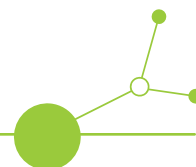


D2.4.2 Solution - Methodology Kit for the development of an economically successful, circular product



01.07.2026





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1. Introduction

The “**Methodology kit for the development of an economically successful, circular product**” presents a structured **two-stage approach** that guides manufacturing companies step-by-step from defining a sustainable business case (*what to develop*) to piloting and the adaptation of the business model.

The methodology is based on its application across seven regions, involving 29 SMEs and small midcaps from the manufacturing sectors mechanics & mechatronics, plastics, packaging, and building & construction in a two-stage innovation process. This diversity provided valuable insights and **demonstrated the flexibility and adaptability of the approach**. It is reported in CURIOST D 2.3.2. - Two stage pilot prototype creation, testing and business modeling.

A key success factor was the **close collaboration between companies, innovation experts (“Creative Heads”) and consortium partners**, supported through workshops and interactive formats. The experience showed that **active company engagement and contextual adaptation are crucial for success**.

The **Creative Head** is an expert in e.g. creative industries, business development, or sustainability, who **guides and supports companies** through the design thinking process to develop a sustainability-focused MVP. This guidance is crucial and relevant as it **ensures high-quality input** throughout the process on a **basis of trust** toward the company.

Overall, the methodology kit highlights the **importance of co-creation and practical testing** in developing and adapting circular, applicable, and sustainable MVPs.

2. Purpose & Target group

Purpose

This methodology enables manufacturing companies to a systematic **two-stage guidance to develop an economically successful, circular MVP**, considering economic and environmental dimensions at the same time.

It provides a **structured yet flexible process** that guides companies **from initial preparation and assessment to the scaling of a sustainable business case into sustainable business models**.

Target group

The primary target groups include small and medium-sized enterprises (SMEs) and small midcaps from the four sectors of mechanics & mechatronics, plastics, packaging and building & construction, seeking to innovate their business models.

The process involves close collaboration between manufacturing companies and regional innovation experts or Business Support Organizations as guiding partners.



3. Two-stage approach

The methodology is structured as a **two-stage approach** within a **total of six phases** that supports companies in systematically developing, testing, and refining sustainable products. The process typically runs over several months and requires active involvement from both companies and facilitators.

It combines analytical work, collaborative workshops, real-life experimentation (piloting) and recurring feedback loops with innovation experts (“Creative Heads”), **ensuring both theoretical grounding and practical applicability**.

The **process is designed to be iterative** rather than strictly linear. While phases are presented sequentially, feedback loops with Creative Heads are encouraged, particularly between development and piloting. This allows companies to continuously refine their solutions based on real-world insights and expertise.

The two stages address different but complementary aspects of developing circular and economically successful MVPs. Together, they **form the basis of the methodology kit**:

Stage 1 = Sustainable business case development

“What is the problem and how can we find a first solution to solve it?”

Phases: 1 preparation → 2 assessment → 3 co-creation → 4 refining/development

- > Creates economic, environmental, and social value
- > Integrates sustainability into business activities
- > Is practical and implementable within company operations

Stage 2 = Piloting and adaptation of the business model

„How does the sustainable business case supports the transition to a more sustainable business model?”

Phases: 5 piloting → 6 adoptions

- > Considers costs, benefits, risks, and impacts
- > Is validated and strengthened through testing (piloting)



Across all phases, four elements contribute to the success of the methodology kit:

- **Collaboration:** Continuous interaction between companies, facilitators, and regional stakeholders enhances learning and innovation.
- **Flexibility:** The methodology can be adapted to different sectors, company sizes, and regional contexts.
- **Feedback loops:** Feedback loops between phases support continuous improvement.
- **Practical focus:** Emphasis on real-world application ensures relevance and impact.

These elements ensure that the methodology is not only structured but also responsive to real-world challenges and opportunities.

The methodology kit includes guidance on **topics that require special attention in circular product development within the manufacturing industry:**

- High **dependency** on physical assets and infrastructure
- Longer implementation timelines due to **technical complexity**
- Higher **investment risks**, but also **higher sustainability impact potential**
- Strong **relevance of circular economy and resource efficiency**



3.1. Stage 1: Sustainable business case development (Phases 1-4)

The first four phases of the methodology kit focus on the **development of the sustainable business case**, addressing the key questions: *“What is the problem and how can we find a first solution to solve it?”*

During these four phases, companies together with Creative Heads analyse their current situation, explore opportunities, and co-create innovative ideas. These ideas are then transformed into structured and actionable business model concepts. The process combines analytical work with collaborative formats to ensure that the resulting models are **both strategically sound and relevant in practice**.

The outcome of these phases is a **clearly defined sustainable business model**, which serves as the foundation for further testing and validation in the subsequent phases.

3.1.1. Phase 1 - Preparation

The preparation phase establishes the foundation for the entire process. It focuses on ensuring that a **company's expectations are aligned** and **resources are secured**:

A company's **interest in sustainability, openness for innovation and willingness to actively participate in workshops and testing activities** crucial.

Also, a clear **definition of individual objectives** is essential at this stage: This includes identifying the company's motivation, expected outcomes, and potential constraints.

In addition, roles and responsibilities among a company's participants are clarified. Company representatives and guiding experts need to define how they will collaborate throughout the process.

In manufacturing, preparation requires strong internal alignment across departments, which is more complex than in service sectors. Preparation must account for technical feasibility and operational continuity, not just strategic intent:

- Involvement of production, procurement, R&D, and sustainability teams
- Consideration of existing production systems and constraints (e.g. machinery, supply chains)
- Early identification of resource-intensive processes (energy, raw materials)
- Need for management commitment, as changes often require investment and operational adjustments

Key outcome of phase 1 - preparation:

A shared understanding of the methodology and commitment of all involved stakeholders.

The **business case input form template** for the preparation phase can be found in [Chapter 5.1](#).



3.1.2. Phase 2 - Assessment

The assessment phase focuses on analysing the current state of the company's business model and identifying areas for improvement from a sustainability perspective:

- Companies **examine key components** such as value proposition, customer segments, revenue streams, cost structures, and resource use.

At the same time, **environmental and social impacts are assessed** to identify risks and opportunities.

This phase typically includes structured workshops using analytical tools, such as Sustainable business model, Value Hill Model and other Design thinking methods that help companies better understand:

- their current positioning
- sustainability challenges
- potential leverage points for innovation

The **Design Thinking methods** and **business canvas** supporting this phase are provided in the [Chapter 5.3.](#)

An important aspect of this phase is **stakeholder reflection** where companies consider expectations from customers, regulators, and society.

For manufacturing companies, assessment goes deeper into physical processes and resource flows:

- Analysis of material flows, energy use, and production efficiency
- Identification of waste streams and circularity potential
- Assessment of supply chain dependencies and risks
- Consideration of regulatory requirements (e.g. emissions, standards)

Key outcome of phase 2 - assessment:

A clear **assessment of the existing business model** and a **prioritised list of sustainability challenges and opportunities**, which serves as input for the next phase.



3.1.3. Phase 3 - Co-Creation

The co-creation phase is **highly interactive** and focuses on **generating innovative ideas for sustainable business cases**:

- Companies **participate in facilitated workshops** together with stakeholders such as regional actors, experts, and, where relevant, other companies. This **collaborative environment encourages the exchange of perspectives** and the **exploration of new approaches**.

Creative methods are used to **stimulate ideation** including e.g. brainstorming, scenario building, and design-thinking approaches. The emphasis is on **identifying solutions that balance economic viability with environmental and social impact**.

During this phase, companies are **encouraged to think beyond incremental improvements** and explore **transformative ideas**, such as new value chains, or service-based models.

The **Design Thinking methods** and **business canvas** supporting this phase are provided in the [Chapter 5.3.](#)

In manufacturing, co-creation must bridge technical expertise and business innovation. Ideas must be both innovative and technically feasible within production systems:

- Inclusion of engineers and technical experts, not only management
- Exploration of circular production models, product redesign, servitisation (e.g. product-as-a-service)
- Strong role of external partners (suppliers, technology providers)

Key outcome of phase 3 - co-creation

A **portfolio of potential business cases / MVP ideas**, which are then further refined and evaluated in the next phase.



3.1.4. Phase 4 - Development

In the development phase, **selected ideas from the co-creation stage are transformed into concrete business case concepts**. Companies **evaluate** technical requirements, market potential, and organisational implications to ensure these concepts are both innovative and implementable.

At this stage, **feasibility is critically assessed** through:

- Work on detailing their concepts by defining:
 - > value propositions
 - > target customers
 - > key activities and resources
 - > partnerships and
 - > financial structures.

Facilitation support is particularly important here, as companies often need **guidance in structuring their ideas and translating them** into coherent business cases.

In manufacturing, development requires detailed technical and economic validation. Concepts must be translated into viable production solutions, not just conceptual models:

- Integration of production requirements into business models
- Assessment of machinery adaptation needs, investment costs, impacts on production efficiency
- Alignment with existing supply chains and logistics

Key outcome of phase 4 - development

- **Well-defined business model concepts** that are ready for testing through piloting.



3.2. Stage 2: Piloting and adaptation of the business model (Phases 5-6)

The phases 5 and 6 of the methodology kit focus on implementing the business case and transitioning from a business case to a more sustainable business model, addressing the key question: „How does the sustainable business case support the transition to a more sustainable business model?“

During these phases, the previously developed business case is tested, evaluated, and refined through real-life application. Companies gather evidence on feasibility, performance, and impact, and use these insights to strengthen and adjust their approach.

The outcome of these phases is a **validated and evidence-based sustainable business case** that **demonstrates how the business model can be adapted**, providing a foundation for an economically successful circular product development.

3.2.1. Phase 5 - Piloting

The piloting phase represents the **transition from conceptual work to practical application**. It involves testing the developed business case concepts in **real-life conditions** within the company.

Piloting is **not about achieving perfection**, but about **learning and improving**. Adjustments to the business model are expected and encouraged based on insights gained during testing.

Piloting is typically conducted on a **small scale**, allowing companies to **experiment without significant risks**:

- This may include testing a new product or service, implementing a new process, or engaging a specific customer segment:
 - > validate assumptions,
 - > identify practical challenges,
 - > assess customer response
 - > measure potential impact.

Monitoring and feedback collection are key components of this phase. Companies systematically **gather data and reflect** on their experiences, often supported by facilitators.

In manufacturing, piloting is particularly critical and complex due to real production constraints. It must balance experimentation with operational reliability:

- Testing often occurs in limited production environments or small batches
- Need to avoid disruption of ongoing operations
- Focus on technical feasibility, production stability, quality control, data collection (resource savings, cost implications)

Key outcome of phase 5 - piloting

Validated and refined business case, supported by practical evidence.



3.2.2. Phase 6 - Adaption

The final phase focuses on adapting and refining the business model based on the insights gained during piloting.

Using the results from testing and feedback collection, companies assess how the solution can be effectively integrated into their existing operations and strategic objectives. This may involve organisational changes, further investment, or strategic alignment.

Companies also consider **long-term sustainability impacts** and monitoring mechanisms.

- **Support from regional stakeholders** can play an important role in this phase, for example by facilitating **networking, funding opportunities, or policy alignment**

Circular business model templates and practical recommendations for four sectors of the manufacturing industry are provided in [Chapter 5.2](#) and [Chapter 5.4](#).

In manufacturing companies, adaptation often requires significant operational and organisational adjustments, including:

- Integration into existing production lines and processes
- Potential need for new equipment, supplier changes, workforce training
- Alignment with long-term production strategies

Key outcome of phase 6 - adaption

An adapted business model that embeds the validated sustainable MVP within the company's activities and supports its wider implementation and growth. The key elements of this sustainable business case are integrated into the business model.



4. Best practices from CURIOST by sector

4.1. Mechanics & Mechatronics Sector: Microsport GmbH & Co. KG (Germany)

Reverse logistics and multi-life strategy for eChecker test benches

Microsport offers a clear, mature, and highly transferable circular business model that directly addresses one of the sector's biggest gaps: the absence of structured reverse logistics for durable technical equipment. Although Microsport's eChecker test benches are robust and long-lasting, they currently lose economic value because returns are handled only occasionally and without a system. Microsport's new model changes this completely.

The company introduces a structured buy-back, refurbishment, and rental system that turns test benches into long-term assets rather than one-time sales. By integrating predefined repurchase values, on-site residual value assessments and visible reminders on each product, Microsport creates predictable return flows and extends product lifetimes. Refurbished units can then be resold or offered through rental and subscription models, opening new customer segments and generating recurring revenue.

Microsport also embeds circular design principles - modularity, repairability, interchangeability into future product development, strengthening supply-chain resilience and reducing dependency on new components. This is especially important in a sector affected by global supply disruptions.

<https://www.ebike-checker.de/en>

4.2. Packaging Sector: HeroPAK (Austria)

Packaging-as-a-Service model replacing single-use plastic stretch film with reusable systems and IoT tracking

HeroPAK offers a fully circular, operationally proven alternative to single-use stretch film in logistics, one of the largest sources of packaging waste in Europe. Its **reusable ClickLOK system** replaces disposable film with a durable, trackable solution that significantly reduces plastic waste, CO₂ emissions, and hidden operational costs.

The company's Packaging-as-a-Service (PaaS) model is particularly innovative. Instead of selling packaging, HeroPAK provides a complete lifecycle service that includes deployment, maintenance, repair, and end-of-life management. This shifts logistics packaging from a linear cost item to a circular, data-driven service.

HeroPAK also integrates IoT tracking, enabling real-time monitoring, compliance reporting, and transparent environmental impact assessment. The 90-day pilot with a supermarket chain demonstrates that the model works in real logistics loops and delivers measurable efficiency gains.

<https://www.heropak.io>



4.3. Plastics Sector: KLGS (Poland)

Functional upcycling of technical plastics with additives for high-performance component

KLGS tackles one of the most difficult challenges in the plastics sector: the reuse of post-production waste that contains functional additives such as fibres, flame retardants, and stabilisers. These materials are normally hard to recycle without losing quality, but KLGS develops functional upcycling technology that restores and stabilises their mechanical and functional properties. This allows materials like PP, ABS, PC/ABS and PC to be reused in high-quality technical components, rather than being downcycled or discarded. The company combines decades of injection-moulding experience with strong R&D partnerships with leading technical universities, giving it the scientific and technological capacity to create reliable, high-performance recyclates.

KLGS is also transforming its business model from a traditional component manufacturer into a technology partner offering material development, process optimisation and consulting. This makes its circular approach highly transferable to other plastics SMEs.

KLGS aligns closely with EU circularity goals by increasing recycled content, reducing carbon footprints and keeping complex plastics in circulation for longer. Its model is scalable, industry-ready and directly addresses the sector's need for high-quality secondary materials. For these reasons, KLGS represents a strong, credible and impactful best-practice example for the plastics sector.

<https://klgs.eu>

4.4. Building & Construction Sector: Reciklaža Mišić (Croatia)

Circular use of construction and demolition waste

Reciklaža Mišić demonstrates a practical, market-ready circular solution for one of the construction sector's biggest challenges: the management and underuse of construction and demolition waste (CDW). This issue became particularly acute following the recent devastating earthquakes in Croatia, which generated big volumes of debris. The company faces a situation where around 20% of processed materials remain unused, while market demand for certain fractions, such as asphalt aggregate is high. Instead of treating this surplus as waste, Reciklaža Mišić collects, sorts, and crushes construction waste to turn it into new, valuable products.

Their MVP introduces a simple but high-impact idea: producing horticulture and small **construction products** (such as garden paving slabs) made from recycled aggregate. This approach is realistic, avoids heavy certification requirements and allows the company to enter a new market quickly. It also demonstrates how mixed construction waste often considered low-value can be transformed into functional, attractive products with real commercial potential.

The company's model is highly **transferable**. Many SMEs and small midcaps in the construction and waste-management sector face similar challenges with fluctuating demand, inconsistent waste streams, and the need to diversify. Reciklaža Mišić shows how these challenges can be turned into opportunities by combining material preparation, product development and branding into a new circular product line.

Reciklaža Mišić offers a **credible, scalable, and sector-relevant circular model** that reduces waste, creates new revenue streams, and demonstrates how SMEs can successfully implement circularity in the building & construction sector.

<https://reciklaza-misic.hr>



Sector	Company	Solution	Key best practice	Impact
Mechanics and Mechatronic	Microsport (Germany)	Reverse logistics & multi-life model	Buy-back & refurbishment system; rental/subscription; modular & repairable design	Extends product life; recurring revenue; supply-chain resilience
Packaging	HeroPAK (Austria)	Packaging-as-a-Service (PaaS)	Reusable system replacing single-use; full lifecycle service; IoT tracking	Cuts waste & CO ₂ ; turns packaging into service; scalable in logistics
Plastics	KLGS (Poland)	Functional upcycling of technical plastics	Reuse of additive-rich plastics; property restoration; R&D partnerships	High-quality recyclates; reduced footprint; scalable for SMEs
Building & Construction	Reciklaža Mišić (Croatia)	Waste valorisation into new products	Convert surplus materials into products; low-certification applications; diversification	Reduces waste; new revenue streams; transferable to construction SMEs

Table 1. Overview: Best practices from CURIOST by sector



5. Templates

5.1. Business Case Input Form



Business case input form



1. Company info (basic):

*Please provide a short description of the company in this field (max. 200 characters).
Ensure the information is clear and directly relevant.*

2. Problem:

Please describe the business problem the company aims to address (maximum 500 characters).



3. Idea for solution (MVP)

Please briefly describe proposed solution for MVP (maximum 500 characters)

4. Concrete components/elements/actions needed for future circular transformation

Please list the key components, elements, or actions of the circular/sustainable transformation that were implemented or identified (maximum 500 characters).



5. Expected impact on the business model (assumed difference between existing and new business model)

Please briefly describe the expected impact on the business model, highlighting the assumed differences between the current and proposed model (maximum 500 characters).

6. Timeline and implementation challenges (e.g. barriers for implementation, risks, missing competencies...)

Please briefly describe timeline and potential implementation challenges, such as barriers, risks or missing competencies (maximum 500 characters).



7. Suggestions from Creative Heads Panel (after 2nd workshop)
Please summarize the key suggestions or recommendations from the Creative Heads Panel following the second workshop (maximum 500 characters).

If needed, include transformation in all elements after 2nd workshop



5.2. Circular business model templates from 4 manufacturing sectors

5.2.1. Circular business model template - Mechanics & Mechatronics

The mechanics and mechatronics sector works with durable, high-value machines that can stay in use for many years. Because of this, companies in the sector have strong potential to shift from a linear “make-sell-discard” model to a circular one where products are kept in use longer, returned after use, digitally monitored and eventually recovered for materials or components. The circular model helps companies reduce costs, improve resilience, strengthen customer relationships and meet new EU sustainability rules.

Five dominant circular patterns appear repeatedly throughout the sector. They provide the essential framework for the circular business model template.

- **Product life extension & refurbishment.** Companies restore used machines, devices or components so they can be used again. This includes repairing, upgrading, cleaning, testing and grading them into quality levels. It works well because machines in this sector are naturally durable and repairable.
- **Product-as-a-service and rental models.** Instead of selling equipment once, companies offer it as a service through rental, subscription or pay-per-use. Customers pay for performance, while the manufacturer **keeps** ownership and can refurbish the product after each use cycle.
- **Reverse logistics & take-back systems.** Circularity only works when products come back. Companies create **structured** return systems such as buy-back programs, deposits or take-back agreements so that used machines and components reliably return for refurbishment or reuse.
- **Digital intelligence for circularity.** Digital tools such as sensors, IoT, digital product passports and predictive maintenance help companies understand how products are used, when they need repair and how materials flow through the system. This data makes circularity manageable and measurable.
- **Resource recovery & secondary component markets.** At the end of a product’s life, valuable materials and components are recovered, tested and reused. This reduces dependency on global supply chains and creates new revenue streams from parts that would otherwise become waste.



5.2.2. Circular Business Model Template - Packaging Sector

The packaging sector is under strong pressure to reduce waste, replace fossil-based materials, and comply with new EU rules on recyclability and reuse. Companies must rethink how packaging is designed, produced, collected and reused. The circular business model template shows how packaging companies can shift from single-use, linear systems to circular loops where materials stay in circulation longer, environmental impact is reduced and new value is created.

Across the sector five recurring circular patterns appear. These patterns form the foundation for circular transformation in packaging

- **Circular materials & packaging substitution**
Companies replace traditional single-use plastics with better, lighter and more recyclable materials. This is the fastest way to reduce environmental impact without changing the whole business model. They switch to mono-materials, reduce plastic content or use biodegradable options so packaging becomes easier to recycle and uses fewer resources.
- **Process automation & resource efficiency**
Companies improve circularity by automating packaging steps and reducing waste in production. Automation helps them use fewer materials, avoid over-packaging, cut energy use and make packaging more consistent. It lowers costs and makes circular packaging easier to implement.
- **Circular supply chains & logistics optimization**
Companies redesign logistics to reduce emissions and waste using reusable transport packaging or shifting to cleaner transport modes. This includes replacing single-use stretch film with reusable crates, improving transport routes or using rail to cut CO₂. Cleaner logistics make packaging loops more efficient and sustainable.
- **Product as a service & lifecycle management**
Packaging becomes a service, not a disposable product. Companies keep ownership of reusable packaging, manage cleaning, repair and returns, and charge customers for access instead of selling packaging once. This ensures packaging stays in controlled loops and is reused many times.
- **Data-Driven circularity & customer feedback loops**
Companies use data, tracking and customer feedback to improve packaging design and performance. They collect information on how packaging is used, how often it is reused, where it breaks and what customers prefer. This helps them refine materials, formats and logistics to make circular solutions work better over time.



5.2.3. Circular Business Model Template - Plastics Sector

The plastics sector works with material-intensive products, often made from polymers that can be recycled, reprocessed or redesigned for better circularity. Because plastics are used in high volumes and generate predictable waste streams, companies have strong potential to shift from a linear “produce-use-discard” model to a circular one where materials are simplified, recovered, reused and digitally tracked. Circular models help companies reduce costs, stabilise supply, meet EU rules and respond to customer demand for more sustainable plastics.

Four circular patterns consistently emerge across the sector. These patterns serve as the core structure of the circular business model template.

- **Circular materials & product innovation**
Companies redesign plastics at the material level by increasing recycled content, simplifying polymer mixes and developing new formulations that are easier to process and recycle. They innovate with mono-materials, cleaner additives and improved compounding to ensure stable quality even when using recyclates. This pattern appears because plastics often fail to be recycled due to unnecessary complexity, and material innovation is the fastest way to unlock circularity.
- **Design for circularity & performance compliance**
Companies redesign products so they remain recyclable while still meeting strict performance requirements such as fire safety, hygiene, food contact or mechanical strength. They adjust geometry, wall thickness, additives and joining methods to balance circularity with regulatory compliance. This pattern appears because many plastic products operate in regulated environments, and circularity only works when products remain safe, functional and certifiable.
- **Resource recovery & closed ILoop systems**
Companies build systems to recover clean, predictable plastic waste streams from production or customers and turn them back into high-quality feedstock. They collect offcuts, regrind materials, reprocess films or pipes and create closed loops with partners. This pattern appears because plastics manufacturing generates valuable mono-material waste, and recovering it reduces dependency on volatile global supply chains while lowering material costs.
- **Digital intelligence & circular solution partnerships**
Companies use digital tools such as material traceability, digital product passports, CO₂ tracking, QR codes and data-sharing platforms to manage circularity across the value chain. They collaborate with customers, recyclers and technology partners to exchange data on material composition, usage and recycling performance. This pattern appears because circularity in plastics depends on reliable information, and digital intelligence makes material flows transparent and verifiable.



5.2.4. Circular Business Model Template - Building & Construction

The building and construction sector works with heavy, long-life materials such as insulation, panels, concrete elements and structural components. Because these materials are durable, high-impact and often difficult to recycle, companies have strong potential to shift from a linear “extract-build-demolish” model to a circular one where materials are recovered, components are designed for reuse, renovation is digitally planned and services replace one-off product sales. Circular models help companies reduce waste, lower costs, meet EU rules and improve the sustainability of buildings across their full lifecycle.

The sector shows a clear repetition of four circular patterns. They act as the central pillars of the circular business model template.

- **Resource recovery & secondary raw material products**
Companies recover valuable materials from production waste or demolition streams and turn them into new products. They stabilise quality through testing, certification and controlled processing so recovered materials can replace virgin inputs. This pattern appears because construction generates large, predictable waste streams, and recovering them reduces disposal costs, lowers environmental impact and creates new revenue opportunities.
- **Circular design & high-performance building components**
Companies redesign building materials so they meet strict performance requirements such as fire safety, moisture control or thermal insulation while still being recyclable or reusable at end-of-life. They simplify material layers, improve modularity and ensure components can be disassembled without damage. This pattern appears because construction products must meet demanding standards, and circularity only works when performance and compliance remain guaranteed.
- **Digital twins & precision-driven circular renovation**
Companies use digital tools such as LiDAR scanning, BIM models and lifecycle data to plan renovation with high accuracy. Digital twins help identify which materials can be reused, reduce unnecessary demolition and avoid errors during construction. This pattern appears because renovation projects are complex, and digital precision makes circular renovation faster, cheaper and more predictable while supporting future Digital Product Passport requirements.
- **Circular Service & Platform Models**
Companies shift from selling building materials once to offering services such as digital renovation audits, reuse planning, lifecycle assessments or subscription-based digital platforms. They package circularity into ongoing services that help clients reduce waste, plan renovations and choose circular materials. This pattern appears because services scale faster than physical products, create recurring revenue and strengthen long-term customer relationships.



5.3. Design thinking methods and business canvas

The Creative Methods Kit is an integral part of the CURIOST methodology, providing SMEs and small midcaps with a structured set of tools that support problem framing, ideation, prototyping, and circular business model development by the help of Design Thinking.

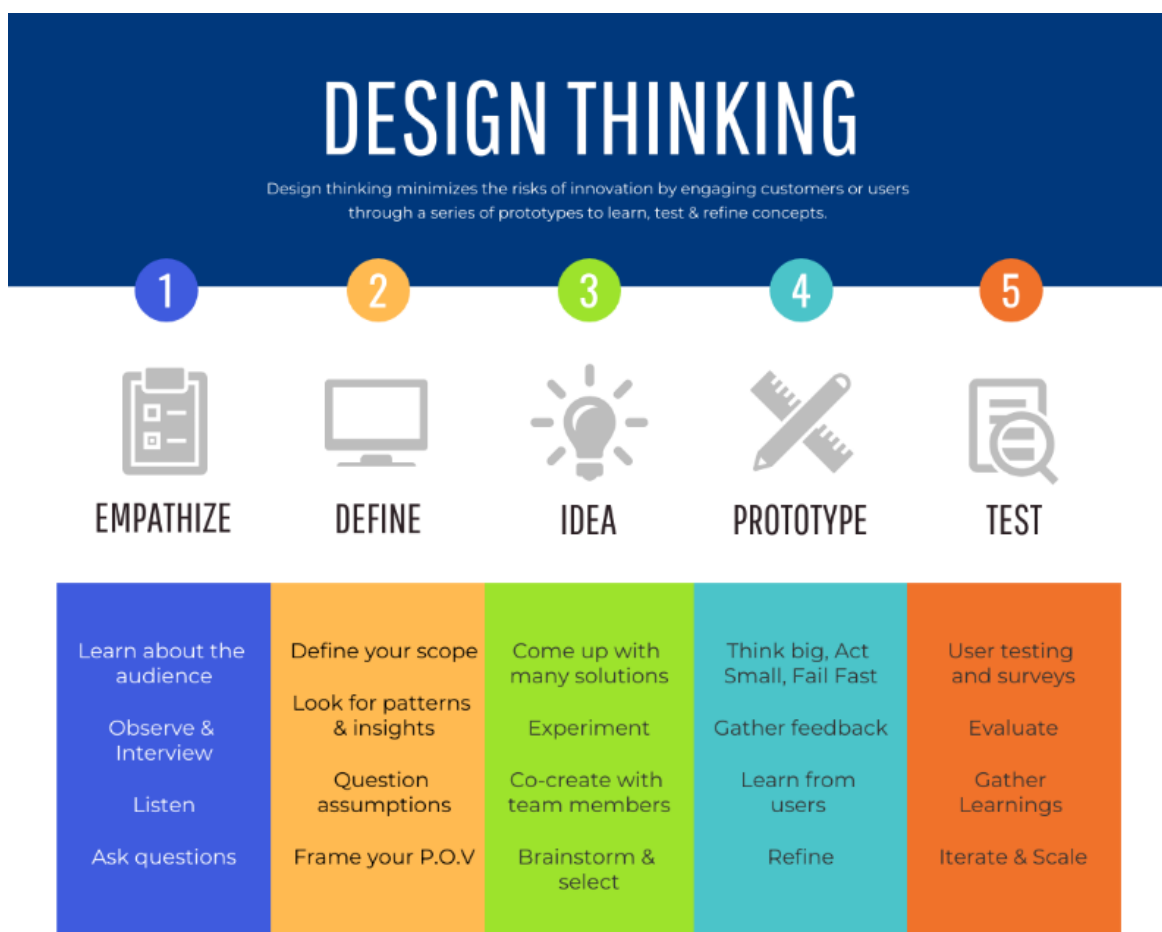
What is Design Thinking?

Design Thinking is a solution-focused, problem-solving methodology that helps companies to get a desired outcome on an inner problem, or to work forward on a future plan. Design Thinking allows for the user of the system to have a more structured plan for understanding innovation and to grow more as a company.

What are the 5 stages of Design Thinking?

The 5-stage model was originally proposed by the Hasso-Plattner Institute of Design at Stanford, and it is continually used by firms to better innovate themselves. The 5-stage model structures as following:

- Empathize (learn about the audience for whom you are designing),
- Define (construct a point of view that is based on user needs and insights),
- Ideate (brainstorm and come up with creative solutions),
- Prototype (build a representation of one or more of your ideas to show to others), and
- Test (return to your original user group and testing your ideas for feedback).

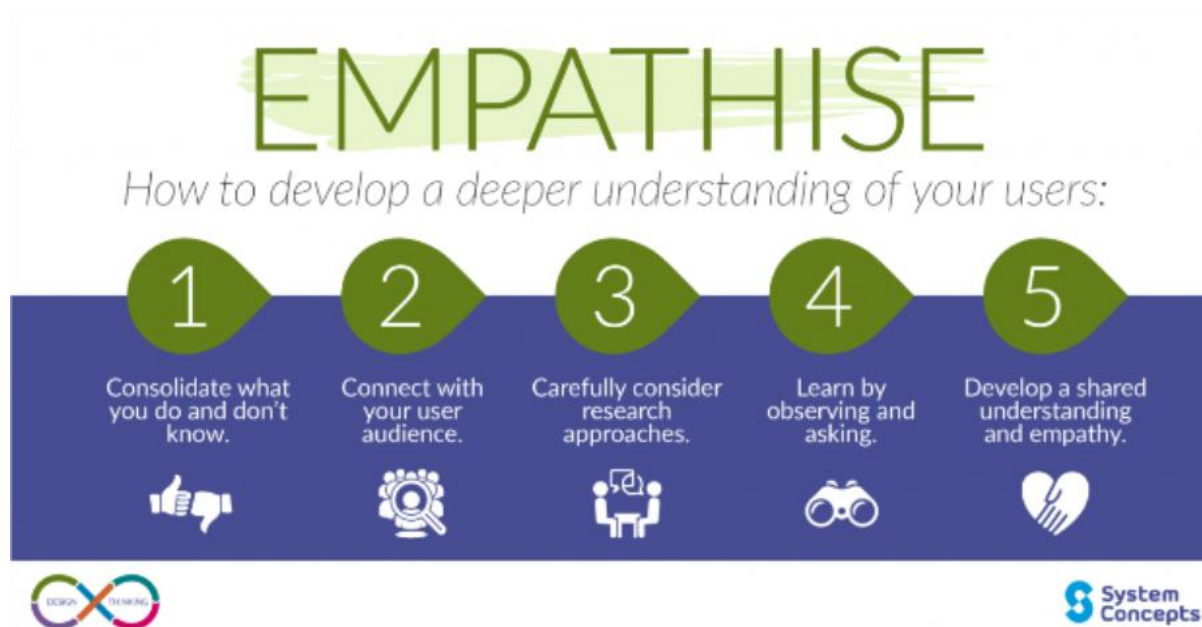


<https://venngage.com/blog/design-thinking/>



Empathise

The first stage of Design Thinking is called **Empathise**. This stage is meant to get a better understand of the problem that you wish to conquer. This includes: consulting experts of the matter, engaging farther into the issue to better understand the problem at hand, as well as working the issue though as a group to have a deeper comprehension of everything that is involved with the problem.



Sourced from System Concepts, a UK-based UX research and human-factors consultancy.

The Empathy stage allows Design Thinkers to gain insight into the needs regarding the issue along with setting aside their personal assumptions regarding it. A substantial amount of information is gathered during the Empathize stage and is carried on to the next few stages to help define the problem and understand how to deal with it.

Define

The second stage of Design Thinking is called Define. During this stage in the Design Thinking process you are putting together all the information you gained during the Empathize step. Essentially, you will analyze your data and put them in order to better concrete the problems that your team has defined to this point.

The Define stage will help your team gather great ideas and be able to understand how to use them effectively. From here, you and your team will start to progress into the third stage of Design thinking, Ideate.



Ideate

The third stage of Design Thinking is called Ideate. During this stage, Design thinkers start to use the information from the previous stages to generate logical ideas. From here, your team will start to make ideas that may be “out of the box” or perhaps just ideas that may normally be skipped over when not all of the information is presented. This stage allows for an alternative way to solve normalized problems.

By the end of this phase, your team should have a few ideas to solve the problem. It’s important during this phase that your team should generate a lot of ideas just so you have many to choose from when starting the next phase in the Design Thinking process, Prototype.

Prototype

The fourth stage of Design Thinking is called Prototype. During this stage the team will work on creating a number of inexpensive products with specific features. This allows for the Design Thinkers to investigate possible solutions to the problems that were identified in the earlier stages of the Design Thinking process. With each prototype, the team investigates a different aspect of the problem.

By the end of this stage, the Design Thinkers should have a clearer understanding of the constraints that are apparent in the prototype. This also allows for the team to identify the problems that would be created by each prototype, and how they could improve the prototype to make it inherently better. From here, the team should be ready to move on to the final step of the Design Thinking process, Test.

Test

The fifth and final stage of Design Thinking is called Test. During this stage Design Thinkers test their prototypes made in stage four. They test their prototypes to see how well they solve/handle the problem that they initially analyzed in stages one and two. Even during this step, the team can and will make alterations and refinements in order to make the product more polished for their needs.

With this process, it allows your team to go back to previous stages and revise their information to get the best outcomes for their product. Essentially, the team can continue to do this until they are either solving their problem, or until they are satisfied with their product.

Design Thinking is a flexible process that is solution-focused to help solve problems that companies have issues with.



5.3.1. Customer Journey Canvas

A **Customer Journey Canvas** is a simple visual tool that helps you tell the story of how a customer experiences a product or service from beginning to end. It breaks the experience into clear stages and shows what the customer is doing, thinking, and feeling at each moment. Instead of looking at your service from the company's perspective, the canvas forces you to see everything through the customer's eyes.

It usually starts with a persona - a short description of the type of customer you are focusing on. Then it maps out the journey step by step: how the customer first becomes aware of a problem, how they search for solutions, how they compare options, how they decide, and how they use the product or service afterwards. For each stage, the canvas captures the customer's actions, emotions, questions, frustrations, and expectations.

The value of the canvas is that it makes invisible things visible. It shows where customers get confused, where they feel frustrated, and where they are delighted. It highlights gaps in communication, unclear processes, or moments where support is missing. At the same time, it reveals opportunities to improve the experience, simplify steps, or create new services.

In short, a Customer Journey Canvas is a practical way to understand the customer's real experience, identify pain points, and design better solutions. It helps teams align around the same picture and make decisions based on what the customer needs, not what the company assumes.



CUSTOMER JOURNEY CANVAS



CUSTOMER NEEDS What are the customer's basic needs at this moment? KEY MOMENT What does the snapshot picture of this moment look like? CUSTOMER SATISFACTION How satisfied is the customer at this moment? ☺ ☹ ☹					
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Sourced from System Concepts, a UK-based UX research and human-factors consultancy.



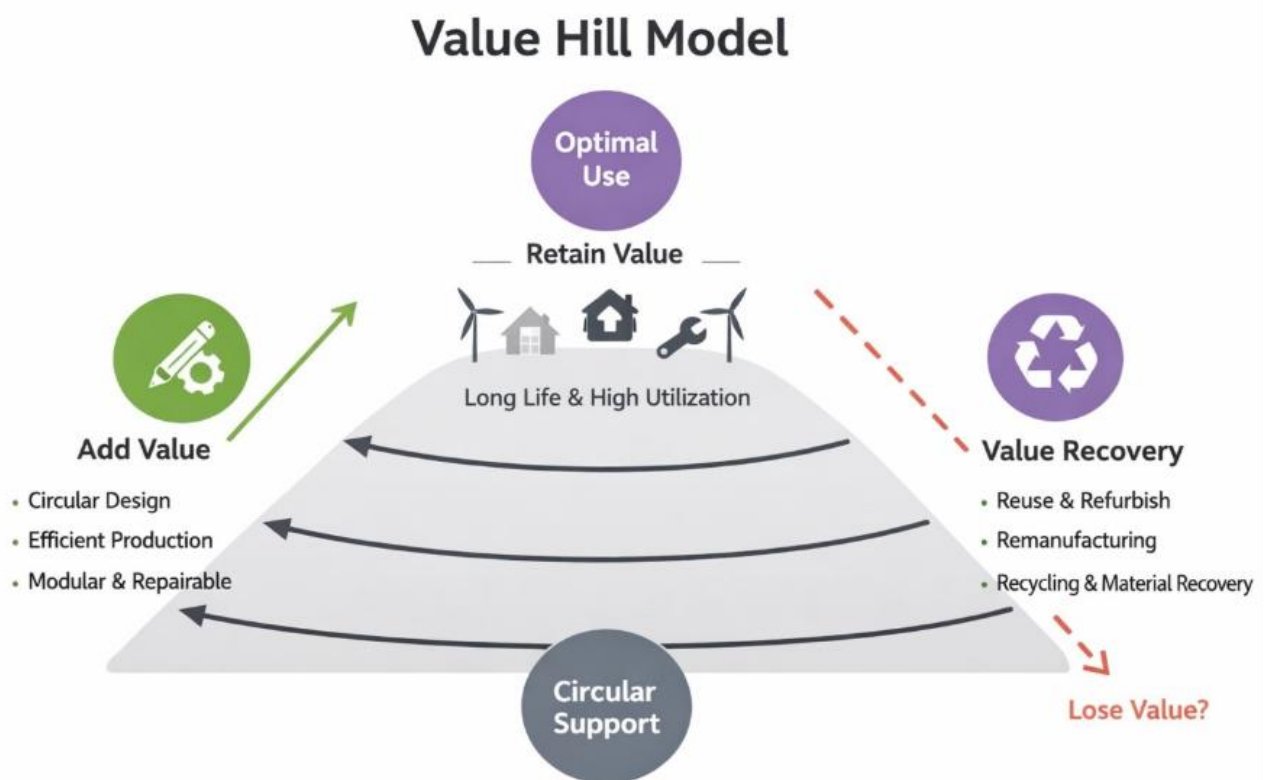
5.3.2. Value Hill Model

The **Value Hill Model** was used to understand how value is created, kept and recovered over the product life cycle. The model helped participants see where value increases during design and production, how it can be kept during use, and how it can be recovered after use.

The model divides the life cycle into three main phases: adding value (for example through circular design), retaining value (through optimal use, maintenance and repair), and recovering value (through reuse, refurbishing, remanufacturing or recycling). This made it easier to discuss which circular strategies are most effective at each stage.

By using the Value Hill Model, participants were encouraged to focus on keeping products, components and materials at their highest value for as long as possible, and to link these strategies directly to the circular business model developed in the workshop.

Used in the "Design" phase as the main structuring tool to develop and prototype a circular business model. Circular strategies and life cycle thinking were integrated into all canvas elements.



Sourced from Circle Economy "The Value Hill: A Circular Economy Guide for Business".



Description of "How to Use Value Hill Model"

The model is used to understand where and how value is created, kept and recovered over a product's life cycle. It helps teams decide which circular strategies make sense at each stage.

Step 1: Look at the "Add Value" phase

Start with the design and production phase. ask:

- How can we design the product to last longer?
- How can we reduce material and energy use?
- Can the product be modular, repairable or upgradable?

This phase focuses on circular design and smart material choices.

Step 2: Focus on "Retain Value"

Next, look at the use phase, where most value can be preserved. ask:

- How can we extend the product's use?
- What services (maintenance, repair, upgrades) help keep value high?
- Can sharing, renting or product as a service models be applied?

The goal is to keep the product at its highest value for as long as possible.

Step 3: Plan for "Recover Value"

Finally, examine the end of use phase. Ask:

- Can the product be reused, refurbished or remanufactured?
- Which parts or materials can be recycled?
- How does take back or reverse logistics work?

This phase focuses on bringing value back into the loop instead of losing it.

Step 4: Use it to guide decisions

The Value Hill Model is then used as a discussion and decision tool:

- Compare different circular options
- Avoid strategies that destroy value too early (e.g. premature recycling)
- Link technical solutions to the circular business model

This helps ensure that circular measures support both sustainability and business value.

The Value Hill Model was used as a supporting conceptual model for understanding value creation, retention, and recovery.



5.3.3. Business Model Canvas

Understanding the business model canvas (BMC)

- The business model canvas is a strategic framework that captures nine essential components of a company's value creation on a single page.
- This visual roadmap helps teams identify connections between customer segments, revenue streams, and key resources to improve strategic clarity.
- It fosters collaborative innovation by providing a shared language for different departments to contribute to their expertise.
- Test the assumptions on your canvas through customer feedback and market research to refine your strategy as you gather new data.

The business model canvas (BMC) revolutionizes how organizations plan, communicate, and execute their vision. This powerful framework transforms complex business concepts into a visual roadmap that guides you through critical project management phases while ensuring everyone understands how your organization creates value.

What is the business model canvas (BMC)?

The business model canvas (BMC) is a strategic tool that captures your entire business model on a single page. This visual framework helps you map out nine essential components:

1. Customer segments
2. Value propositions
3. Channels
4. Customer relationships
5. Revenue streams
6. Key resources
7. Key activities
8. Key partnership
9. Cost structure

The BMC is a roadmap for successful project management, clarifying how your business creates, delivers, and captures value. It can also help you quickly identify connections between different areas of your operation and spot potential improvements or inconsistencies.



BUSINESS MODEL CANVAS

KEY PARTNERS Who are your key partners?	KEY ACTIVITIES What are the activities you perform every day to deliver your value proposition?	VALUE PROPOSITION What is the value you deliver to your customer? What is the customer need that your value proposition addresses?	CUSTOMER RELATIONSHIPS What relationship does each customer segment expect you to establish and maintain?	CUSTOMER SEGMENTS Who are your customers?
	KEY RESOURCES What are the resources you need to deliver your value proposition?		CHANNELS How do your customer segments want to be reached?	
COST STRUCTURE What are the important costs you make to deliver the value proposition?		REVENUE STREAMS How do customers reward you for the value you provide to them?		



DESIGNED BY **BUSINESS MODEL FOUNDRY AG**

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<https://www.strategyzer.com/>



What makes this canvas powerful is its ability to transform complex business models into an accessible format that promotes knowledge sharing across your organization. It allows everyone to see the same big picture, fostering alignment and collaborative innovation.

Benefits of using a business model canvas

The business model canvas delivers tremendous value for organizations seeking strategic clarity. Your team gains a shared visual language that cuts through complexity and aligns everyone around core business elements.

This powerful tool accelerates decision making by revealing interdependencies between business components. When considering new initiatives, you immediately see how changes affect your operation. Additionally, project collaboration thrives with BMC implementation. Teams from different departments can contribute their expertise, creating richer insights and breaking down silos that typically hinder innovation.

The canvas also functions as an exceptional innovation catalyst. It allows you to rapidly sketch alternative business models, test assumptions, and pivot when market conditions shift. This adaptability proves invaluable, especially in volatile environments.



5.3.4. Sustainable Business Model Canvas

The **Sustainable Business Model Canvas** is more than just a modified version of the traditional canvas (Business Model Canvas). It integrates environmental, social, and economic factors to help businesses create positive change. Rather than just reducing negative impacts, this framework helps organizations completely rethink how they create value. It enables companies to build profitable business models that actively benefit people and the planet.

The Sustainable Business Model Canvas

Designed for:		Designed by:		On:
				Version:
Key Partners Who are our Key Partners? Who are our Key Suppliers? Which Key Resources are we acquiring from partners? Which Key Activities do partners perform? MOTIVATION FOR PARTNERSHIPS: Optimization and economy Reduction of risk and uncertainty Aggregation of particular resources and activities	Key Activities What Key Activities do our Value Propositions require? Our Distribution Channels? Customer Relationships? Revenue Streams? CATEGORIES: Production Problem Solving Platform/Network	Value Propositions What value do we deliver to the customer? Which one of our customer's problems are we helping to solve? What bundles of products and services are we offering to each Customer Segment? Which customer needs are we satisfying? CHARACTERISTICS: Novelty Performance Customization "Getting the job done" Design Brand/Status Price Cost Reduction Risk Reduction Accessibility Economic Viability	Customer Relationships What type of relationship does each of our Customer Segments expect us to establish and maintain with them? Which ones have we established? How are they integrated with the rest of our business model? How costly are they? EXAMPLES: Personal Assistant Dedicated Personal Assistant Self Service Automated Services Communities Co-Creation	Customer Segments For whom are we creating value? Who are our most important customers? POSSIBILITIES: Mass Market Niche Market Segmented Disrupted Multi-sided Platform
Key Resources What Key Resources do our Value Propositions require? Our Distribution Channels? Customer Relationships? Revenue Streams? TYPES OF RESOURCES: Physical Intellectual (brand, patents, copyrights, data) Human Financial	Channels Through which Channels do our Customer Segments want to be reached? How are we reaching them now? How are our Channels integrated? Which ones work best? Which ones are most cost-efficient? How are we integrating these with customer resources? CHANNEL PHASES: 1. Awareness 2. Evaluation 3. Purchase 4. Delivery 5. After Sales (post-purchase customer support) ... of products & services and Value Proposition			
Cost Structure What are the most important costs inherent in our business model? Which Key Resources are the most expensive? Which Key Activities are most expensive? IS YOUR BUSINESS ABOVE: Cost Driven (lowest cost structure; low price value proposition; maximum cost reduction; industry benchmarking) Value Driven (discount on value creation; premium value proposition)		Revenue Streams For what value are our customers really willing to pay? For what do they currently pay? How would they prefer to pay? How much does each Revenue Stream contribute to overall revenues? FIXED PRICING: List Price Product/feature dependent Customer segment dependent Volume dependent DYNAMIC PRICING: Negotiation (bargaining) Yield management Real-time Market TYPES: Asset Sale Subscription Fee Usage Fee Lending/Renting/Leasing Licensing Brokerage Fee		
Eco-Social Costs What ecological or social costs is our business model causing? Which Key Resources are non-renewable? Which Key Activities use a lot of resources? EVALUATION INSTRUMENTS: Life-Cycle Assessment (of products and services) Common Good Balance Sheet		Eco-Social Benefits What ecological or social benefits is our business model generating? Who are the beneficiaries? Are they potential customers? Can we bundle the benefits into a Value Proposition? If yes, for whom? INSTRUMENTS: Social Reporting Standard Common Good Balance Sheet		

Based on: www.businessmodelgeneration.com

The online Business Model Canvas is a free tool for creating and visualizing business models. It is based on the Business Model Canvas by Alexander Osterwalder and Yves Pigneur. The online version is available at www.strategyzer.com/. The online version is available at www.strategyzer.com/. The online version is available at www.strategyzer.com/.

<https://www.strategyzer.com/>



Why use a sustainable business model canvas?

This canvas helps you make sustainability core to your operations. By visually mapping out how your activities connect and impact both society and the environment, you can spot new opportunities. For instance, you might discover ways to work with eco-friendly suppliers or identify areas where you can reduce waste. The canvas also helps ensure your business decisions benefit both your bottom line and your community.

Key components of the sustainable business model canvas

The canvas adds several important elements to address sustainability alongside the traditional nine building blocks:

- **Key environmental impacts:** Maps out your company's effects on nature - from resource use and emissions to waste and biodiversity impacts
- **Key social impacts:** Examines how your business affects people through labor practices, community involvement, product safety, and data protection
- **Value proposition for sustainability:** Shows how your offerings specifically help the environment and society, such as lower emissions or ethically sourced materials
- **Sustainable cost structure:** Analyzes both the investments needed for sustainable practices and potential savings from efficiency improvements

Since the early 2010s, more companies have adopted this approach as environmental and social issues have become priorities. Research from 2018 identified **45 proven patterns** for sustainable business models that are now part of various planning tools, including this canvas.

From canvas to action: implementing your sustainable strategy

This canvas is meant to drive real change, not just theory. Using it effectively means setting specific goals for each area, assigning clear responsibilities, and tracking progress regularly. This practical approach ensures sustainability becomes part of your daily operations and long-term planning, rather than just a nice idea.



5.3.5. Lean Canvas

What is a Lean Canvas?

A Lean Canvas is a **strategic management and entrepreneurial tool** that helps businesses quickly visualize, develop, and communicate their business model. Think of it as a one-page business plan outlining the most important elements of your business in a concise and easy-to-understand format.

The Lean Canvas was developed by Ash Mauryana as a simplified version of Alexander Osterwalders Business Model Canvas. The Lean Canvas focuses on identifying the unique value proposition of a business and its target customers, as well as key elements of the business, like revenue streams, cost, and customer acquisition channels.

Lean Canvas				
Problem List your customers top 3 problems	Solution Outline possible solutions for each problem	Unique Value Proposition A single, clear, compelling message that turns an unaware visitor into an interested prospect	Unfair Advantage Something that can't be easily copied, bought or stolen.	Customer Segments List your target customers and users
	Key Metrics List key numbers telling how your business is doing today		Channels List your path to customers	
Cost Structure List your fixed and variable costs		Revenue Streams List your sources of revenue		

www.leanstack.com



Your Lean Canvas should be a living document that can be updated and refined as your business grows and evolves. It is often used by startups and entrepreneurs who are seeking to develop and refine their business model but can be used by any business looking to clarify and communicate its strategy in a simple and visual way.

What is the purpose of a Lean Canvas?

The purpose of Lean Canvas is to provide a simple and effective way for entrepreneurs and businesses to develop and communicate their business models. It serves several important functions, including:

- **Clarity:** The Lean Canvas helps business owners clarify their ideas and focus on the most important aspects of their business. By distilling a complex business model into a simple one-page document, it provides a clear and concise summary of the business and its value proposition.
- **Communication:** The Lean Canvas provides a common language for all stakeholders, including investors, employees, and customers. It communicates the key aspects of the business in a way that everyone can understand.
- **Iteration:** The Lean Canvas is a living document, updated and refined as the business evolves. Entrepreneurs iterate quickly and make changes to their business model based on feedback and new information.
- **Validation:** Entrepreneurs validate their business model by identifying potential problems and opportunities. By testing assumptions and gathering feedback, entrepreneurs refine their business models and increase their chances of success.

The Lean Canvas is a tool for any entrepreneur or business owner who is looking to develop, refine, and communicate their business model in a clear and effective way.



5.3.6. Nightmare Competitor Approach

The Nightmare Competitor Approach is a strategic thinking technique that involves designing an imaginary, ideal competitor who, with unlimited resources and no constraints, could completely dominate your market and drive your company bankruptcy and designing a strategy that will allow the company to outperform them.

Workshops based on this method help companies break through thinking patterns and create innovations that truly transform the market.

This strategic method is used in management, innovation, and business planning.

Why the “Nightmare” approach?

The “Nightmare Competitor” workshop uses an innovative approach to developing radical business models by imagining a hypothetical company that would cause the greatest disruption to an organization. Participants consider these disruptive competitors and their potential business models, allowing the company to strategically prepare and innovate to disrupt the market before someone else does by:

Accepting disruption:

By creating a worst-case scenario, a company can learn to adapt and innovate in response to future market changes, rather than waiting for disruption.

Encouraging radical ideas:

The “nightmare” concept allows for outside-the-box thinking and exploration of the unthinkable, leading to truly innovative ideas and new business models.

Gaining new perspectives: Involving external participants provides objective and unbiased insight into potential threats and innovative solutions.

Business model transformation:

This method helps companies challenge existing business models and customer satisfaction, transforming them into customer-centric and innovative concepts that can transform the industry.



STEP 1

interreg
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CURIOST

Defining the company's business problem

<i>Nightmare competitor challenges</i>	Business problem
Customers	
Offer	
Operations	
Business performance	

Internal CURIOST Library



This approach differs from traditional methods (e.g., Business Model Canvas) by motivating action through threat rather than through seeking opportunity. This allows teams to move beyond established patterns more quickly.

Its main premise is to imagine the most terrifying, ideal competitor that could threaten one's company - a competitor who:

- has unlimited resources
- knows our offerings and weaknesses
- offers customers something significantly better, cheaper, faster, or simpler
- completely changes the rules of the market.

With this method, a company can:

- identify its own weaknesses and threats before real competition does
- stay ahead of the market, instead of just reacting to changes
- strengthen innovation and strategic courage by taking actions that can "outdistance" the competition

Key question: "If you wanted to destroy your own company, how would you do it?"



5.4. Practical recommendations for companies based on business model templates

A circular transformation in the 4 sectors becomes much more manageable when companies break it down into simple, practical steps. The following recommendations show how SMEs and small midcaps can start small, build capabilities gradually and apply each circular pattern in a realistic, hands-on way that fits their daily operations.

5.4.1. Mechanics & Mechatronics

Product life extension & refurbishment

Start with one flagship product that is already durable and repairable. Define a clear refurbishment checklist (mechanical, electrical, software), set simple quality grades (“like new”, “functional”), and offer refurbished units at a lower price with a warranty. Build a small stock of returned products, track them in a basic registry, and use refurbishment to shorten delivery times and reduce dependence on new components.

Product as a service & rental models

Choose one “rental ready” product where customers value uptime more than ownership. Create a simple monthly or pay per use contract that includes maintenance, repairs and upgrades. Keep ownership of the equipment, install monitoring (hours of use, key alarms), and use these contracts to build long term customer relationships and a predictable revenue stream.

Reverse logistics & take-back systems

Start with voluntary take-back for a limited set of products. Offer a clear incentive (discount on a new product, deposit, buy-back price) and define simple rules for what you accept. Label products with basic lifecycle information, register each returned unit, and gradually build a structured flow of used machines and components that can feed refurbishment and parts harvesting.

Digital intelligence for circularity

Pick one key metric such as energy use, uptime, or number of operating hours and start collecting data with sensors, PLC logs or QR-based service records. Store this data in a digital system and use it to plan maintenance, improve design and support service contracts. Over time, expand to digital product passports and more advanced analytics to make circular performance visible and measurable.

Resource Recovery & Secondary Component Markets

Map your material and component flows to identify where valuable parts or substances become waste. Select one high-value stream (e.g. electronic boards, metal parts, chemicals) and set up a controlled process for testing, recertifying and reusing or selling these resources. Partner with specialised recyclers or marketplaces, and use the recovered materials to reduce procurement costs and create new product or service offers.



5.4.2. Packaging

Circular materials & packaging substitution

Start by identifying one product line where material reduction or substitution is easiest. Test a simpler mono material or a lighter version of the current packaging, and run a small pilot with selected customers. Collect feedback on performance, adjust the design and gradually expand the new material to more products once quality and cost are stable.

Process automation & resource efficiency

Begin by mapping where waste, errors or over packaging occur in the current process. Introduce small automation steps such as automated sealing, cutting or dosing to reduce material use and improve consistency. Track simple KPIs like material waste per unit or energy use, and use these insights to guide further upgrades.

Circular supply chains & logistics optimization

Choose one logistics flow where reusable transport packaging or route optimisation can make an immediate difference. Replace single use stretch film or pallets with reusable alternatives and test them with one customer or route. Measure CO₂ savings, cost changes and handling performance, then scale the solution to more routes once the loop is stable.

Product as a service & lifecycle management

Select a reusable packaging asset such as crates, boxes or pallets that can circulate in a closed loop. Offer it as a service instead of selling it, including cleaning, repair and return logistics. Track each asset with QR, IoT or RFID to monitor cycles and losses. Use the data to optimise return rates and improve lifecycle performance.

Data driven circularity & customer feedback loops

Start by gathering simple data on how packaging performs in real use breakage rates, return rates, customer complaints or CO₂ savings. Use QR codes or short surveys to collect feedback from customers. Analyse the results to refine material choices, improve design and adjust logistics. Over time, integrate this data into continuous improvement and compliance reporting.



5.4.3. Plastics

Circular materials & product innovation

Start by selecting one product where material simplification or recycled content is easiest to introduce. Test a mono material version or a formulation with a small share of recycled plastics. Run a controlled pilot to check processing stability, mechanical performance and customer acceptance. Adjust additives or geometry as needed, then gradually expand the improved material to more product lines once quality and cost are stable.

Design for circularity & performance compliance

Begin by reviewing where your current products fail recyclability too many layers, incompatible polymers, unnecessary additives or difficult to separate parts. Redesign one component to be simpler, modular or easier to disassemble while still meeting required performance standards. Validate compliance (fire safety, hygiene, mechanical strength) early in the process. Use the learning from this pilot to update design rules for future products.

Resource recovery & closed loop systems

Map your production waste streams to identify clean, mono material fractions that can be reprocessed. Start with one stream such as offcuts, sprues or rejected parts and set up a controlled loop to collect, grind and reuse the material. If customer waste is available, create a small closed loop with one partner to take back used plastics. Measure material savings and quality stability, then expand the loop once the process is reliable.

Digital intelligence & circular solution partnerships

Begin by tracking one simple data point material composition, recycled content, CO₂ footprint or batch traceability. Use QR codes, batch IDs or basic digital logs to store this information. Share data with one partner (supplier, recycler or customer) to improve transparency and build trust. Over time, expand to digital product passports, material flow tracking or shared platforms that support compliance and circular collaboration.



5.4.4. Building & Construction

Resource recovery & secondary raw material products

Start by identifying one material stream such as insulation offcuts, concrete fragments, timber, or panel waste that is clean and easy to collect. Set up a simple sorting and storage process to keep this material separate from mixed waste. Test whether it can be reused directly, processed into a secondary raw material, or supplied to a recycling partner. Once quality and logistics are stable, expand the recovery system to additional materials and integrate testing or certification where needed.

Circular design & high performance building components

Begin with one product or component that can be redesigned to be simpler, modular or easier to disassemble. Reduce unnecessary layers, adhesives or mixed materials that block recycling. Check early whether the redesigned component still meets required performance standards such as fire resistance, moisture control or structural strength. Use the results to create internal design rules that guide future circular product development.

From laboratory verification to BIM - enabled Bi

Start with a small renovation project and create a basic digital model using simple tools such as 3D scans, BIM elements or digital inventories. Use the model to identify which materials can be reused, which components can be kept in place and where demolition can be avoided. Track quantities, conditions and potential reuse options. As skills grow, expand to full digital twins that support planning, cost estimation and future Digital Product Passport requirements.

First, find a certified laboratory and engage experts to optimize the mixture. In parallel, set up a simple digital notebook using everyday software like Excel to plan and test different recipes for the new material (combining recycled waste, binders, and plastic fibers). Utilize localized digital databases and specialized software to run preliminary Life Cycle Assessments (LCA) and cost estimations. This ensures early on that the new mixture actually reduces carbon footprints, avoids future toxic 'rebound effects' (like inseparable wood-polymer composites), and gathers data required for future EU Digital Product Passport (DPP) alignment. After your first laboratory product is verified, find a small renovation project to apply your product where it is needed. Involve experts that can create a digital model to analyse how the new material works in a whole building, allowing the project to simulate construction timelines and monitor real-time building energy use or maintenance.

Circular service & platform models

Choose one service that supports circular renovation or material reuse such as digital building audits, reuse planning, lifecycle assessments or a small materials exchange platform. Offer it to a pilot customer to test demand and refine the service. Document results, create simple templates and gradually expand the service to more clients. Over time, combine multiple services into a platform that supports long term customer relationships and recurring revenue.