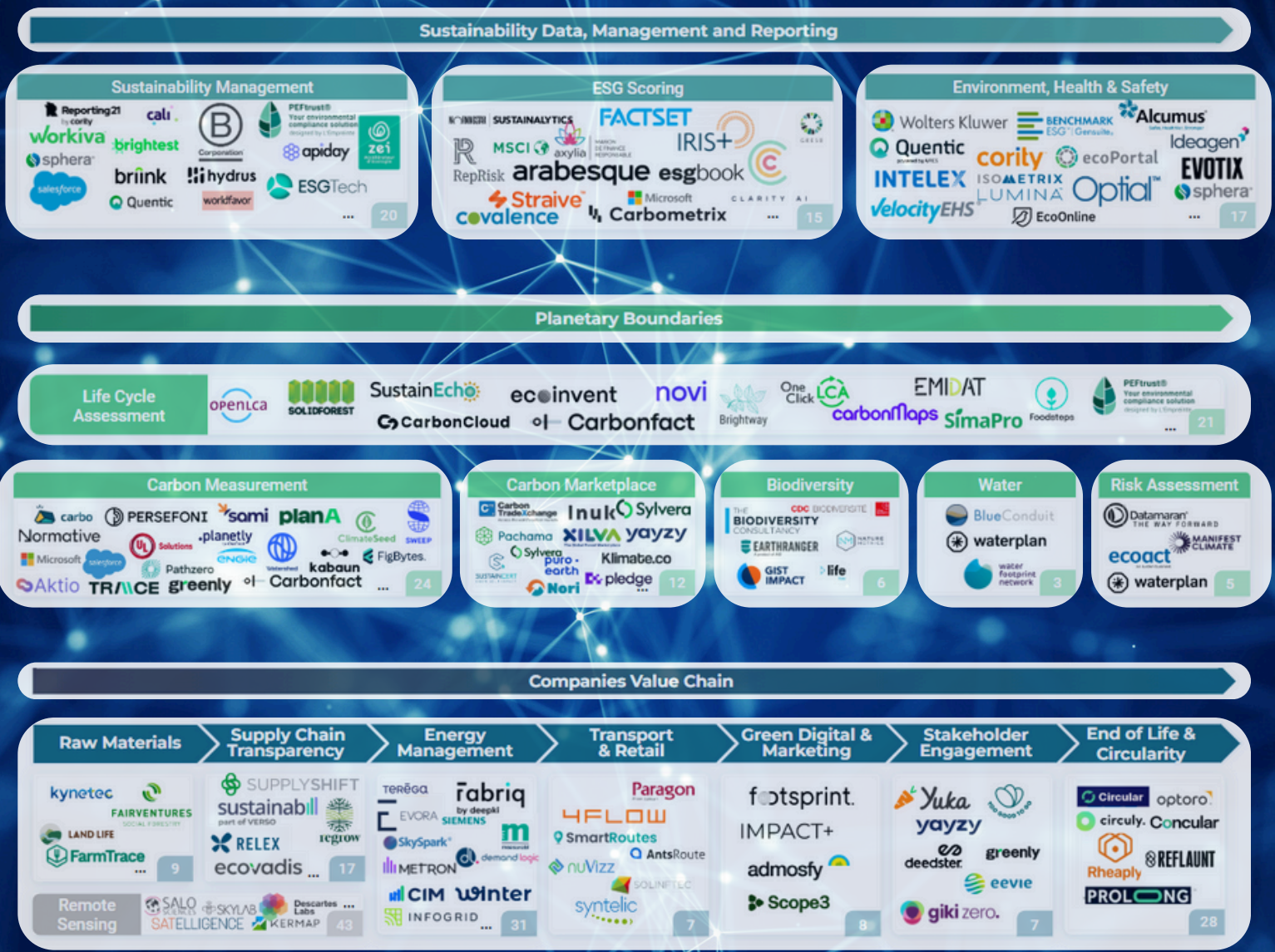
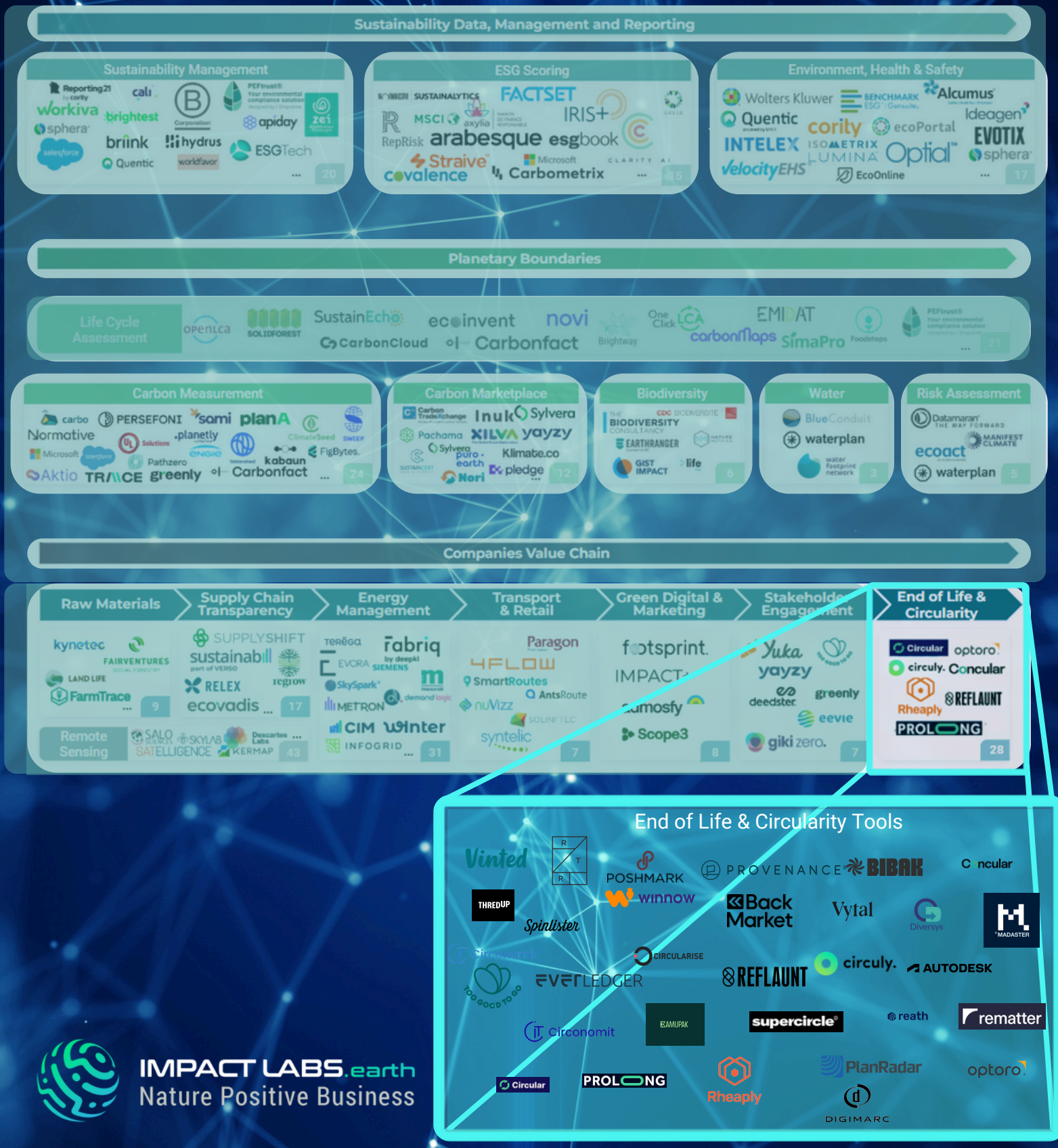
Digital4Impact Tech Radar



IMPACT LABS.earth
Nature Positive Business

Digital4Impact Tech Radar

Circularity Deep Dive



IMPACT LABS.earth
Nature Positive Business

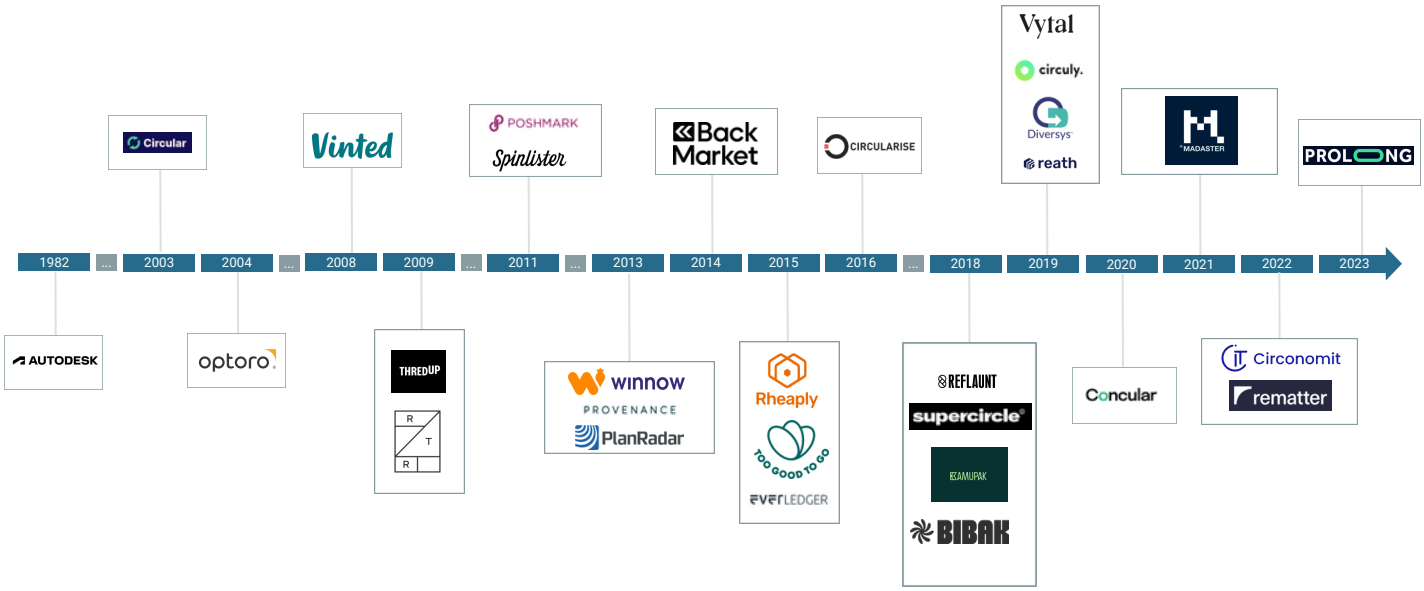
The urgency of circularity

Our current economic system is linear: we take materials from the earth, make products from them, and eventually throw them as waste. Circularity is a shift from this traditional linear economy to a regenerative model where materials are either safely returned to the earth, or shared, maintained, reused, redistributed, refurbished, remanufactured, and recycled.

This transition to circularity has become increasingly urgent as we face more and more environmental challenges. Between 2018 and 2023, we have consumed 28% of all the materials humanity has consumed since 1900. Meanwhile, circularity has dropped by 21% over this time.

As the Human Development Index increases, so does global material consumption, and consequently pressure on the environment. As a result, six out of nice planetary boundaries have been broken largely due to the impacts of the linear economy.

Achieving circularity is thus crucial for our planet, and it is the responsibility of all stakeholders: states, citizens, and businesses. Our position at Impact Labs is to guide businesses to find their way towards circularity. On that journey, multiple technologic solutions have emerged to facilitate the circularity transition.



Date of creation of companies included in this Deep Dive
Source: Impact LABS Research & Analysis

The role of technology

The technology sector has a **dual paradoxical role** in the circular economy with two opposite facets:

- As a significant consumer of resources, particularly in **hardware** manufacturing and data centre operations,

- As an enabler of circular solutions through digital technologies, platforms, and innovations.

The focus of Impact Labs and this tech Radar is on **digital technologies** as enablers of **nature positivity in business**.

Digital technologies are catalysts in accelerating the **transition** to a circular economy. As we move away from linear "take-make-waste" models, digital solutions are providing the software and innovations needed to make circular systems viable across industries.

The integration of **Internet of Things (IoT)** and **AI** allows connected products to generate data that feeds into data systems for optimal maintenance and end-of-life cycles. **Blockchain** and **digital passports** create records of product composition, usage, and maintenance, enabling **traceability** and safe circular transactions. **Digital twins** and analytics enable the virtual modeling of circular systems to optimise material flows and identify inefficiencies.

These digital technologies are crucial in driving the shift towards a more sustainable, resource-efficient, and **circular economy.**

Digital tech tools for Circularity

The transition towards a circular economy requires the integration of innovative digital technologies that enable new business models, optimise resource use, and enhance supply chain transparency. We have categorised these digital tools across six categories, each playing a role in promoting circularity. These categories are outlined below.

1

Blockchain technology, digital product passports, and supply chain visualisation tools have emerged as key digital enablers for enhancing **supply chain transparency and traceability**. These technologies allow for the verification of materials, origins, and production processes. This in turn allows for greater accountability and trust throughout the value chain.

2

In a world of **platform business models and marketplaces**, digital tools such as marketplace algorithms and AI-powered pricing have facilitated the growth of B2C/B2B2C resale platforms and C2C marketplaces. These platforms use digital technologies to organise the resale of products, enabling to extend the life of products and allows the creation of new revenue streams.

3

Reverse logistics and product life extension have been enhanced by digital tools such as route optimisation algorithms, digital tracking systems, and mobile apps for service coordination. These solutions simplify the management of product returns, repairs, and refurbishment, prolonging the lifespan of products.

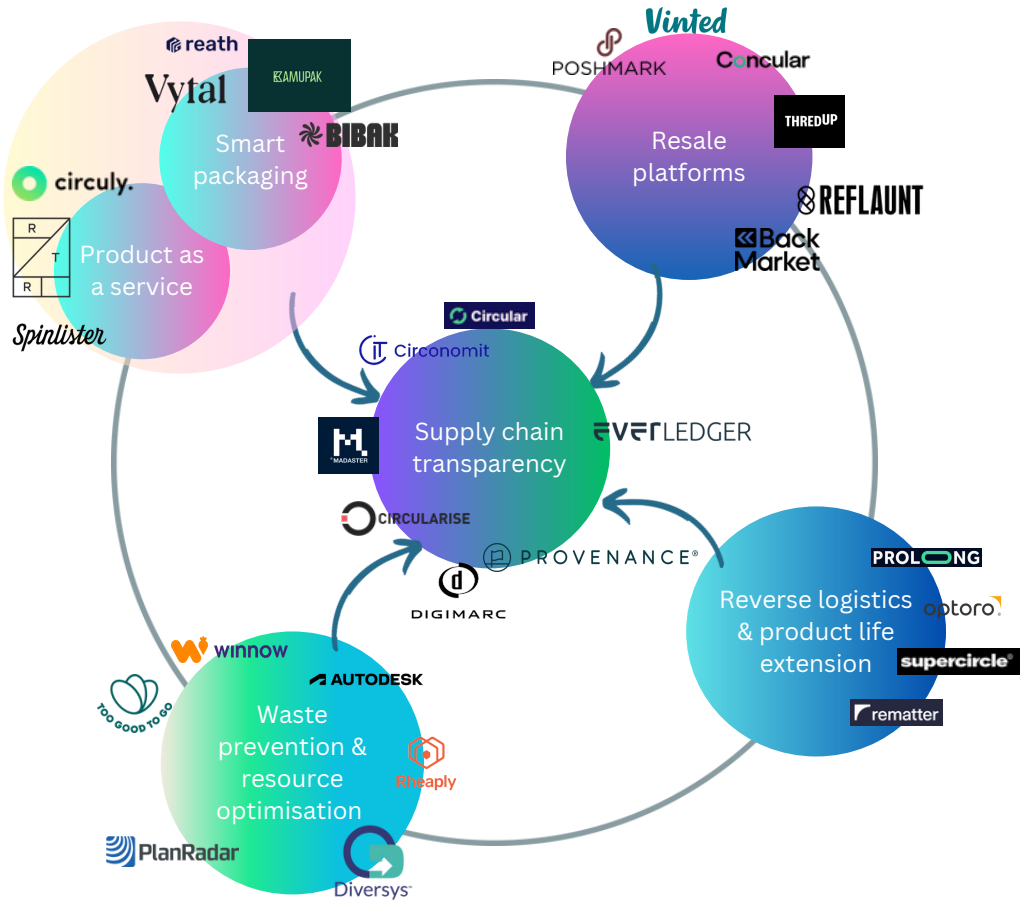
4

To address **waste prevention and resource optimisation**, digital tools like AI, IoT sensors, and analytics platforms have helped companies to predict waste, monitor resource usage in real-time, and optimise processes for more efficiency. These solutions help divert materials from landfills and promote the circular flow of resources.

5 In the case of **product-as-a-service** and rental models, digital platforms for subscription management, IoT-enabled product monitoring, and predictive maintenance systems have facilitated the transition from traditional ownership-based models to more circular ones. These models encourage product longevity and allow a more efficient use of resources.

6 Finally, the integration of digital product passports, IoT-enabled packaging, and mobile authentication has enabled **smart packaging** and **product intelligence**. These innovations provide detailed information about a product's origin, composition, and lifecycle, helping consumers to make decisions that foster the circular economy.

The interconnection of these digital tech tools can be instrumental in driving the transition towards a more circular economy, promoting resource efficiency, transparency, and the creation of innovative business models that prioritise sustainability.

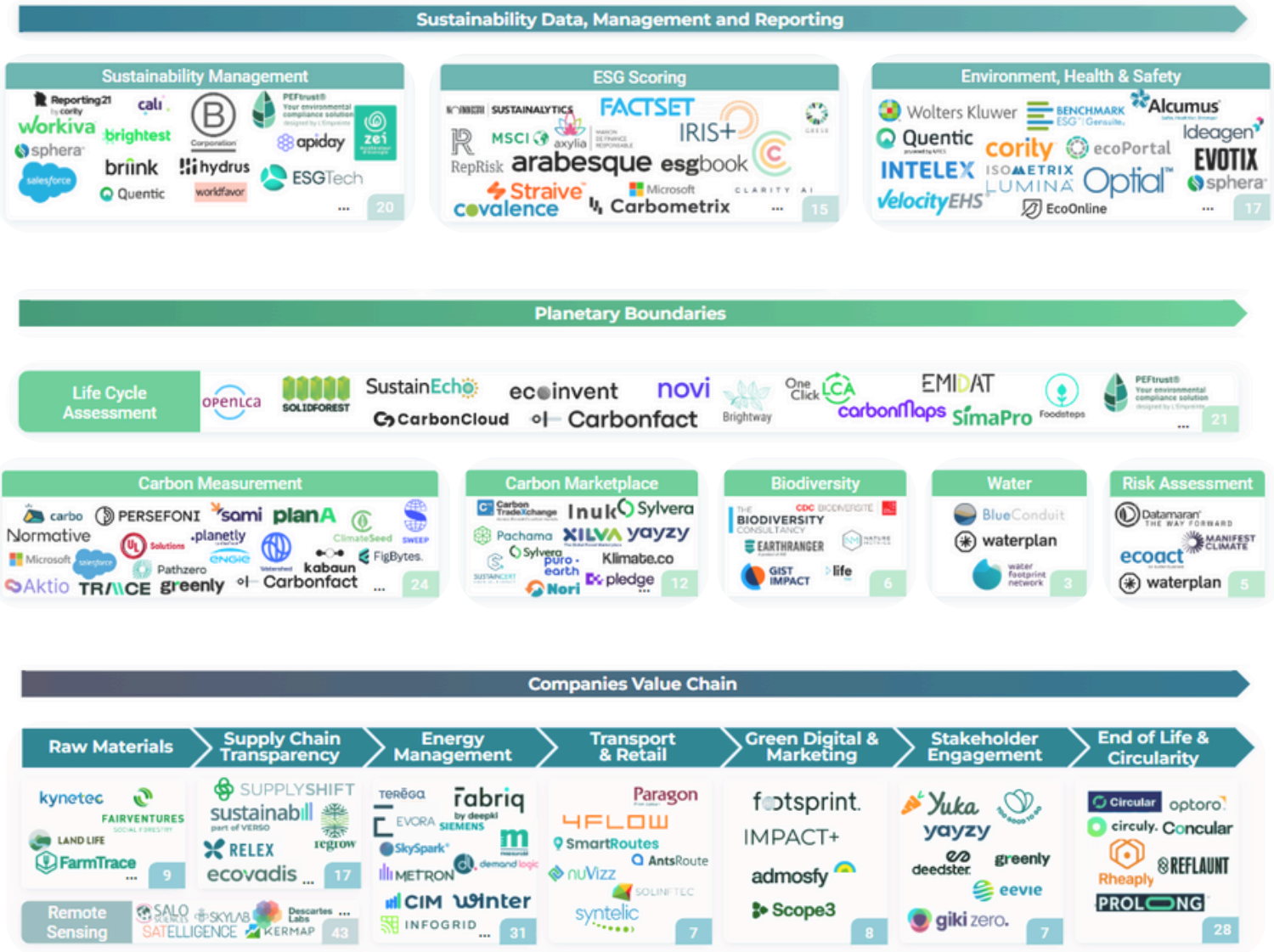


Categorization of companies included in this Deep Dive

Digital4Impact Tech Radar

Zoom on Circularity:

Below you can find the Circularity solutions identified.



If you feel you would like to feature your technology or product on the Digital4Impact Tech Radar, please write to us at techradar@impactlabs.earth

IMPACT LABS.earth
Nature Positive Business

Digital4Impact Tech Radar

Highlights

Considering the growth of digital tech geared towards the circular economy, and the complexity behind each circularity category across industries and locations, we decided to highlight one company per category above-mentioned to show their different strengths. This is meant to help businesses at all stages of their transition to a circular model to better identify with tools are the most useful to reach such transition.

	Circonomit	REFLAUNT	optoro	Diversys	circuly.	reath
Business Target	From large businesses to startups	Large businesses (luxury) & startups	All size of Businesses	All size of Businesses	Small, Medium Businesses	Small, Medium Businesses
Geographic Coverage	DACH region	Global	USA	N. America	DACH region	Global
Date of Creation	2022	2018	2004	2019	2019	2019
Capabilities: Current capabilities to deliver the vision of the company	★★★★½	★★★★½	★★★½½	★★★½½	★★★★★	★★★★½
Momentum: Current traction on the market	★★½½½	★★★★½	★★★★★	★★½½½	★★★½½	★★★½½
Vision: Understand where the market is going and/or has an idea to shape the market	★★★★½	★★★★½	★★½½½	★★★★½	★★★½½	★★★★★
Integration Capacity to connect the digital solution with existing softwares	★★★★½	★★★★½	★★★★½	★★★½½	★★★★½	★★★★½
Services Scope of services provided	★★★★½	★★★★½	★★★★½	★★★★½	★★★★½	★★★★½

If you feel you would like to feature your technology or product on the Digital4Impact Tech Radar, please write to us at techradar@impactlabs.earth

IMPACT LABS.earth
Nature Positive Business

Capabilities

The parameters used for the assessment of the capabilities of circularity solutions are the following:

Integration with existing tools: Extent to which the digital tech can seamlessly integrate with clients' interfaces. The goal is to assess how easily the circularity solution can be adopted and incorporated into the client's current systems, without requiring integration work or disrupting normal operations.

Operability with existing frameworks: Whether the technology is compatible with and can function within the context of established sustainability standards and regulations like the CSRD. The idea is to evaluate if the circularity solution can serve as an effective tool for companies to comply with these existing sustainability frameworks.

Type of tech: The specific types of digital technology used in the circularity solutions, ranging from AI, digital twins, IoT, blockchain, etc. This can provide insights into the capabilities and potential applications of the circularity offerings.

Impact measurement: Understanding how the companies quantifu and measure the impact of their circularity solutions. This includes the metrics used (ex: CO2eq reduction, waste prevented, etc), the transparency of the impact claims, and the methods used to quantify impact.

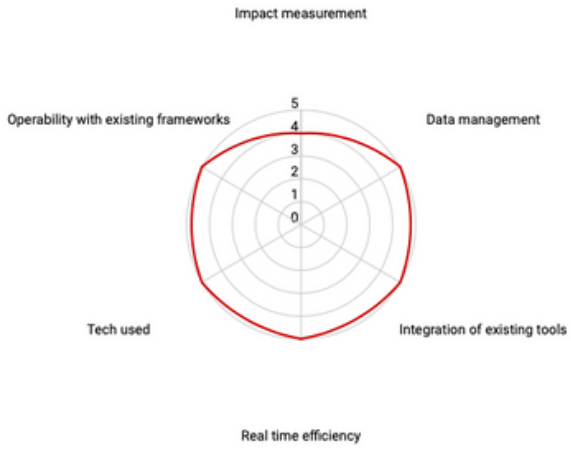
Data management: Evaluating how the circularity solutions handle the collection, storage, and ownership of the data involved.

Real time tracking: Assessing the capabilities of the circularity solutions in terms of real-time monitoring and tracking of relevant data and metrics.

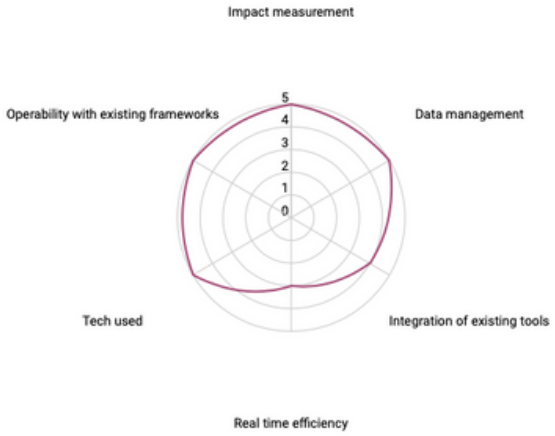
Digital4Impact Tech Radar

Capabilities

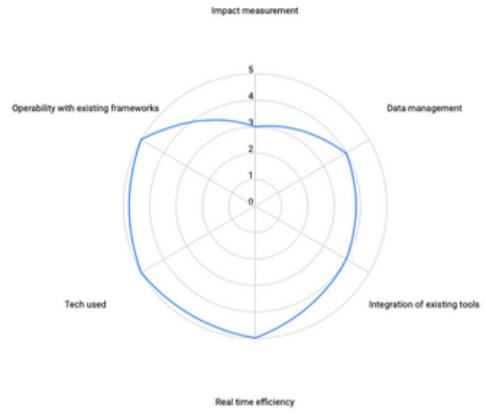
Circonomit



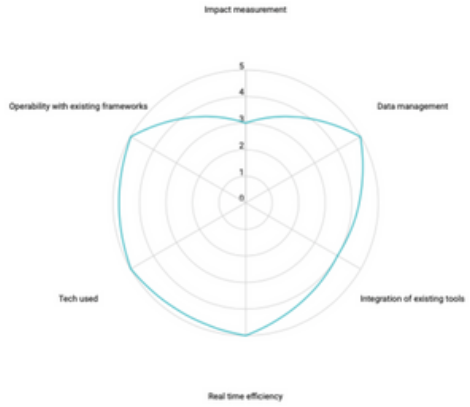
REFLAUNT



optoro



Diversys



circuly.

reath

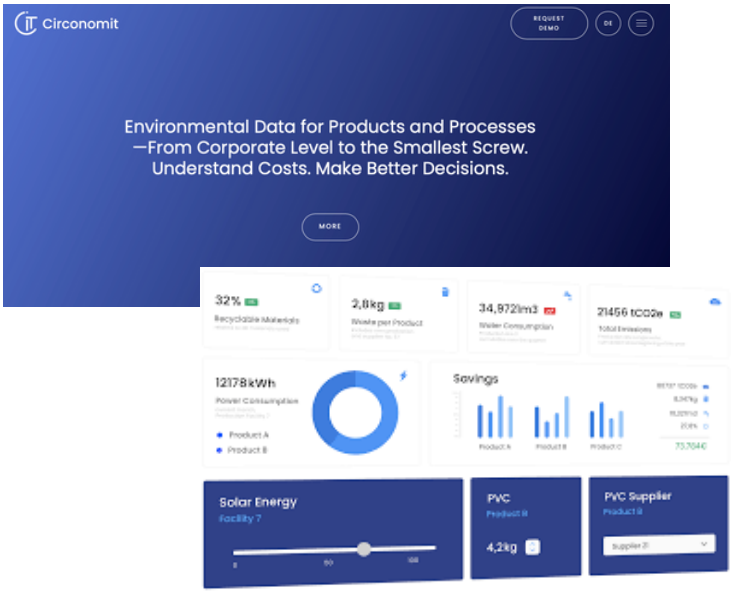
If you feel you would like to feature your technology or product on the Digital4Impact Tech Radar, please write to us at techradar@impactlabs.earth

IMPACT LABS.earth
Nature Positive Business

Digital4Impact Tech Radar

Circonomit

Business Target	International Coverage	Date of Creation
Large businesses and startups	DACH region	2022



Summary & Impact

- Circonomit was founded in 2022 to streamline data collection and link sustainability metrics with financial decision-making.
- They created an Environmental Data Toolbox with guided workflows to enrich data for further use.
- They enable their clients to make informed decisions using traceable metrics across the value chain.

VISION

- Environmental Data for Products and Processes from Corporate Level to the Smallest Screw to understand Costs and make Better Decisions

INTEGRATION

- Integration can work in 3 ways:
  - If clients already have data, Circonomit can mirror it,
  - It can make sense to integrate the platform through API,
  - Circonomit can work as a stand-alone solution.

SERVICES

- Circonomit can be used for circularity design, quality management, green controlling, reporting, GHG accounting, and financial analysis.
- Through the Environmental Data Toolbox, they build environmental data sets for products and their value chain.

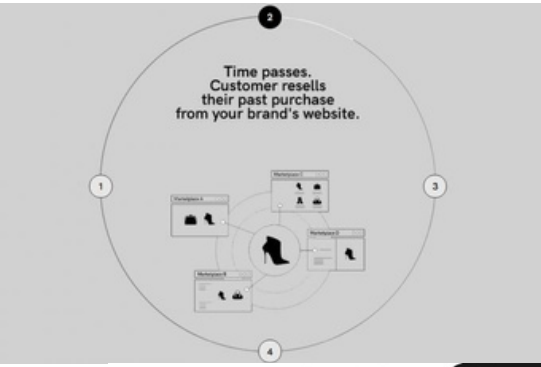
CAPABILITIES

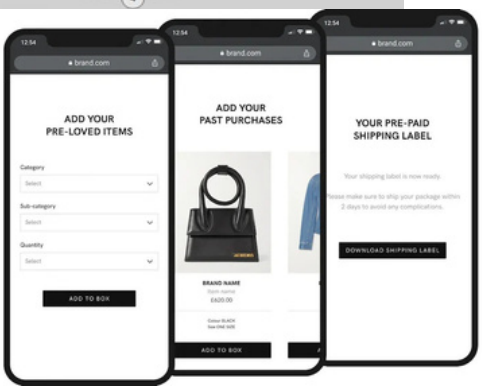
- Circonomit allows companies to select KPIs from sustainability and finance, then models the dependencies between the targets, and simulate the effects of value chain adjustments on the selected KPIs.
- Data management is made easy through a no code interface.

Digital4Impact Tech Radar

REFLAUNT

Business Target	International Coverage	Date of Creation
Large businesses (luxury) and startups	Worldwide	2018





Summary & Impact

- Reflaunt is acompany founded in 2018 operating a circular second-hand clothing maretplace intended to bridge the first-hand and second-hand markets.
- The company's platform empowers brands to take control and benefit from second-hand systems through circular fashion model, enabling clients to give customers the option to re-sell, donate, or recycle their wardrobes.
- Reflaunt helps reduce carbon emissions through encouraging reuse and resell, save water from preventing production of new fashion pieces, and save energy through decreasing electricity needs.

VISION

- Reflaunt envisions to support brands in their path towards circularity.

INTEGRATION

- Due to increasing regulation, brands increasingly need to adopt resale. But building a resale platform is complex, so Reflaunt integrates into existing softwares to provide the resale service.
- Reflaunt partners with digital passport providers in order to streamline the integration process for brand-specific needs.

SERVICES

- Reflaunt manages data through its own platform, offering clients access to insights on item resale and lifecycle, without requiring them to manage data directly.
- The operational flow is end-to-end, what is unsold is used by up-cycling partners.

CAPABILITIES

- Reflaunt uses digital product passports, proprietary algorithms to establish the best price for each item, and integration technology to connect with 30+ platforms.
- Reflaunt helps clients report on lifecycle data and environmental impact.

Digital4Impact Tech Radar

optoro®

Business Target	International Coverage	Date of Creation
SMEs	Worldwide	2011

Summary & Impact

- Optoro offers a reverse logistics software that connects online returns with an efficient supply chain processing
- The company's software provides retailers and manufacturers a platform to manage, process, and sell returned and excess inventory using comprehensive data analytics and multi-channel online marketing.
- This enables companies to determine the path for each item, maximising recovery, and reducing environmental waste.
- For example, Tuckernuck went from 0% to 78% of returned items sold within 30 days of using the Optoro software.

VISION

★★☆☆☆

- Optoro's vision is to establish themselves as the only end-to-end reverse logistics portal and continue to grow across the world to support the circular transition.

INTEGRATION

★★★★☆

- Optoro's integration is fully automated through APIs, enabling Optoro to handle data for returns optimisation.
- The solution is modular so it can easily be adapted to client specificities.

SERVICES

★★★★½

- Return portal: automation to get rid of customer service
- Return methods: QR code-based, pick up locations
- Return processing
- Data insights: enterprise reporting, items traceability
- All services are managed by Optoro's platform

CAPABILITIES

★★★★½

- AI and proprietary algorithms are used to streamline retail returns.
- APIs are used to manage every step of the return system
- The focus on waste and optimising returns allows companies to report on waste reduction efforts.

Digital4Impact Tech Radar

Diversys

Business Target	International Coverage	Date of Creation
SMEs	N. America	2019

Summary & Impact

- Diversys develops a recycling management software designed to deliver solutions that make waste reporting and management simple.
- They use patent-pending technology to manage the programs from start to finish, allowing clients to track and record their recycling activities.
- Diversys ensures an end-to-end traceability, streamlined auditing and reporting process.
- They help realise the value of recyclables through their digital solution.

VISION

- Diversys' vision is a world without waste.

INTEGRATION

- Integration within their clients' interface is fully managed by Diversys.
- They implement their cloud-based platforms into existing systems.

SERVICES

- Data capture through any device (barcode, smartphone)
- Data management of all the captured data
- Data reporting in real time for any type of report needed (all data is managed within the platform)
- For reporting, clients can choose any system preference to comply with sustainability metrics.

CAPABILITIES

- Diversys uses real-time data tracking and automated reporting, as well as data-driven insights to improve recycling rates and reduce landfill waste.
- AI ensures the automation of Data processing to track, manage and optimise waste collection.

Digital4Impact Tech Radar

circuly.

Business Target	International Coverage	Date of Creation
Small, Medium Enterprises	DACH region	2019

Summary & Impact

- Circuly is a B2B SaaS business software designed to enable circular business models.
- Circuly supports companies in optimising and scaling existing rental models, and helps established companies to build new ones.
- The majority of a product's CO2 emissions are released in the production process, so Circuly helps reducing production needs by enabling renting and subscription models

VISION

★★★★★

- Circuly aims to sustain a natural growth to be able to offer their services to more clients.

INTEGRATION

★★★★★

- Clients go through an onboarding process, during which the Circuly platform is integrated through API to allow for data synchronisation.
- Circuly has on-the-shelves integration to all key e-commerce platforms & payment providers

SERVICES

★★★★★

- Circuly's sfotware allows businesses to rent out their products instead of selling them with a subscription management software.

CAPABILITIES

★★★★★

- Circuly is a plug-and-play solution for the e-commerce channel
- Circuly manages the data, in turn collecting and organising subscription and rental data.
- Clients can align the Circuly platform to their workflows to enhance reporting.

Digital4Impact Tech Radar

reath

Business Target	International Coverage	Date of Creation
Small and medium businesses	Global	2019

Summary & Impact

- Reath is a packaging management platform offering the digital infrastructure to shift to a circular economy.
- They target all industries that need packaging, from shampoo to washing machines (transport packaging).
- The solution is designed to be customisable and accessible, the metrics Reath uses to measure their impact are CO2e emissions saved and amount of single-use packaging saved.

VISION

- Reath wants the circular economy to become a household term. They want sustainable options to become cost effective solutions through governmental support. They want to help companies give customers better options. .

INTEGRATION

- To colllect information on the physical flow of packaging, Reath leverages data via machine readable codes, like QR codes, RFIDs, NFCs or barcodes.
- Reath is an API-led platform so it can easily be integrated with existing systems and tools.

SERVICES

- Track and trace software: real time to optimise the collection and reuse of Packaging
- Packaging Comparison Tool: Reath ingests publicly available data set and Enterprise Resource Planning systems and Packaging spec systems.

CAPABILITIES

- Reath uses digital product passports for their Reusable Asset Track & Trace software and they use customised algorthims and machine learning models for their Packaging Comparison Tool
- Insight tools to build case for circularity
- Reporting & visualization

Quantifying the impact of circularity

In a company's journey towards circularity, a key step is understanding and quantifying environmental impact. While carbon footprint quantification in tCO2eq is widely used, the emerging landscape of circularity measurements demands more comprehensive and nuanced approaches to impact measurement.

Different tools for different maturity

Companies with low circularity maturity often rely solely on traditional waste management metrics or basic recycling rates. These lack a holistic view of the material value chain, preventing to capture the full picture of resource use and product-design. These companies should shift their focus to resource optimisation rather than simple end-waste management.

Three-fold impact at Reflaunt

The fashion industry, in particular, relies on manufacturing processes that release substantial CO2eq, and consume large amounts of water and electricity. Through the encouragement of reusing and reselling existing items, Reflaunt successfully curtails the necessity for fresh production, leading to a noteworthy reduction in overall CO2eq emissions, water, and electricity.

Reflaunt quantifies its impact in 3 ways (to this day):

- CO2eq saved - 156 tonnes
- Water saved - 13,737,683 litres
- Electricity saved - 672,829 KWh

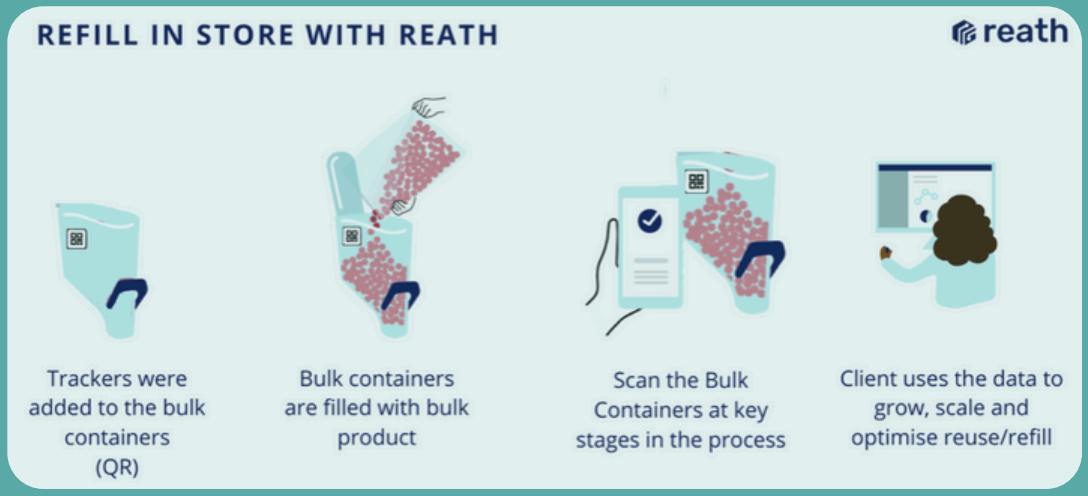
As circularity maturity increases, companies develop more holistic approaches to quantifying impact. This involves moving beyond simple waste reduction to more advanced metrics that capture resource use throughout the entire value chain. For instance, one of Circuly's impact measure is the number of companies whom they enabled to transition towards a circular business model. Moreover, Circonomit uses time as an impact measure in addition to tCO2 saved. They improve companies' efficiency, allowing their clients to spend more time on taking meaningful action. They believe in a world where everything that is waste becomes a resource. These innovative impact measures show that companies should not limit themselves to carbon footprint measurement.

As mentioned in this Tech Radar, digital technologies can be levers for impact measurement. This can be the case of:

- AI-led material analysis
- Blockchain traceability of resources
- Digital twins simulating circularity scenarios
- IoT tracking product lifecycle and material degradation
- Advanced data analytics that predict and optimise resource use

Managing a refill in-store system with Reath

Reath guided a retail brand towards their circularity objectives. Reath digitalised th lengthy process of refill in-store and provided a blueprint for the refill model to scale, safely across the store footprint. The Reath digital system has been powering this refill in-store system since 2021.



The ultimate goal shifts from measuring waste reduction to demonstrating positive resource creation – transforming linear consumption models into regenerative systems that create more value than they consume.

At ImpactLabs, we will support you in your journey to transform your business to make it more circular. With our track record in change management, our sustainability expertise and our in-depth knowledge of the enablers of the transformation, we will mitigate, find new, more sustainable paths for your business and minimise the risks along the way.

The next stage is transforming linear value chains into regenerative ecosystems, where products and materials are continuously redesigned to maximise utility, minimise resource extraction, and create holistic value beyond traditional economic value.

The fundamental shift is from seeing materials as finite resources to be consumed, to dynamic, adaptable value streams that can be continuously re-employed and re-imagined.

Sources

Go Circular or Go Home: The Road to Nature Positive Business

Closing the loop

Circonomit

Reflaunt

Optoro

Diversys

Circuly

Reath

Reath - case study

Pitchbook

Version 1
Published in July 2024