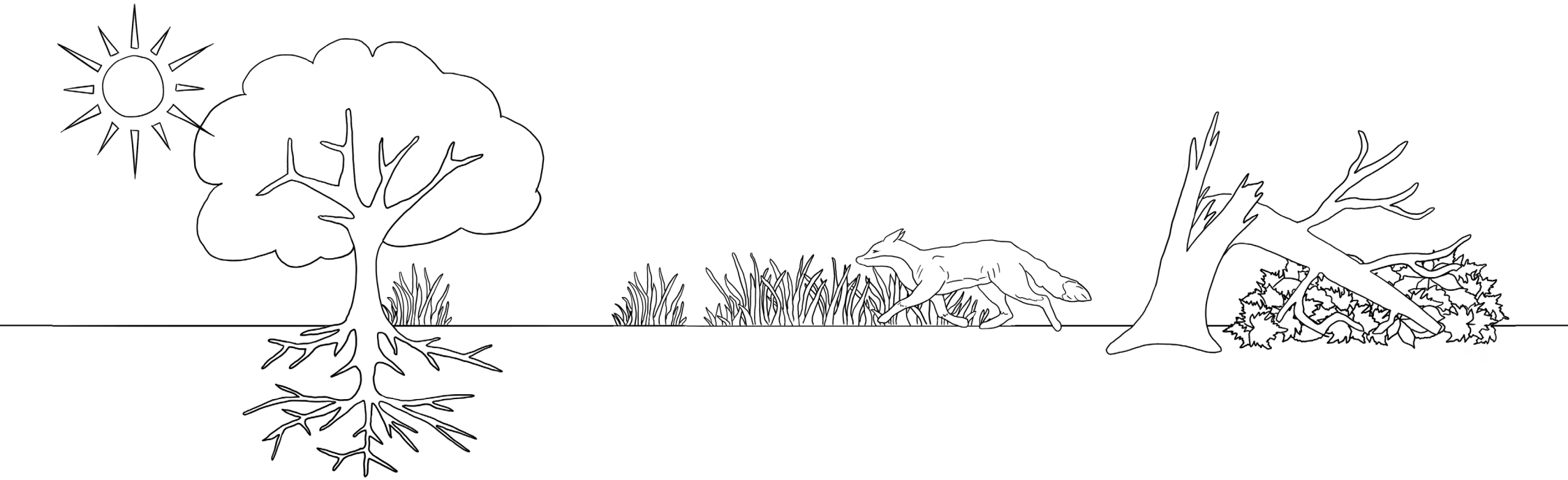
Shifting The Innovation Mindset: Embracing Nature's Circular Economy In A Co-Creation Session



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Master Thesis Report
MSc Strategic Product Design
TU Delft

“Imagination is more important than knowledge. Knowledge is limited.
Imagination encircles the world” - Albert Einstein.

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Preface

Dear reader,

I am delighted to present my graduation report.

My time living abroad laid the foundation for this project, pushing me out of my comfort zone and igniting a strong sense of urgency about sustainability. However, I still needed to figure out how to translate this feeling into actionable knowledge and skills. Consequently, the project also evolved into a personal journey to define my role as a strategic designer within the context of the circular economy.

This period has been the most intense of my life. During which I met many inspiring people, navigated countless challenges, and delved deep into the complexities of the subject. Reflecting on it now, I am proud to present my final work—a result that would not have been possible without the help and support of others.

This thesis owes its existence to the opportunity provided by IN10. Therefore, I thank everyone at IN10 for making me feel welcome and supporting me throughout the process. A special shout-out goes to Jasmijn, Joca, Sofie, and Jos, who became true motivational speakers during all my moments of struggle.

Thank you, Niels, for everything. Our weekly meetings were invaluable for refocusing whenever I lost track again. I appreciate all your time, dedication, and patience in this project. Thank you, Marlies, for your valuable insights into IN10's strategy and design approach and your critical feedback, which elevated this project to new heights.

Furthermore, I want to thank my supervisory team. Thank you, Margreet, for your persistent questioning of 'why' and encouragement to write down my thoughts. You were always available to ask for help. And thank you, Peter, for helping me structure my thoughts and giving me suggestions. I also want to thank you both for giving me the confidence I sometimes missed during this project. Our meetings with the three of us were always insightful and constructive, pushing me to deliver a project I am proud of.

Lastly, I thank all my family and friends for their support over the past months.

Enjoy reading!

Carlijn Hutter

Summary

Society is facing a critical point of unsustainability, urging the need to accelerate the transition towards a circular economy (CE). This transition not only addresses pressing issues but also unlocks new business opportunities. However, the lack of clarity around its specifics leaves many businesses uncertain about how to best respond, navigate, and adapt to this change.

The design and innovation agency IN10 is committed to contributing to this transition by bridging this gap. Specializing in digital design, they collaborate with clients to create positive, future-oriented, user-centered service solutions. As the company has recognized the value of co-creation sessions to drive transformations, it seeks to expand its service offerings to encompass the circular economy context.

This graduation project revolves around their creative problem-solving approach. It aims to define the innovation mindset IN10 should embrace to design for the CE transformation and explores how this mindset can be applied in a co-creation session. Following a learning-by-doing approach involving exploration, analysis, and creation phases, the project delves into various innovation strategies, business barriers, and conceptual metaphors to develop a comprehensive understanding of the circular economy and the type of thinking required to achieve this.

An examination reveals that the prevailing technocratic narrative of the circular economy overlooks vital aspects of the transition, making it too narrow to rely on exclusively. Therefore, this project proposes to adopt the Living Ecosystem Mindset, which conceptualizes the circular economy through the metaphor of a forest and addresses the limitations of the technocratic perspective. This holistic view embraces ecological and social values, draws inspiration from nature's open-ended and flexible cycles, and integrates social sustainability considerations. Furthermore, it redefines the purpose of the circular economy beyond mere economic growth to prioritize meeting human needs.

The CE transition demands systemic change, necessitating a systemic design approach. An analysis of IN10's approach reveals shortcomings in this area. Consequently, the project compares two systemic design approaches to identify success factors that IN10 can adopt. Both internal and external insights inform the concept development phase.

Ultimately, the project introduces the Circular Future Session as a theoretical foundation and starting point for IN10's Circular Sprint Series. The session encompasses systemic design phases: creating a shared understanding, understanding the big picture, and envisioning a desirable future. It includes the following activities: Vision Talk, Actor Map, Wider Lens, and Circular Idea, aiming to generate circular ideas aligned with living ecosystem thinking.

The concept underwent internal testing within IN10, but it is recommended to be refined further through client sessions. Besides, IN10 must continue investing in knowledge about the circular economy and living ecosystem thinking. This investment will enable them to execute future co-creation sessions effectively and navigate the other design steps related to the CE transformation.

Table Of Contents

Preface 3
Summary 4

01 Introduction 6
1.1 Background 7
1.2 Company 8
Core Principles 8
Designing Transformations 9
1.3 Project Objective 10
1.4 Project Approach 11

PART A - EXPLORE

02 Literature Review 13
2.1 Structure 14
2.2 Circular Innovation 15
Aim 15
Implementation 17
Key Insights 19
2.3 Business Barriers 20
Key Insights 21
2.4 Cognitive Shift 22
Mental Models 22
Conceptual Metaphors 24
Key Insights 24
2.5 General Conclusion 25

03 Innovation Mindset 26
3.1 Systems Thinking 27
Terminology 27
Systems Of The Economy 29
3.2 Technocratic Mindset 30
Characteristics 30
Design Principles 31
Shortcomings 31
3.3 Living Ecosystem Mindset 32
Aspire To Fit On This Planet 33
Advocate For Distribution And Inclusion 33
Adopt Life's Principles 34
Reconceptualize Human Well-Being 35

PART B - ANALYZE

04 Context Analysis 38
4.1 Approach 39
Expert Interviews 39
Session Observation 39
Internal Documents 40
4.2 Context Findings 41
Design Process 41
Co-Creation Session 43
4.3 Key Insights 44

05 Comparative Analysis 45
5.1 Approach 46
Systemic Design Framework 46
Disruptive Design Method 48
Framework With Comparison Factors 49
Comparing The Two Methods 50
5.2 Research Findings 51
Design Process 51
Designer 52
Design Resources 54
5.3 Key Insights 55

PART C - CREATE

06 Design Brief 57
6.1 Solution Space 58
6.2 Design Goal 59
6.3 Concept Criteria 60

07 Concept Development 62
7.1 Case Study 63
7.2 Design Process 64
Session Blueprint 64
Activity Details 72
7.3 Concept Validation 75
Iteration 1 75
Iteration 2 76
Iteration 3 76

08 Concept 78
8.1 Concept Description 80
Context Of The Session 80
Value For IN10 81
8.2 Activity Overview 82
Vision Talk 83
Actor Map 84
Wider Lens 86
Circular Idea 87

CONCLUDE

09 Conclusion 89
9.1 Project Evaluation 91
Living Ecosystem Mindset 91
Circular Future Session 92
9.2 Recommendations 93
9.3 Discussion 94
9.4 Personal Reflection 95

10 References 96

11 Appendices 100

01 INTRODUCTION

1.1 Background

Our economy has long operated under the assumption of abundantly available resources that can always be discarded somewhere. This take-make-dispose pattern, however, has pushed us to a critical point of unsustainability. With escalating signs of climate change, biodiversity loss, and environmental pollution, it becomes evident that we are structurally overlooking and exceeding our planetary boundaries (Borthwick et al., 2012).

In response to these challenges, the Dutch government has established a clear objective: achieving a fully circular economy by 2050. This transition offers businesses a dual prospect. Firstly, it unlocks opportunities to differentiate themselves from competitors and operate sustainably. Secondly, failure to embrace this shift could make them obsolete, risking survival. Consequently, businesses must start taking societal responsibility and view the transition as a strategic battle that must be won to remain relevant. However, translating ambition into action is complex and cannot be achieved with the same thinking that got us into the problem (Palacin & Ylivainio, 2022a).

One company aiming to contribute to this transition is the design and innovation agency IN10. Their expertise lies in digital design, whereby they facilitate co-creation sessions to develop positive, future-oriented, and user-centered service solutions, primarily within the healthcare, culture, and (semi-)government sectors. Driven by its designer's internal commitment and anticipating the increasing market demand, IN10 sees an opportunity to expand its service offerings to help businesses translate their circular aspirations into concrete actions, bridging the gap between ambition and implementation.

However, the company recognizes its existing approach falls short of effectively tackling these challenges. Therefore, this graduation project explores how IN10 can enhance its understanding of the circular economy and integrate CE principles into its operations. This exploration will be the foundation for a co-creation session they can use as a starting point for their Circular Sprint Series.

While IN10 stands out as a proactive business leading the way in embracing the circular economy, it is clear that numerous other businesses face similar challenges. Therefore, at a broader level, this thesis aims to demonstrate how new knowledge can be introduced to companies already successful in other domains.

1.2 The Company

IN10 was founded in 1999 and has since developed into a versatile design and innovation agency offering various services, including branding, communication, and digital services (see Figure 1.1). This versatility is also reflected in the diversity of its team, which includes strategists, designers, developers, and content creators. To give this project a clear direction, its scope is centered around IN10's 'innovation by design' pillar, excluding the other two.

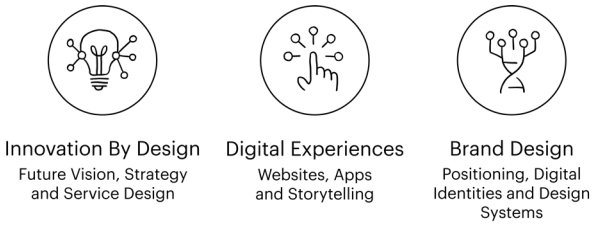

Figure 1.1. IN10's Service Offerings (IN10, 2023)

Core Principles

IN10 fosters an innovative yet practical mindset throughout all its operations, continually striving to improve itself. Furthermore, it promotes an open, optimistic, and solution-oriented culture, maintaining curiosity and enthusiasm throughout the design process (IN10, 2023). This ethos provides a solid basis for entering the CE market.

Their core principles are reflected as follows:

- Design for positive change
- People-centered
- Learning-by-doing

Design For Positive Change

IN10 is dedicated to designing for positive change and is currently developing its principles to align with this objective. This initiative emphasizes its dedication to driving meaningful transformations through its projects. By integrating sustainability into this commitment, IN10 will strengthen its capacity to make a more substantial impact on society.

People-Centered

Their approach revolves around people, as they design for and with them. This is also evident in their DVF Framework, where they have included an additional circle to highlight the societal impact they aim to achieve, illustrating their innovation sweet spot (see Figure 1.2).

Learning-By-Doing

IN10 has adopted an iterative and experimental problem-solving approach, involving clients in co-creation to discover opportunities, solve problems, and validate and test concepts. They describe their approach as a learning process, utilizing sprints to immediately build prototypes, remain flexible, and adjust the design direction if needed (see Figure 1.3).

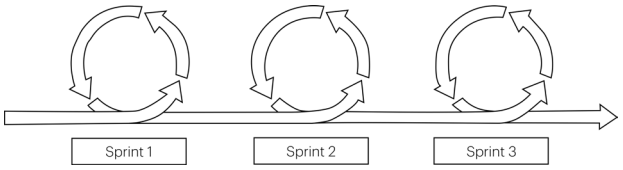

Figure 1.3. IN10's Learning-By-Doing Approach (IN10, 2023)

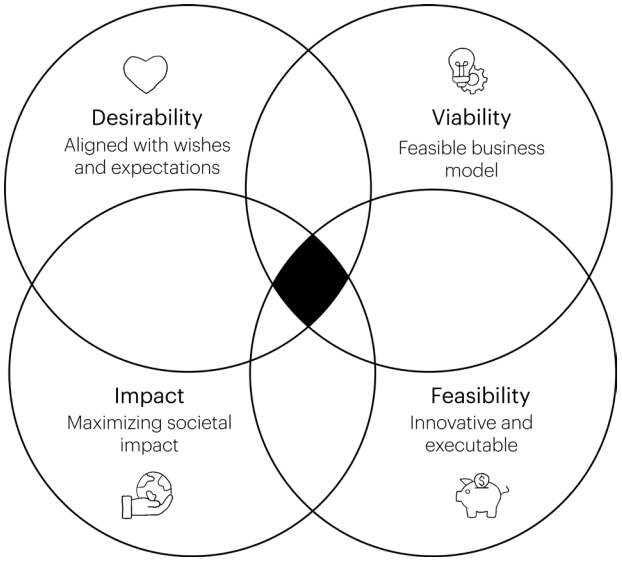

Figure 1.2. IN10's Innovation Sweet Spot (IN10, 2023)

Designing Transformations

These core principles are present in IN10's recent expansion into the healthcare sector, where they have begun experimenting with how their approach could address current issues and future challenges, such as workforce shortages. They aim to enhance patient care and operational efficiency by introducing digital design interventions that improve user experiences and alleviate burdens for stakeholders such as healthcare providers and caretakers.

With Thebe as its primary client in this sector, IN10 explores its transformative impact by developing strategies and solutions based on the Three-Horizon Model, which describes the extent of innovation required (see Figure 1.4). Upon entering the healthcare market, IN10 began recognizing the potential for addressing sustainability challenges. Specifically, its strengths in creative thinking could serve as a transformative force, giving it an advantage over strategy consultancies, which often lack hands-on action and solution creation—areas in which IN10 excels.

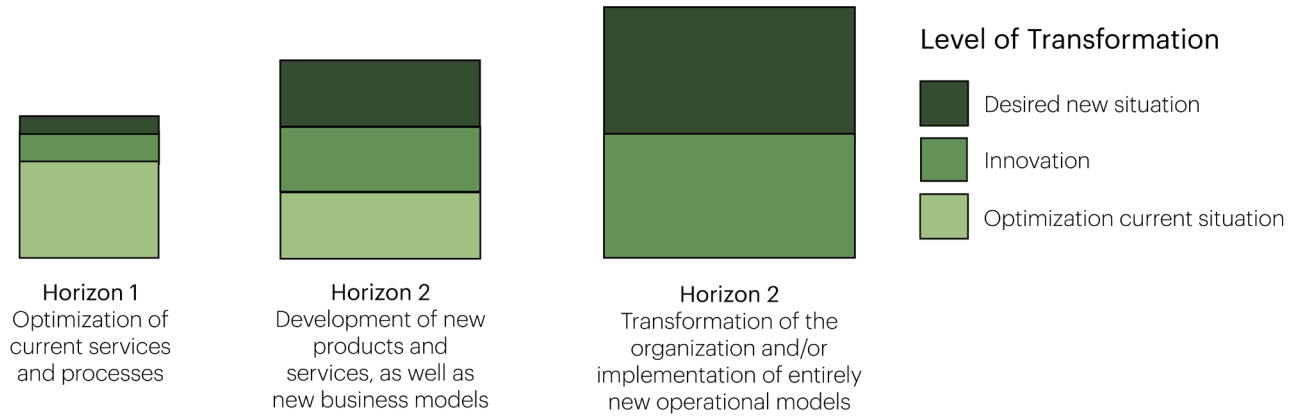

Figure 1.4. Three-Horizon Model (IN10, 2023)

1.3 Project Objective

AIM
Transitioning to a circular economy necessitates adopting an innovation mindset that prevents perpetuating the linear economy (Palacin & Ylivainio, 2022a). Therefore, understanding this shift will be the primary focus of the graduation project. Secondly, IN10's design approach revolves around diverse co-creation sprints, prompting an exploration of how to tailor one for the CE context.

RESEARCH QUESTION
This project aims to develop a co-creation session as a starting point for IN10's Circular Sprint Series. Additionally, it seeks to shape IN10's approach to the circular economy and determine its optimal positioning in this transition.

The following two research questions are formulated:

1. What kind of innovation mindset should IN10 embrace in designing for the circular economy?

2. How can this mindset be integrated into a co-creation session?

The first research question is broken down into objectives and subquestions **(xQx)**, examined in the literature review. The insights obtained from this and additional analysis conducted later in the project aim to address the second research question.

Objective 1: Examine the current state of circular innovation.

- **(1Q1)** What is its ultimate goal?
- **(1Q2)** What lessons can be learned from existing strategies?

Objective 2: Identify business barriers to the CE transition.

- **(2Q1)** What are the primary challenges businesses encounter during the transition?

Objective 3: Explore the formation of mindsets.

- **(3Q1)** How do mindsets (mental models) influence systems?
- **(3Q2)** How can the circular economy be conceptualized

STAKEHOLDERS
The project scope includes the company IN10, involving all employees to varying degrees. Consequently, they are among the most important stakeholders, alongside the faculty of Industrial Design Engineering. Therefore, the concept must align with IN10's needs and wishes and adhere to the framework of the master's program in Strategic Product Design.

1.4 Project Approach

The project aligns with IN10's learning-by-doing approach, evolving iteratively through three design phases: explore, analyze, and create. Insights from internal reflections within IN10 and external discoveries have shaped and guided the project's direction.

PART A - EXPLORE

Chapter 2 conducts an extensive literature review on the circular economy to establish the foundation for the innovation mindset.

Chapter 3 introduces the Living Ecosystem Mindset, building on insights from the previous chapter and supported by additional literature.

PART B - ANALYZE

Chapter 4 delves into IN10's design process to uncover its approach toward transformations and co-creation sessions.

Chapter 5 compares two systemic design approaches to identify success factors that IN10 can integrate into its approach.

PART C - CREATE

Chapter 6 outlines the design brief for the co-creation session.

Chapter 7 elaborates on its concept development phase.

Chapter 8 presents the Circular Future Session.

PART A - EXPLORE

02 LITERATURE REVIEW

The literature review establishes the foundation for the innovation mindset, which is further explored in the next chapter. To advance the research, the sub-questions formulated in Section 1.3 are used to elaborate on relevant theories, identify gaps in the existing literature, and highlight potential opportunities to define the circular innovation mindset.

2.1 Structure

The chapter is divided into three main sections, each addressing specific sub-questions. The first section explores the current state of circular innovation, delving into the overarching goal of the circular economy and drawing lessons from existing strategies aimed at this transition. Subsequently, it investigates the barriers businesses face in this transition to better understand the emerging market IN10 wants to enter. Lastly, the research examines how mental models influence the understanding and conceptualization of the circular economy.

EXPLORATORY INTERVIEWS

Circular design experts were interviewed to enrich the literature review and gain deeper insights. These interviews aimed to learn about the circular economy and understand how the transition can be approached.

Interview Goals

- Understand the concept of the circular economy.
- Understand the transition towards a circular economy.
- Explore the role of the designer in this transition.

Method

A general interview guide was created to address the interview goals mentioned above. This approach allowed for flexibility in modifying questions during the interview, as participants had varied expertise, making not all questions equally applicable to them, see Table 2.1. Moreover, it facilitated a deeper exploration of specific topics. The interviews were recorded and transcribed; the results can be found in Appendix A.

Table 2.1. Anonymized List of Interview Participants

#	Function	Duration
P1	Assistant Professor of Design for Sustainability Transitions	30 min
P2	PhD candidate on the educational implications of different conceptualizations of a circular economy	30 min
P3	PhD candidate in sustainable consumer behavior and circular packaging systems	30 min

Reflection

The questions were considered too broad and challenging. Consequently, the interviews shifted towards more of an exploratory conversation, allowing for follow-up questions as needed. This approach ensured the responses remained insightful and guided the literature review.

2.2 Circular Innovation

Aim

The circular economy is often perceived as an umbrella concept, lacking a clear consensus on its precise definition. Its ambiguous, inconsistent, and poorly understood nature has led to diverse interpretations, resulting in individuals operating within "*significantly different worlds of thought*" (Kirchherr et al., 2017).

Despite this diversity, the Ellen MacArthur Foundation has proposed a definition that aims for the highest level of sustainability, focusing on 'regeneration,' as depicted in Figure 2.1. The foundation describes the circular economy as "*an industrial system that is restorative and regenerative by intention and design*" (Ellen MacArthur Foundation, n.d.-b), capturing the essence of circularity. Therefore, this definition should be regarded as the ultimate goal of the transition.

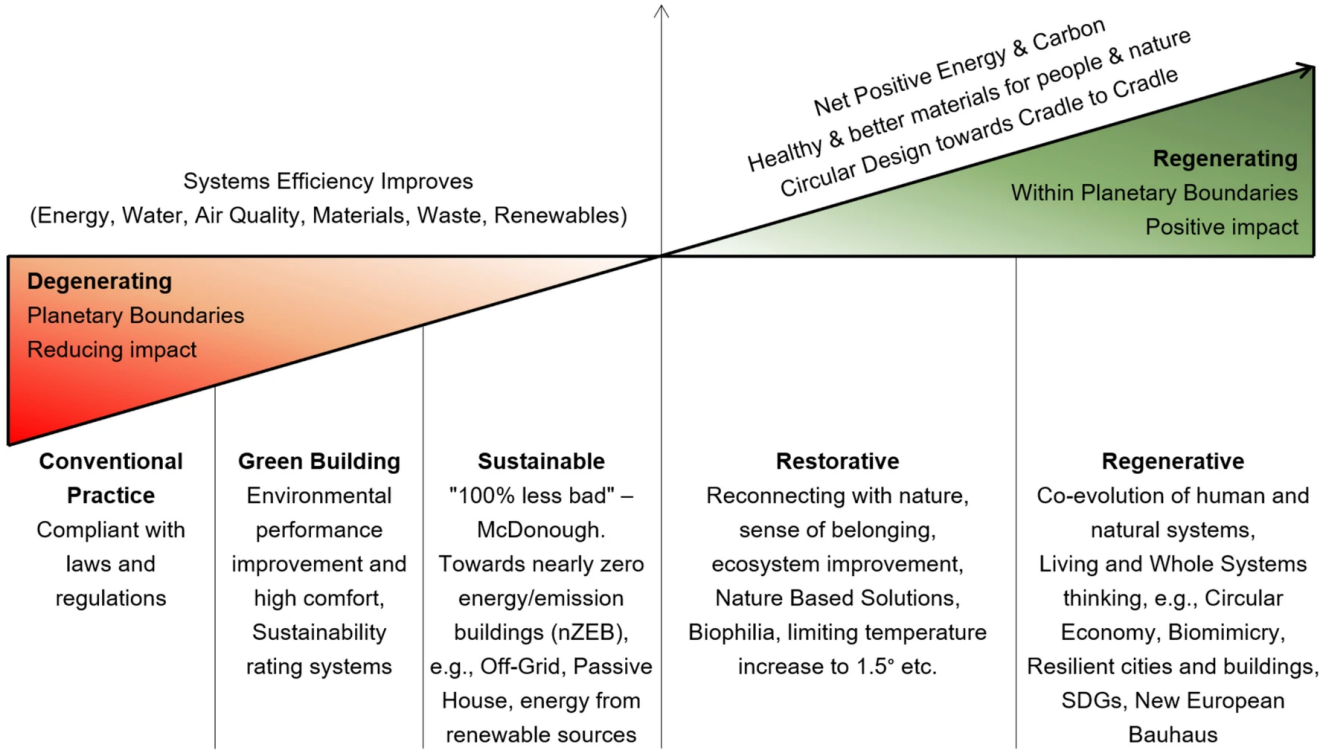

Figure 2.1. Different Levels and Approaches to Sustainability (Dervishaj, 2023)

To illustrate its definition, the Ellen MacArthur Foundation has developed a system diagram depicting the ideal scenario of a continuous flow of materials, as shown in Figure 2.2. This diagram distinguishes materials based on their ability to safely re-enter the natural environment (the biological flow - left side) and materials manipulated by humans, which must continually cycle through, capturing value after each cycle (the technical flow - right side) (n.d.-b).

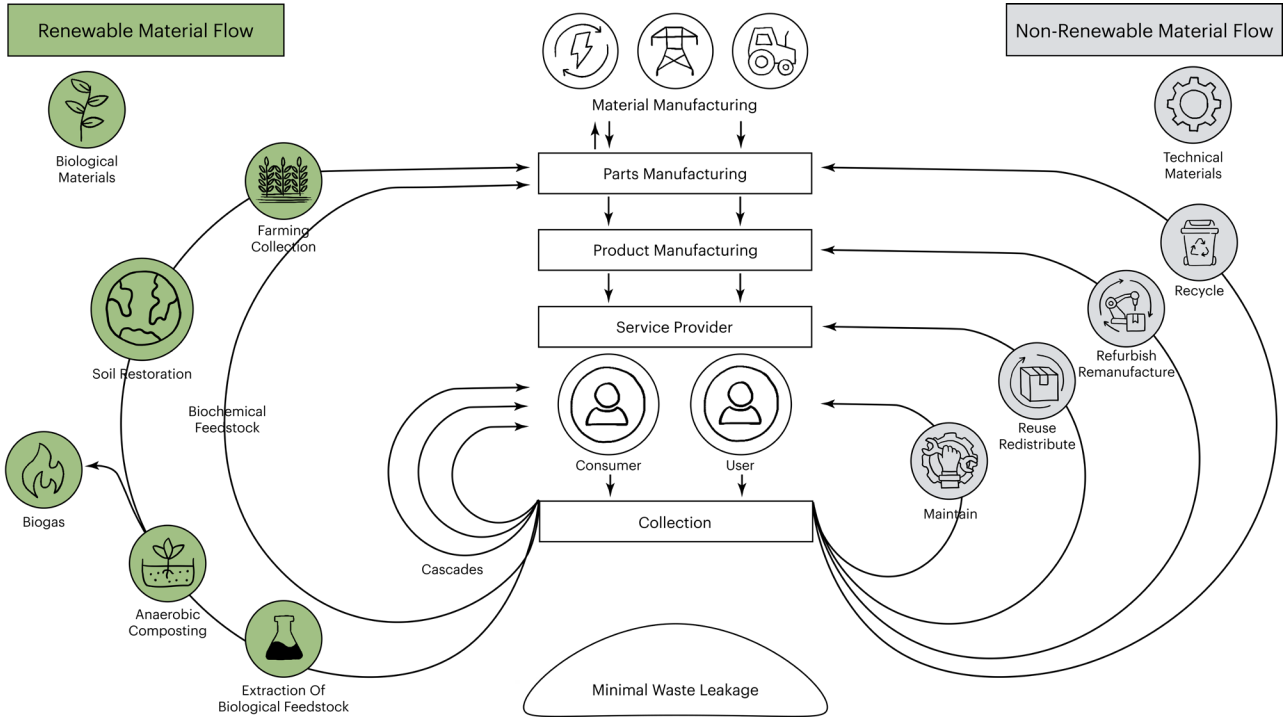

Figure 2.2. Butterfly Diagram (Ellen MacArthur Foundation, n.d.-b)

Implementation

Designing for the circular economy involves transforming the current linear production and consumption systems (see Figure 2.3). Understanding these strategies provides IN10 with valuable insights into its approach and market positioning.

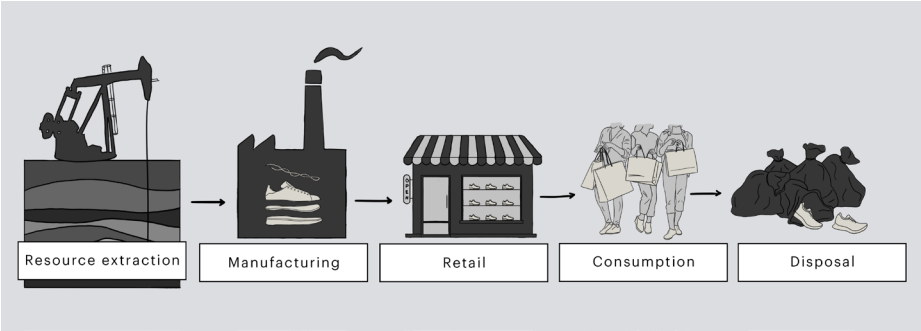

Figure 2.3. Linear Production and Consumption Systems Overview

The R-Ladder is a widely recognized framework for recovering value and establishing circular flows. It comprises ten practical strategies with varying levels of systemic impact, as depicted in Figure 2.4. These strategies focus on slowing, closing, and narrowing resource loops (Malooly & Daphne, 2023). Refusing and rethinking have the most significant impact on the system, as shown in the figure. However, implementing these strategies also poses the greatest challenge as it entails the highest degree of uncertainty and ambiguity regarding their precise execution.

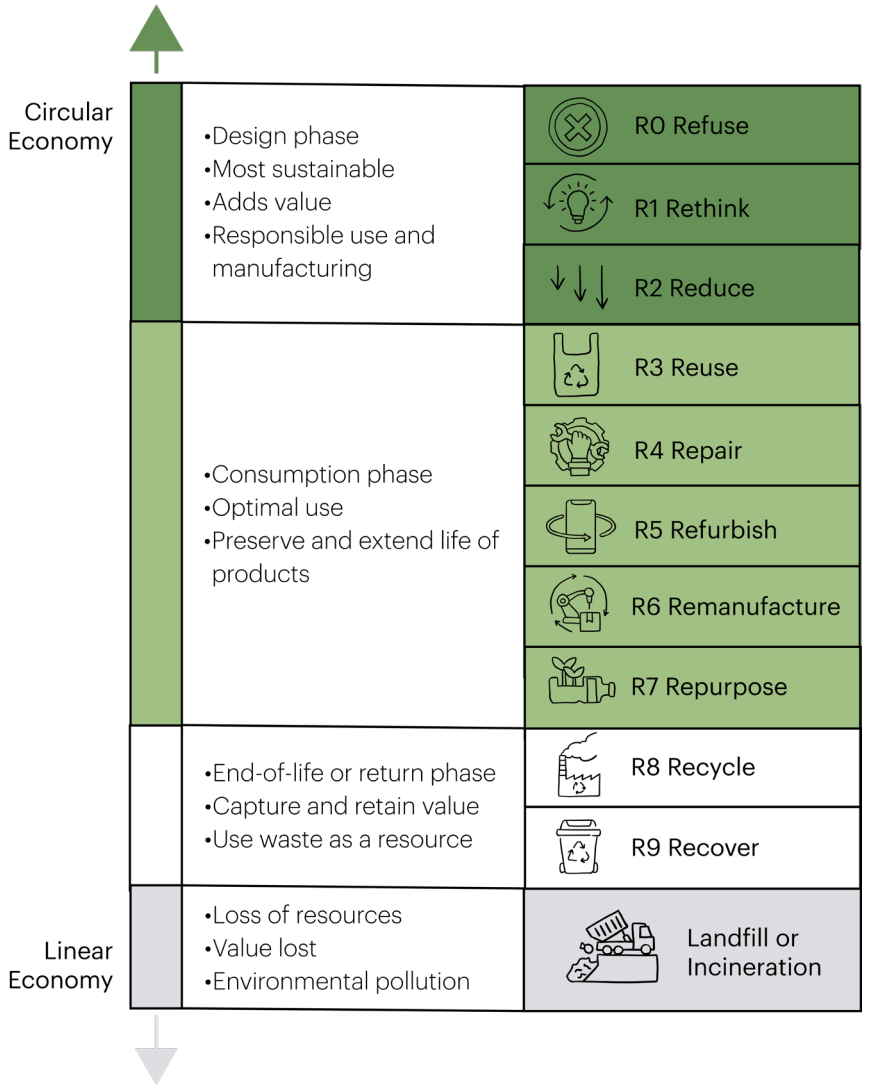

Figure 2.4. CE Strategies Illustrated in the R-Ladder Framework (Malooly & Daphne, 2023)

Yet, when implementing these and other strategies, there is a risk of adopting a mere reductionist approach. This perspective breaks down complex phenomena into simpler parts to enhance understanding. It focuses on individual elements in isolation and assumes that the whole can be understood as the sum of its parts. However, this emphasis on simplicity and compartmentalization may lead to unintended outcomes (Balanay & Halog, 2021).

Examples of such outcomes are:

- Rebound Effects

Efforts to reduce resource use or emissions may backfire, resulting in increased consumption or emissions.

- Jevons Paradox

Efficiency improvements can paradoxically lead to increased overall resource consumption. This occurs when demand rises as resources become cheaper or more efficient, canceling the gains made in efficiency.

- Boomerang Effects

Actions addressing a specific issue can exacerbate other problems or introduce new ones.

Below, three circular innovation strategies are evaluated, illustrating that implementing them requires 'doing the right strategies right,' emphasizing the necessity of a systemic approach, that aims to design everything to fit within the system rather than in isolation (Balanay & Halog, 2021).

1. Strategy: Recycling

The Netherlands is seen as one of the recycling frontrunners in Europe, with an 80% waste recycling rate. However, this achievement has yet to translate into an absolute reduction of material resources. Consequently, an 'in-between' economy, also known as the recycling economy, has emerged, as depicted in Figure 2.5 (Hanemaaijer et al., 2021).

2. Strategy: Biodegradable Features

Merely being biodegradable does not guarantee that a product will decompose in landfills. Therefore, considering products' end-of-life is just as crucial as designing them. Understanding how materials behave within the system is essential for innovation. Environmental benefits disappear when products and materials circulate in the wrong system conditions (Acaroglu, 2017b).

3. Strategy: Repair

Expecting a single mother to repair her clothes or garment workers to protest against working conditions, knowing they could face dismissal, is unrealistic. Therefore, ecological sustainability cannot be achieved without social equality (Design Council, 2021).

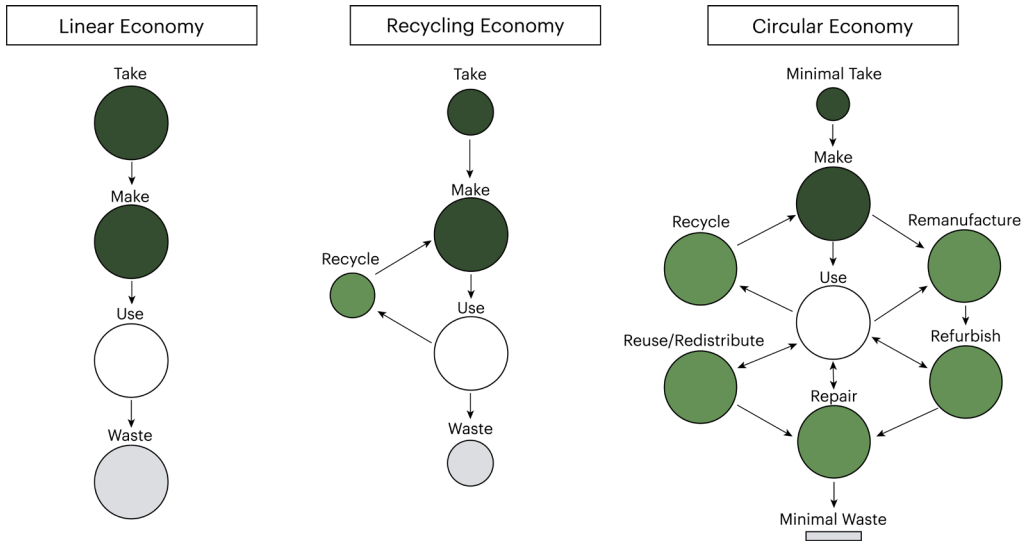

Figure 2.5. Comparison of Different Economic Models

Key Insights

Although circular innovation is gaining traction, it is still perceived as a "*theoretical dream rather than an implementable reality*" (Kirchherr et al., 2017). This perception primarily arises from the concept being subject to different interpretations by different people. Dominant definitions often emphasize delivering "*economic and environmental benefits while omitting societal impact*" (Robinson, 2022). Ultimately, the concept must be understood as fundamental systemic innovation rather than simply tweaking the status quo. Additionally, it necessitates including the social dimension of the circular economy.

2.3 Business Barriers

Understanding the barriers businesses encounter when transitioning to a circular economy is crucial for IN10 to grasp the new market landscape. While I will not delve deeply into its business opportunities, it is worth noting that this is a growing market driven by legislative forces from the Dutch government and the EU, mainly through initiatives like the Circular Economy Action Plan. These initiatives create opportunities for businesses to differentiate themselves, enhance their brand, and avoid regulatory expenses.

While businesses recognize the need for change, there is confusion about what needs to happen and how it can be best accomplished. This confusion partly arises from the misconception that circular innovation is easy, which is not the case, especially for businesses operating in today's linear economy (De Jesús & Mendonça, 2018).

In addition to this knowledge gap, businesses encounter various barriers hindering change. Understanding their dynamics is essential, as it reveals that internal barriers are not isolated challenges but are influenced by and dependent on external obstacles, which may indirectly affect them. Therefore, viewing these barriers from a systemic perspective provides insights into their interconnections and how they impact each other. Figure 2.6 categorizes them into several levels (Takacs et al., 2022).

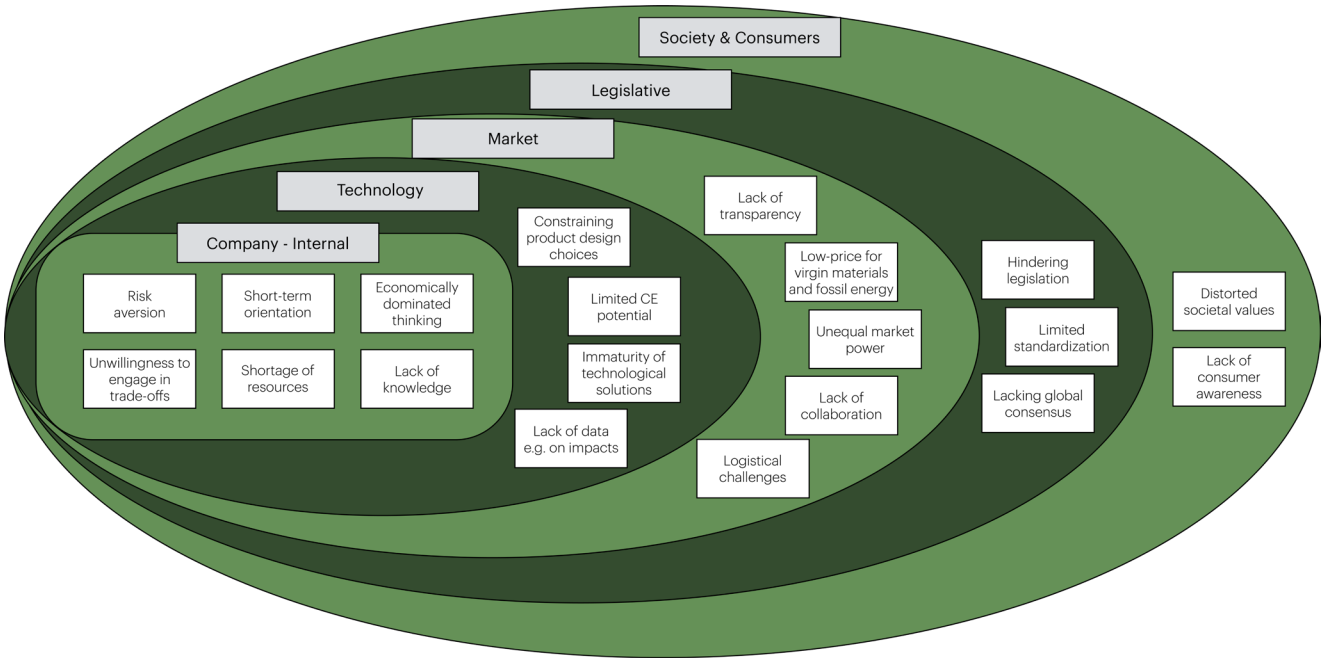

Figure 2.6. Multi-Level Framework with Integrated Barriers: Adapted from Takacs et al. (2022), De Jesús & Mendonça (2018), and Pião et al. (2023)

Key Insights

Businesses that do not prioritize sustainability often encounter their main barriers within their culture and mindset. These include risk aversion, short-term orientation, and the dominance of economic thinking (Pião et al., 2023). The type of economic thinking established in the current linear economy, in particular, presents a challenge for the future when we must radically rethink the purpose and operation of our economy. Consequently, this outdated mindset is not helping us and must be changed.

2.4 Cognitive Shift

Relying on our old habits of thought appears restrictive. Therefore, a cognitive shift is necessary to help us understand how this new economy should function and be conceptualized. By embracing a systems thinking approach, we can delve into the deepest layers of systemic change, which are intertwined with our thinking and sense-making processes.

Mental Models

Mental models shape our perception and behavior and are described as "*deeply held internal images of how the world works*." These are often created without our conscious awareness (Kellner, 2022). The Iceberg Model illustrates that our behavior is driven by these mental models, with visible actions representing only a small part and deeper beliefs, assumptions, and values hidden far beneath the surface (see Figure 2.7).

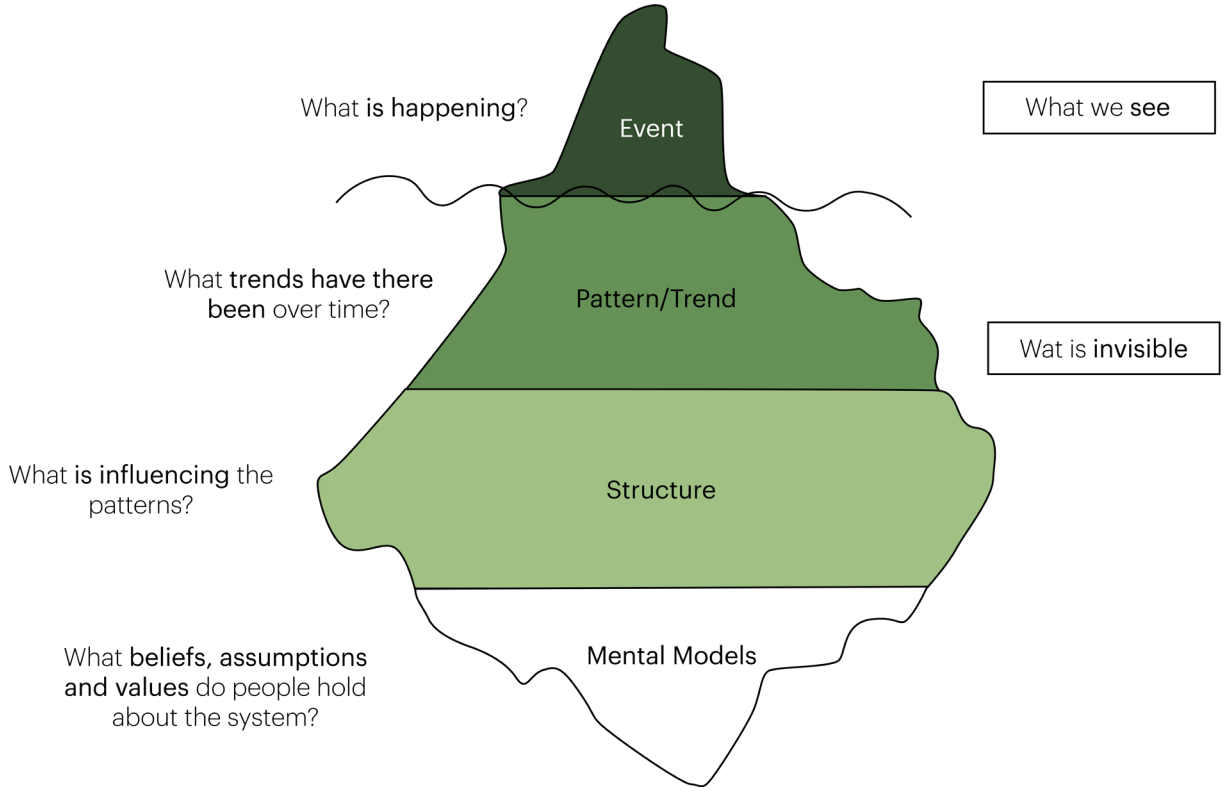

Figure 2.7. The Iceberg Model (Kellner, 2022)

Figure 2.8 illustrates Meadows' pioneering work on leverage points for intervening within a system. According to her, these mental models have the greatest impact on the system but are also the most challenging to change (Meadows, 1999). Therefore, recognizing and understanding these mental models is crucial for fully transforming the economic system from linear to circular. Simultaneously, it provides valuable insights for defining the innovation mindset in the subsequent chapter.

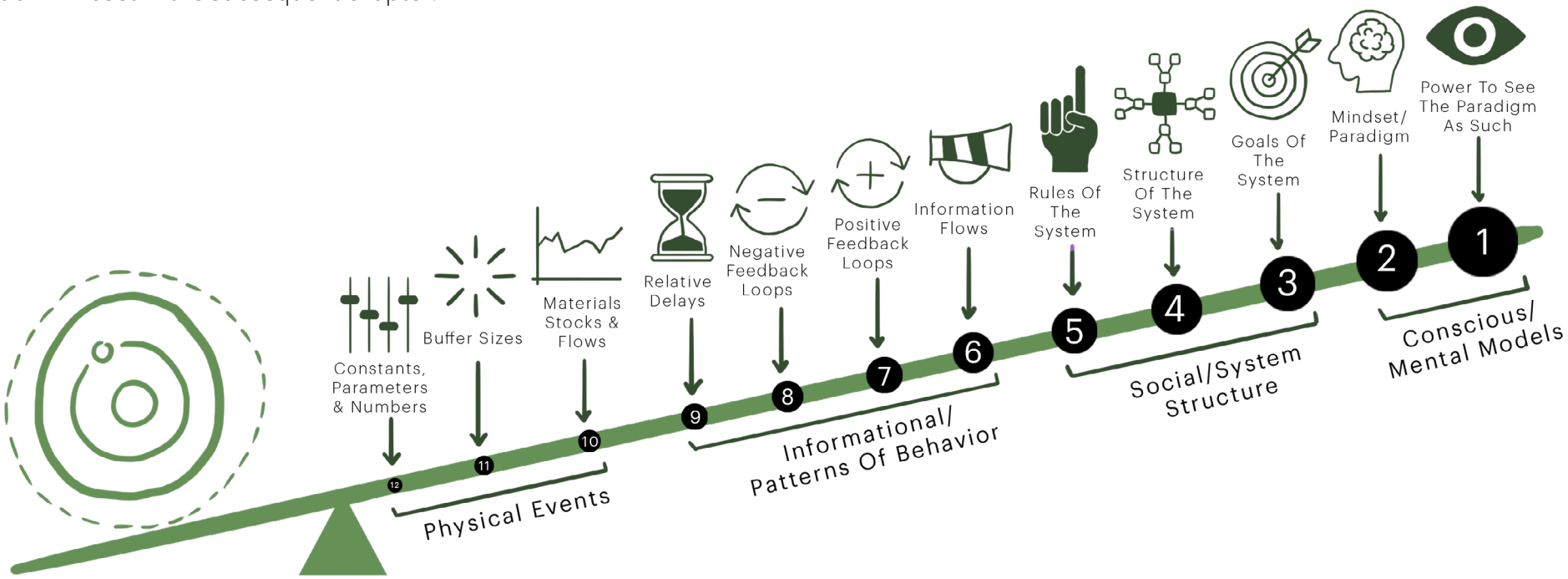

Figure 2.8. Meadow's Leverage Points (Meadows, 1999)

Conceptual Metaphors

Diving deeper into these mental models, we find that metaphors are used to make sense of complex and abstract phenomena, such as love, freedom, and the economy, by linking them to something more concrete. These metaphors become visible through our language. For example, the economy is often metaphorically described as a patient, as seen in phrases like "*economic depression*" and "*monopolies are diseases*," or through the lens of sport in "*the company is on a winning streak*" (Fromberg et al., 2023). Consequently, these conceptual metaphors play a crucial role in shaping abstract ideas.

Fromberg et al. discovered that some conceptual metaphors describing our current economy have infiltrated the circular economy discourse. While these metaphors have strengths, they also carry misconceptions and blind spots. Therefore, adopting a new metaphor could broaden our understanding of the circular economy, revealing aspects overlooked by linear metaphors (2023).

A dominant metaphor of the linear economy is evaluated and compared with a promising metaphor that describes the non-linear nature of the circular economy. This comparison aims to uncover current limitations and seek a better understanding of the concept.

THE CIRCULAR ECONOMY AS A MACHINE
This metaphor portrays the economy as a sum of inputs entering and outputs exiting the machine, following strict laws. In this perspective, individuals are regarded as homo economicus, functioning like calculators.

This mechanistic worldview perceives the transition as a technical problem, viewing the economy as a machine that requires constant maintenance and endless growth. It compares the economy to a network of pipes, emphasizing the materials flowing within it (P2, 2023, Appendix A).

THE CIRCULAR ECONOMY AS A FOREST
This metaphor presents the circular economy as a living ecosystem inspired by nature's circular systems. It aims to address fundamental systemic flaws by applying the logic of the forest and drawing lessons from nature to encourage innovation (Tate et al., 2019).

While the machine metaphor emphasizes transitions through a direct approach, such as substitution, nature's transitions evolve through transformations. Consequently, changes observed in nature tend to be more radical because multiple conditions for change coincide. For instance, consider the transformation of a caterpillar into a butterfly. Instead of occurring gradually, with one part replacing another, as would be the case with the mechanistic transition, all changes happen simultaneously, presenting a fundamentally different conceptualization of change.

Moreover, this ecological viewpoint sheds light on symbiotic relationships, interdependencies among forest entities, and communication through mycelial networks, thereby encompassing the social aspects of a circular economy. Additionally, this perspective recognizes the longer-term and often uncertain consequences of actions. Doing so avoids short-term radical decisions prioritizing immediate gratification, a tendency commonly associated with a mechanistic viewpoint (P2, 2023, Appendix A).

Key Insights

The machine metaphor, rooted in linear thinking, is limiting because it depicts the circular economy as separate from society and the environment. Consequently, it prioritizes tangible and measurable outcomes while neglecting the harder-to-quantify social aspects.

In contrast, the forest metaphor provides a non-linear perspective. It views change as transformations rather than transitions and integrates social considerations into the concept. Therefore, this metaphor seems most promising for conceptualizing the circular economy.

2.5 General Conclusion

To truly embody a restorative and regenerative system, the circular economy demands a systemic approach. One significant barrier to this transition lies in the mindset of businesses, heavily influenced by our current linear economic system. Thus, shifting to a circular economy necessitates a cognitive shift.

The forest metaphor, characterized by its non-linear nature, holds promise for enhancing our understanding of the circular economy by highlighting its social dimension. This understanding can offer valuable insights into IN10's positioning, especially considering its user-centered design approach.

Therefore, the innovation mindset should embrace systems thinking and draw inspiration from nature's circular economy. The upcoming chapter will explore this topic in greater detail.

03 INNOVATION MINDSET

In this chapter, I introduce the Living Ecosystem Mindset, which is based on the forest metaphor and supported by additional literature. To ensure clarity, I first explain the basics of systems thinking. Next, I provide a brief overview of the dominant technocratic mindset. Finally, I delve into the principles underlying the Living Ecosystem Mindset.

3.1 Systems Thinking

Understanding the basic terminology of systems thinking and the subsystems that constitute our economy is essential, as it forms the foundation for the innovation mindset.

Terminology

SYSTEM

Nearly everything around us can be understood as a system. As described by Meadows, a system is dynamic and interconnected, defined as "*a set of interconnected things—people, cells, molecules, or whatever—producing their own pattern of behavior over time.*" It comprises numerous subsystems and is simultaneously part of a larger system. This can best be illustrated by likening a system to a Matryoshka doll, whereby smaller parts are nested within a larger whole (see Figure 3.1). Therefore, when seeking to understand a system, it is crucial to consider its scope and boundaries (Acaroglu, 2017a).

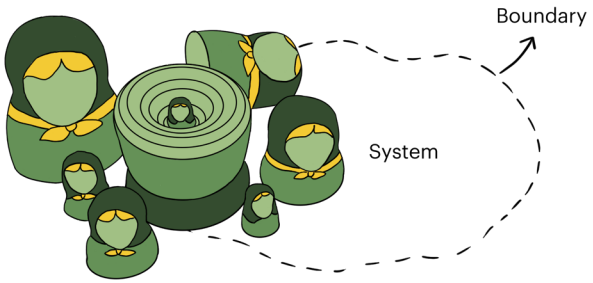

Figure 3.1. Systems Analogy: The Matryoshka Doll

HEAP

When a system loses its broader connections, it devolves into a heap—a collection of parts lacking purpose. Take a cow, for example, which operates as a functioning system. Yet, when the cow is divided in half, it does not result in two cows but rather two heaps of meat (or many hamburgers). The same principle applies to waste. When waste is discarded in a landfill, it contributes to a heap. However, if waste is composted, it integrates into a regenerative system (Acaroglu, 2017a).

COMPONENTS

The main components of a system comprise elements, interconnections, and functions and/or purpose, as illustrated in Figure 3.2. Below, each component will be explained and enhanced with the example of the interaction between a person and a bicycle, forming a transportation system neither can achieve alone (Robinson, 2022).

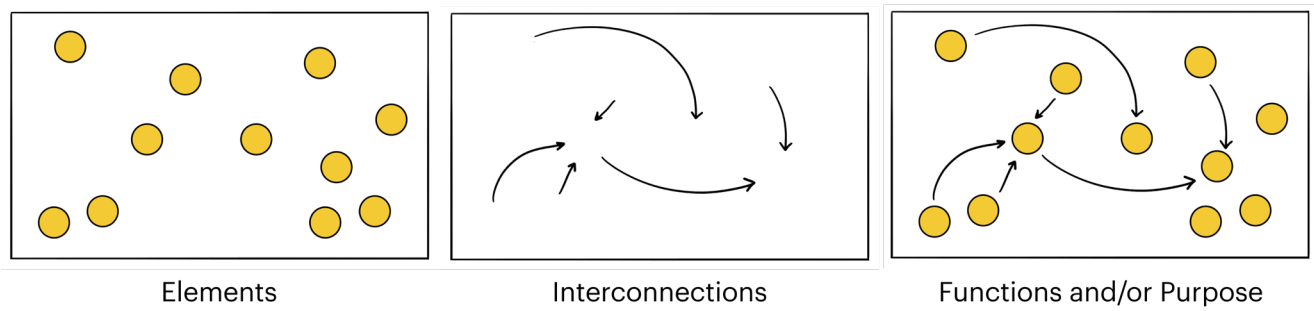

Figure 3.2. System Key Components

Elements

Elements are usually easy-to-identify parts, often tangible, but can also be intangible. They carry out specific functions.

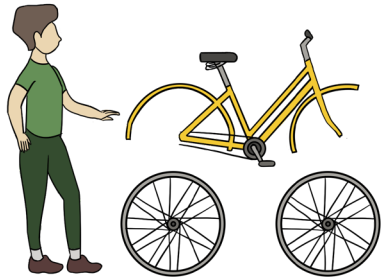

Figure 3.3. Elements

For example, the wheels, the saddle, and the rider's reaction time (see Figure 3.3).

Interconnections

Interconnections, also referred to as relationships, can be understood as either physical or intangible flows. These flows build connections between the elements through information, energy, or resource exchanges.

Figure 3.4. Interconnections

For instance, the pedals are linked through chains and gears to rotate the wheel, and the rider adjusts her steering when spotting an obstacle (information) (see Figure 3.4).

Functions and/or Purpose

A system's intended function often diverges from its behavior and does not always align with the intentions of its individual parts. Therefore, a system's actual purpose only becomes evident through observation.

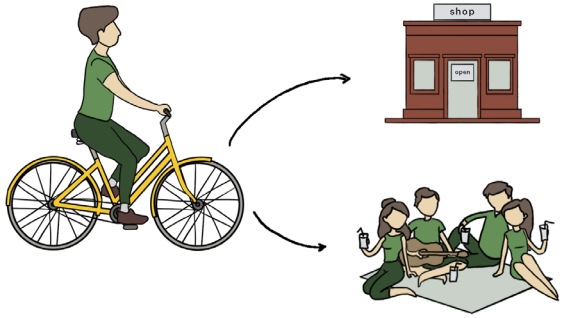

Figure 3.5. Purpose

For example, the stated purpose of this transportation system may be to buy groceries. However, if the rider chooses a longer route to stop at the park to see friends, it reveals that leisure is the primary purpose rather than transportation (see Figure 3.5).

Systems Of The Economy

These principles can be applied to understand how our economic system is constructed, which can be viewed as three subsystems: social, industrial, and ecological (see Figure 3.6). As a designer, it is crucial to comprehend these subsystems and their interactions to create products and systems that benefit the planet, economy, and society (Acaroglu, 2017a).

SOCIAL SYSTEM
This system consists of intangible rules and structures established by people, which shape and uphold societal norms and behaviors. Additionally, it generates our needs and desires.

INDUSTRIAL SYSTEM
This system encompasses the manufactured world, comprising products and services designed to meet the needs and desires of the social system, thereby relying on natural resources for their creation.

ECOSYSTEM
This system provides essential natural services such as clean air, food, fresh water, minerals, and other resources crucial for the functioning of the other two systems. Consequently, the ecosystem is considered the most critical system of all.

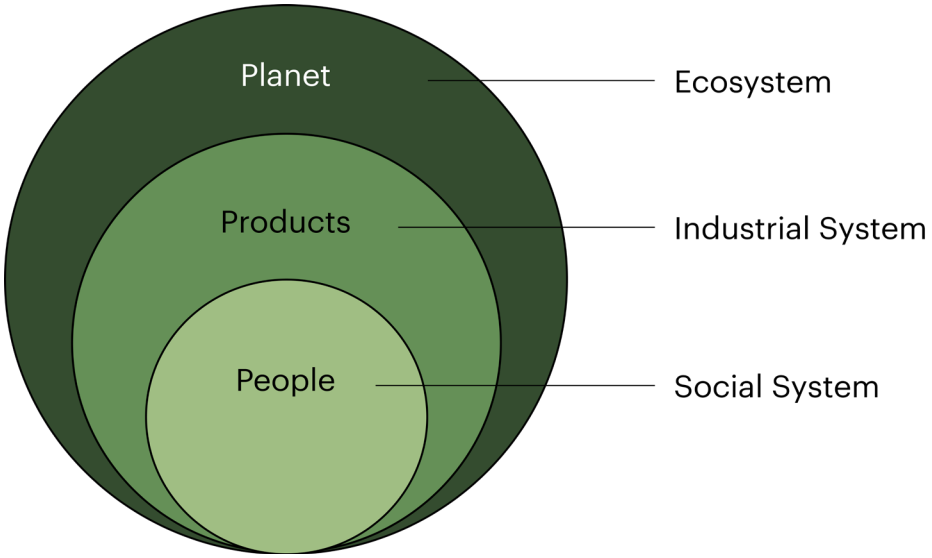

Figure 3.6. Subsystems of the Economy

3.2 Technocratic Mindset

The dominant technocratic mindset offers valuable insights and approaches to advancing the circular economy. While this perspective can help grasp the concept, it is crucial to recognize that it overlooks critical aspects and is, therefore, too narrow to rely on exclusively.

Characteristics

It is characterized by a focus on technological solutions to address the environmental flaws of the linear economy (Clube & Tennant, 2023). It encompasses the following key features:

- Technological Optimism

There is a prevailing belief in the ability that technology can overcome environmental challenges and resource limitations by innovating materials, processes, and infrastructure accordingly.

- Emphasis On Efficiency

The primary goal of this narrative is to enhance resource utilization and waste management through technological advancements, aiming to minimize waste generation and maximize material recovery.

- Closed-Loop Systems

The perspective advocates establishing closed-loop systems where materials are continuously recycled and reused. This approach reduces dependency on virgin resources and mitigates environmental impact through technological interventions.

- Economic Growth

A technocratic assumption is that embracing CE innovations will drive economic growth, create new market opportunities, enhance competitiveness, and foster job creation.

- Industry and Infrastructure-Focused

This mindset predominantly focuses on industries and large infrastructure projects, prioritizing optimizing production and consumption processes to achieve circularity goals.

Design Principles

The design principles developed by the Ellen MacArthur Foundation are closely aligned with this mindset (n.d.-b). Below, a simplified illustration of the sneaker industry places these design principles in context (see Figure 3.7).

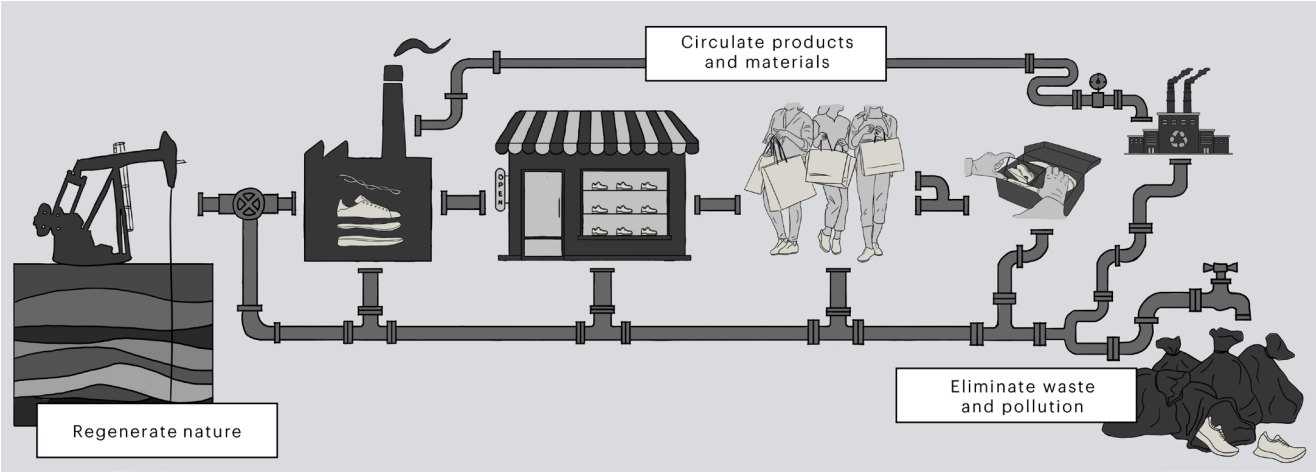

Figure 3.7. Technocratic CE Perspective on the Sneaker Business Industry

Shortcomings

While technology is expected to play a role in the CE transition, its significance may be overstated, as this perspective overlooks the broader complexities of the transformation (Clube & Tennant, 2023). Some of the shortcomings include:

- Excessive Reliance On Technology

There is a failure to consider social, cultural, and systemic factors beyond technological solutions focusing on resource efficiency.

- Neglecting Social Aspects

While it is often assumed that a circular economy will bring positive social impacts, the specifics of how this will happen are rarely articulated, and empirical evidence is lacking. Furthermore, social aspects are often reduced to indicators based on wealth creation, like circular employment potential.

- Limited Scope

The emphasis on industries and infrastructure narrows the range of potential solutions, often overlooking the contributions of community-based initiatives and informal economies to accelerate the transition.

- Lack Of Diversity

Alternative solutions and perspectives, such as indigenous knowledge, traditional practices, and local innovations, are often neglected, limiting the range of approaches for achieving circularity.

3.3 Living Ecosystem Mindset

The Living Ecosystem Mindset presents an alternative perspective on the circular economy, addressing the limitations of the prevailent technocratic view. It encompasses these key principles:

- Inspiration From Nature

Rather than focusing on rigidly closing resource loops, this mindset draws inspiration from nature's flexible and open-ended cycles, aligning with biomimicry's philosophy and innovation strategies (Baumeister et al., 2013).

- Integration Of Social Sustainability

Instead of relying exclusively on technological fixes, this mindset advocates integrating social sustainability considerations. This approach broadens the scope to explore a more diverse range of circular solutions.

- Human-Centered Focus

This mindset redefines the purpose of the circular economy, shifting emphasis from pure economic growth to meeting human needs. In doing so, it seeks to explore an alternative that not only generates economic value but also addresses social and ecological concerns.

These principles are categorized by: values, design principles, and purpose, as depicted in the table below:

Table 3.1. Fundamental Principles of the Living Ecosystem Mindset

Values	Design Principles	Purpose
Aspire to fit on this planet Advocate for distribution and inclusion	Adopt Life's principles	Reconceptualize human well-being

Aspire To Fit On This Planet

The philosophy of biomimicry embodies core values aimed at nurturing a culture that seeks guidance from nature in all human activities, with the ultimate goal of harmonizing with Earth (Baumeister et al., 2013).

- Ethos: Intention And Ethics

This value underscores the importance of prioritizing respect for all forms of life and ecosystems, highlighting our responsibility towards them for our own survival. It advocates for aligning our actions with the principles of nature to thrive and 'fit in.'

- (Re)connect: Human-Nature Connection

This value emphasizes the need to reconnect humans with nature, rejecting the notion of separation and exploring our inherent interdependence. Fostering positive emotional connections with nature leads to a sense of moral responsibility that inspires and promotes care. Additionally, it allows individuals to experience a profound sense of belonging.

- Emulate: Model Nature

This value represents our commitment to learning from nature and using it as a model, mentor, and measure to solve problems while minimizing our negative impacts on the planet. It aims to design harmoniously with nature, recognizing it as the ultimate guide for sustainable solutions.

Advocate For Distribution And Inclusion

Nature efficiently distributes and circulates resources, promoting cooperation and resilience through diversity. Similarly, ensuring a fair distribution of economic resources such as opportunities, income, and wealth enhances the benefits of a circular system, encouraging widespread participation and shared prosperity. Taking this in consideration, Motta advocates for adopting circular, distributive, and inclusive business models to realize this (Motta, 2021).

This perspective also resonates with Barford and Ahmad's socially restorative butterfly model, which parallels the Ellen MacArthur Foundation's butterfly model while emphasizing social inclusion (see Figure 3.8). The model symbolizes the transformation of societal structures, values, and behaviors, addressing social inequalities and injustices. Moreover, it seeks to broaden the discourse on the circular economy to ensure that no individual or community is left behind (Barford & Ahmad, 2021).

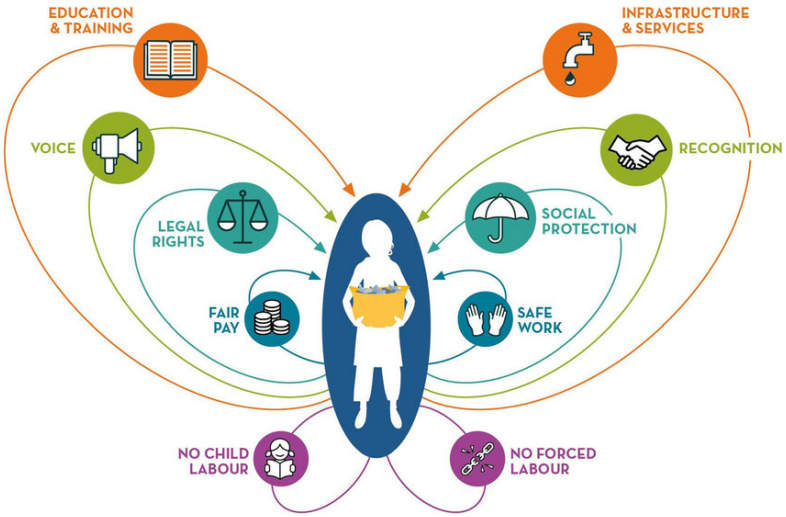

Figure 3.8. The Socially Restorative Butterfly Model (Barford & Ahmad, 2021)

Adopt Life's Principles

Rather than reinventing the wheel, biomimicry adopts nature's sustainable and regenerative approach to life. It has formulated six principles that explain how Life thrives and survives on Earth (Baumeister et al., 2013). Figure 3.9 illustrates these principles within the forest metaphor for the circular economy. Each principle is complemented by a set of strategies detailed in Appendix B.

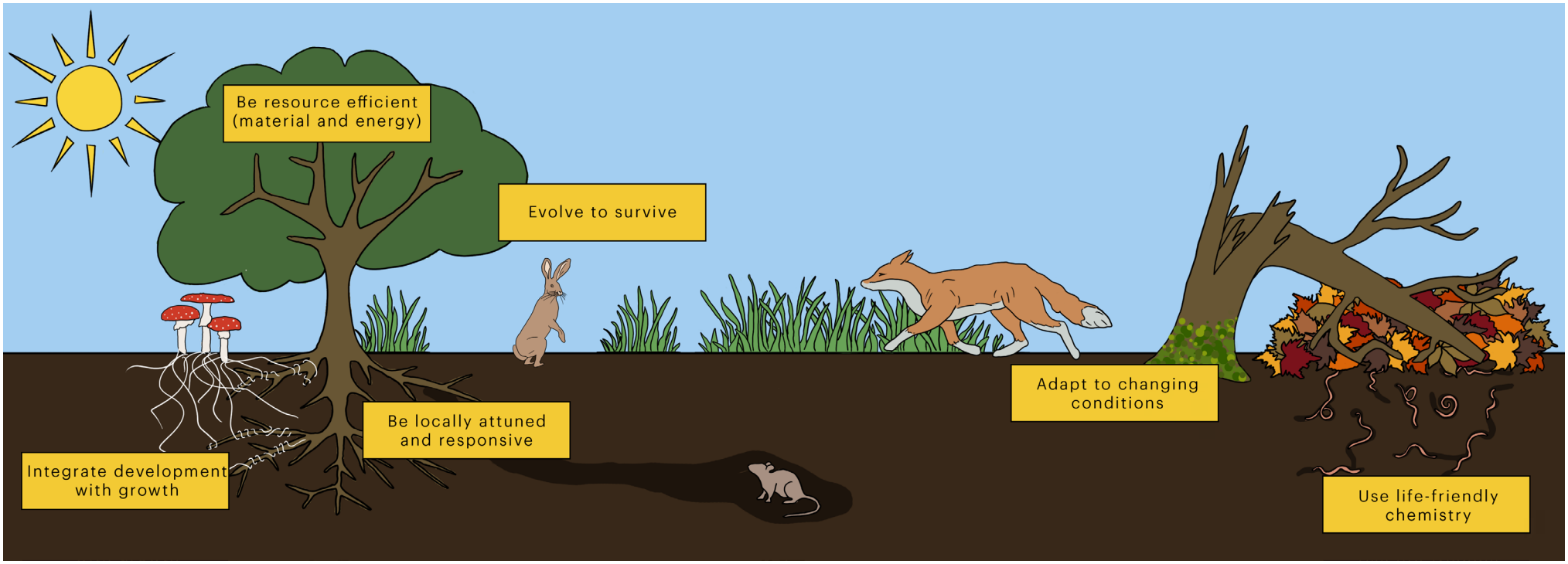

Figure 3.9. Life's Principles from a Forest Ecosystem Perspective

Reconceptualize Human Well-Being

In nature, every entity fulfills a specific purpose or function. This sense of purpose is highly fragmented in our current society, leading to hyper-consumerism and hyper-individualism. These crises damage our well-being and the planet by falsely equating materialism with happiness (Clube & Tennant, 2023). Therefore, transitioning to a circular economy requires moving away from the culture of consumerism, which exhibits characteristics such as:

- Conspicuous Consumption

This cultural phenomenon prioritizes acquiring and displaying goods and services to signal social status and identity, making material possessions and consumptions central to one's life.

- Made Desires

Artificially created desires for products, driven by marketing, advertising, and societal pressures rather than genuine needs and wants, perpetuate the consumption cycle.

- High-Volume Production and Low Costs

Mass manufacturing prioritizes efficiency and affordability to meet high demand, resulting in the widespread availability of inexpensive, often disposable products, contributing to the linear take-make-dispose system.

PERSPECTIVES ON WELL-BEING

Reevaluating our understanding of human well-being is crucial to moving away from this culture of consumerism. The hedonic and eudaimonic perspectives provide valuable insights, offering a comprehensive understanding of human well-being when combined (see Figure 3.10) (Clube & Tennant, 2023).

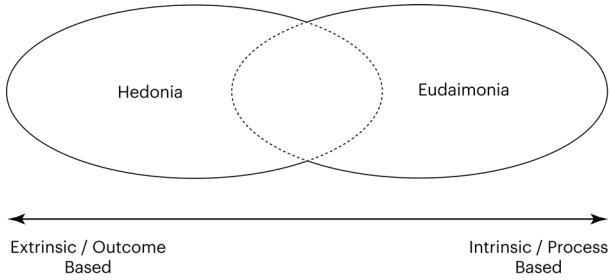

Figure 3.10. Overlapping hedonic and eudaimonic paradigms in wellbeing (Smith & Reid, 2017)

Hedonic Perspective

This viewpoint perceives individual happiness as the ultimate goal, achieved through immediate gratification and fulfilling short-term desires for comfort and pleasure. In today's society, its overemphasis contributes to hyper-individualization and hyper-consumerism because:

- It overlooks deeper dimensions of well-being, such as purpose and individual development.
- It relies on ambiguous and unreliable external factors like material possessions and social status for happiness.
- It does not equip individuals with resilient coping mechanisms, since it prioritizes immediate gratification over personal growth.
- It does not make a substantial contribution to societal well-being, as it primarily concentrates on individual pleasure and satisfaction.

Eudaimonic Perspective

On the other hand, the eudaimonic perspective focuses on meaning, self-realization, and personal growth, emphasizing a purpose-driven and fulfilling life beyond mere happiness. It highlights two aspects relevant to advancing a circular society:

- Eudaimonic values offer intrinsic fulfillment, leading to a more enduring and sustainable form of happiness.
- It fosters societal well-being by promoting contributions to the common good fostering empathy, compassion, and altruism within communities.

Therefore, the Living Ecosystem Mindset advocates prioritizing this perspective on well-being.

FUNDAMENTAL NEEDS

Max-Neef's Human-Scale Development Framework offers valuable guidance in adopting a eudaimonic perspective on well-being. This framework outlines nine fundamental human needs and their corresponding satisfiers (Clube & Tennant, 2023). Recognizing this connection is essential for developing effective strategies and solutions that enhance human well-being.

Needs

Max-Neef identified nine essential needs that transcend cultural, social, and economic contexts (see Figure 3.11). These needs represent the fundamental elements necessary for individuals to lead fulfilling lives.

Satisfiers

These needs can be grouped into four primary domains of existence: being, doing, having, and interacting (see Figure 3.12). Satisfiers serve as the means or mechanisms through which human needs are met. For instance, while food satisfies the need for subsistence, the specific types of food consumed vary among different cultures.

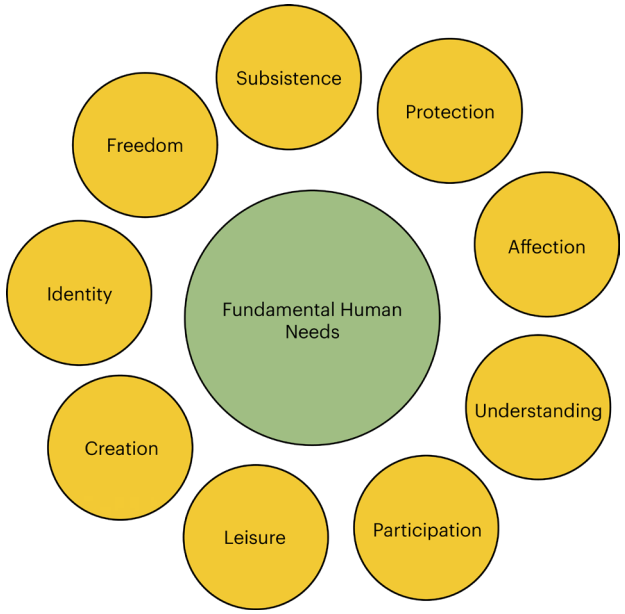

Figure 3.11.. The Nine Fundamental Human Needs (Max-Neef et al., 1991)

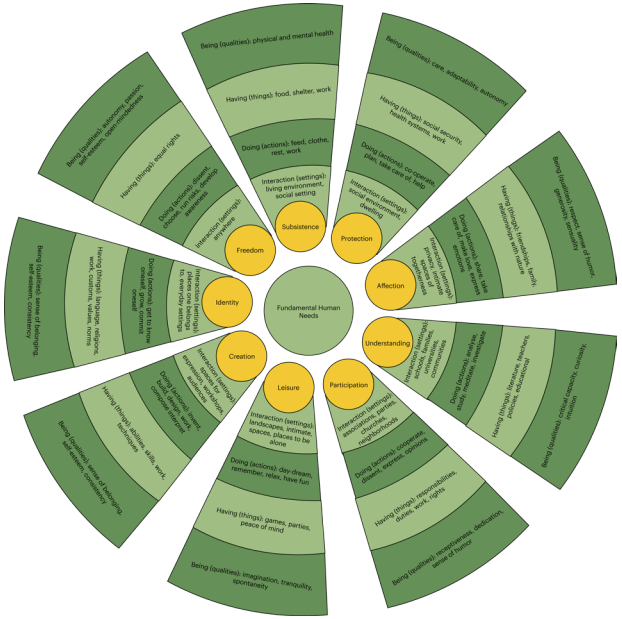

Figure 3.12. The Human-Scale Development Framework (Max-Neef et al., 1991)

PART B - ANALYZE

04 CONTEXT ANALYSIS

This chapter delves into IN10's design process to uncover its approach toward transformations and co-creation sessions. This understanding is crucial to inform the concept development phase, ensuring alignment and fostering acceptance among IN10’s designers to lead the co-creation session themselves.

4.1 Approach

Various research methods were employed to overview IN10's approach. This included gathering data through expert interviews, observing a co-creation session, and reviewing internal documents.

Expert Interviews

The expert interviews with IN10 were conducted to get to know the company, understand their way of working, and gain insights into how they prepare and facilitate co-creation sessions.

Method

The method involved semi-structured interviews with two service designers and a creative strategist (see Table 4.1). One of the service designers has been with the company for about seven years, while the other has recently started working there. This diversity ensured a balanced mix of in-house knowledge and external perspectives. The inclusion of the creative strategist was necessary because the scope of my co-creation session focuses on providing a starting point for IN10's Circular Sprint Series, which partly falls within the domain of a strategist. The interviews were recorded and transcribed; the results can be found in Appendix C.

Table 4.1. Anonymized List of Interview Participants

#	Function	Duration
P1	Service Designer	30 min
P2	Service Designer	30 min
P3	Creative Strategist	30 min

Interview goals:

- Get to know the company.
- Identify IN10's problem-solving approach.
- Learn how projects are initiated and progress.
- Find out how the client is involved.
- Gain insights into the criteria for selecting and utilizing activities within a co-creation session.

Reflection

During the interviews, some questions were perceived as too complex, resulting in deviations from the interview guide or necessitating further clarification. Nevertheless, the interviews provided valuable insights into IN10. A key observation is their custom approach to each co-creation sprint, tailored to the specific project needs. Depending on their relevance and timing, they vary their activities and tools. Consequently, as an outsider, I find this approach not immediately clear. An overview is missing, which is crucial for understanding the bigger context in which my concept should fit.

Session Observation

I observed a co-creation session to gain insights into its practical context and discover how IN10 engages and involves the client throughout such sessions.

Method

As a 'fly on the wall,' I attended a session with the Rotterdampas*, focusing on their transition from paper to digital. This allowed me to reflect on their communication and participant involvement and to gain insights into the practical use of activities and tools.

The session was structured into three parts:

1. Reviewing the completeness of the current service blueprint.
2. Designing the desired service blueprint where no paper is used.
3. Creating a roadmap outlining the actions necessary to achieve the desired situation.

**The Rotterdampas provides residents with discounts on cultural, recreational, and sports activities offered by the municipality of Rotterdam.*

Reflection

This session primarily addressed a logistical challenge rather than a creative one. Therefore, attending a variety of co-creation sessions would have enhanced my understanding of them. Nonetheless, it did offer valuable insights into their collaborative approach with clients.

Internal Documents

IN10 showcases its digital expertise by using Miro and Figma to design and collaborate with clients. This digital approach gives IN10 the flexibility to facilitate both physical and digital sessions, allowing people to work on a project simultaneously. Examining their past client cases gave me a comprehensive and varied insight into their design methodology.

Method

Various cases involving different co-creation sprints were chosen. Each sprint underwent mapping and segmentation into activities, further grouped into themes. This method was employed to comprehend the range of problems IN10 addresses and pinpoint the activities and tools they find most effective. Figure 4.1 illustrates an example of how a sprint is segmented into themes.

Reflection

I found this research method most valuable because it uncovered IN10's diverse range of approaches, which provided me with numerous insights. Consequently, I have consistently referred to these client cases throughout the project, using them as a source of reflection and inspiration.

Figure 4.1. Example of a Co-Creation Sprint Categorized into Themes

4.2 Context Findings

The results of the context analysis are divided into two parts. Firstly, I will review IN10's design process to understand its complete service offerings. Secondly, I will delve into how IN10 creates and utilizes co-creation sessions. These insights will inform the development of the criteria for my concept.

Design Process

CHARACTERISTICS

IN10's design process can be characterized as follows:

- Involving The User's Perspective

IN10's design process revolves around prioritizing the user's perspective, serving as a cornerstone of their approach. This commitment is evident in two key aspects. Firstly, they prioritize involving users extensively to gain valuable insights. One interviewee emphasized, "We have a user-centered approach, so we will soon suggest engaging with users or looking at the company from their perspective." Secondly, IN10 ensures user inclusion by amplifying their voices within the design process, as articulated by another interviewee: "It is my responsibility to incorporate user insights that the client may overlook or neglect."

- Working In Co-Creation Sprints

IN10 prefers to work in sprints, describing them as a "package containing a problem" due to "its flexibility to make adjustments." Consequently, they base most project proposals around this format, resulting in unique, non-standardized sprints comprising various co-creation sessions. These sessions are tailored to address specific problems within defined timeframes. The benefits of this iterative approach are clear: *"If research findings or a sprint segment alter your perspective, there is still time and space to adapt,"* and *"Essentially, you determine on day one which target audience you want to design for."*

- Solving Problems Creatively

The company emphasizes creative problem-solving, combining design thinking methodologies with the converging and diverging activities of the Double-Diamond Model developed by the Design Council.

- Addressing Different Levels Of Transformation

IN10 addresses problems ranging from process optimization to developing new services and strategic roadmaps for the future. These challenges vary in their degree of transformation and closely align with the Three-Horizon Model. This perspective offers a clear overview of their problem-solving capabilities.

OVERVIEW

Each co-creation sprint conducted by IN10 is unique. Therefore, I have created a schematic overview of IN10's design process, illustrated in Figure 4.2. This overview divides its service offerings on the y-axis into the different levels of the Three-Horizon Model. Additionally, the framework categorizes the activities and tools used during such sprints following the steps of the Double-Diamond Model on the x-axis. The overview draws inspiration from Thebe's transformation in the healthcare sector, and is complemented with other client cases.

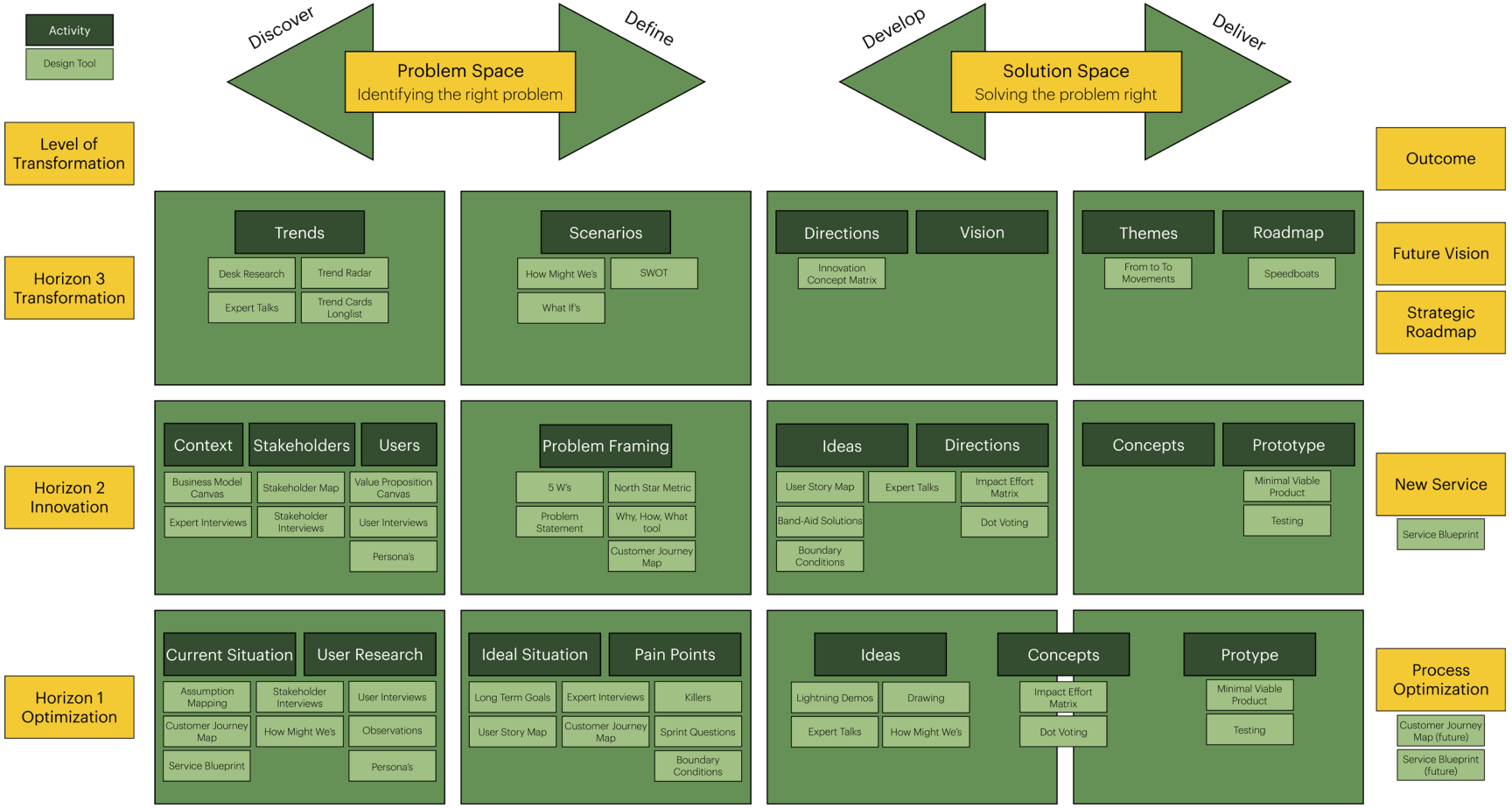

Figure 4.2. Schematic Framework of IN10's Design Process

Co-Creation Session

This section delves into the roles of both the designer and the client and provides insights into the criteria for selecting activities for a session.

ROLE OF THE DESIGNER

Designers play dual roles in a co-creation session as facilitators and active participants. As facilitators, they guide and structure the process, steering discussions and asking guiding questions where needed. One interviewee emphasized, "I*deally, we involve the client as much as possible in the design process*."

Furthermore, as active participants, they leverage their expertise to visualize ideas, prototype solutions, and test them. However, they recognize that certain challenges cannot be addressed solely through sketches or co-creation; instead, "*they need to be documented for someone to investigate*," as one interviewee pointed out.

ROLE OF THE CLIENT

Clients participate in co-creation sessions, drawing on their expertise to contribute valuable insights. Involvement is crucial to foster a sense of ownership and create a solution that resonates with the organization. Typically, one person is designated as the product owner, playing a distinct role from other participants. As highlighted in the interviews, "*The product owner must be someone capable of making decisions and should also communicate what has been decided back to the rest of the company or other stakeholders. Therefore, this person must be able to shoulder the responsibility.*"

Decisions are approached in various ways. "*Explicitly assigning someone the final decision-making authority is a key aspect of the design sprint methodology, where having a designated product owner with the ultimate voting power is integral.*" Additionally, "*It is straightforward yet powerful to give everyone equal voting rights, as it helps to balance out those who are more present, vocal, or situated in management rather than operational roles*." This democratic approach ensures fair representation and consideration of diverse perspectives.

CRITERIA FOR THE ACTIVITIES

The interviewees ultimately outlined several criteria for selecting and utilizing design activities, categorizing their key takeaways into three main sections: participation, content, and form.

Participation

Enjoyable
- *"That it should be enjoyable to use."*

Active attitude:
- *"If it encourages an active attitude in people."*

Creative
- *"That participants become more creative."*

Optimistic
- *"We want to get people excited about the topic, so if it makes them more optimistic."*

Content

Simplify
- *"If it makes things easier rather than harder."*

User perspective
- *"The user perspective should be incorporated".*

Scientific
- *"I find it important that it has a scientific research basis."*

Form

Visual
- *"We often try to make it visually intuitive."*

Examples
- *"If there are examples of how this tool can be used, not necessarily to copy but for inspiration."*

Easy understood
- *"That you understand the methodology even if you've only looked at it for 5 or 10 minutes, as often people who need to use it are seeing it for the first time."*

4.3 Key Insights

1. IN10 is skilled in facilitating co-creation sessions for various levels of transformation.

2. IN10 demonstrates a strong commitment to integrating the user perspective into the design process, ensuring the creation of user-centric solutions.

3. IN10’s utilization of sprints aligns with the iterative and non-linear approach required for systemic change, fostering adaptability and responsiveness.

4. Despite IN10's expertise in multiple areas, the absence of focus on the circular economy results in missed opportunities for insights and innovation in this domain.

5. While IN10 is solution-oriented and strong in developing solutions, there is a tendency to narrow its focus on the client's immediate problem. To achieve a more holistic understanding, IN10 would benefit from a more profound analysis and a systemic approach to address underlying issues alongside immediate solutions.

05 COMPARATIVE ANALYSIS

This chapter will explore how IN10 can adapt to meet the demands of the circular economy, which requires a systemic approach, as discussed in Section 2.2, and a shift towards living ecosystem thinking, as outlined in Section 3.3.

5.1 Approach

The analysis compares two systemic design approaches to identify success factors that IN10 can integrate into its approach. Despite their differences, both approaches offer valuable insights that complement and enrich each other in designing for the CE transformation.

The first approach involves an update from the Double-Diamond Model, initiated by the Design Council in response to sustainability and climate commitments, to effect real change. Since IN10 has already incorporated the Double-Diamond Model into its process, the Systemic Design Framework appears to be a natural fit.

The second approach is the Disruptive Design Method developed by Leyla Acaroglu. This method aims to activate positive social change through design, which aligns well with IN10's current mission of fostering positive change.

Systemic Design Framework

The Design Council has explored design's potential for driving real change and concluded that achieving net zero is insufficient. Instead, designers should prioritize broader concepts of sustainability and regeneration, aligning with my findings on the CE transition described in Section 2.5.

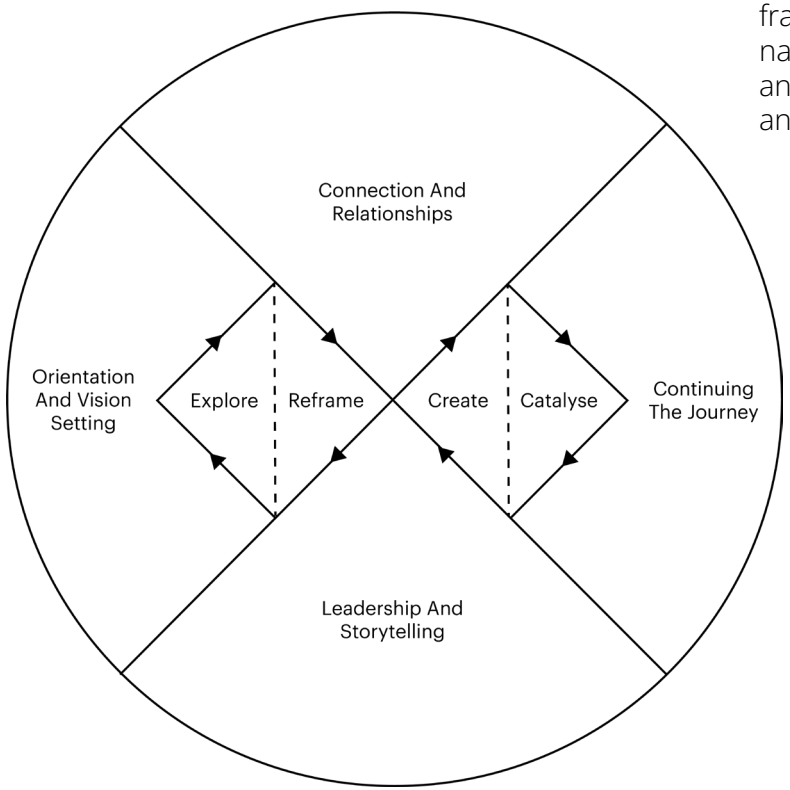

Figure 5.1. The Systemic Design Framework

Furthermore, the organization found that although a significant amount of technical knowledge exists, it often remains inaccessible or underutilized. Consequently, they advocate for embracing a systemic approach and have developed a framework to support designers in this regard, as Figure 5.1 illustrates. This framework recognizes the interconnected nature of problems and prioritizes the planet's and its people's well-being, focusing on ethics and inclusivity (Design Council, 2021).

The framework outlines an iterative and cyclical approach, where the process shifts between various ways of working and moves back and forth between different design stages. These are further detailed in Figures 5.2 and 5.3.

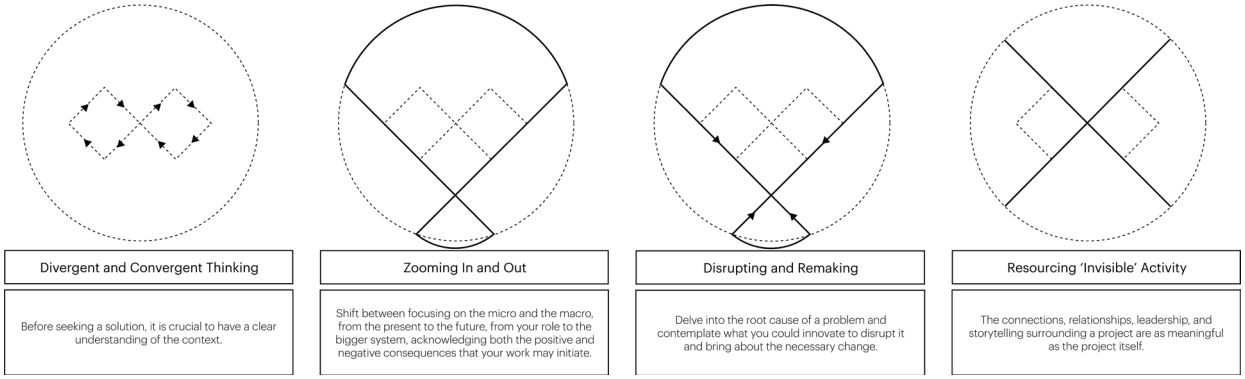

Figure 5.2. Different Ways of Working

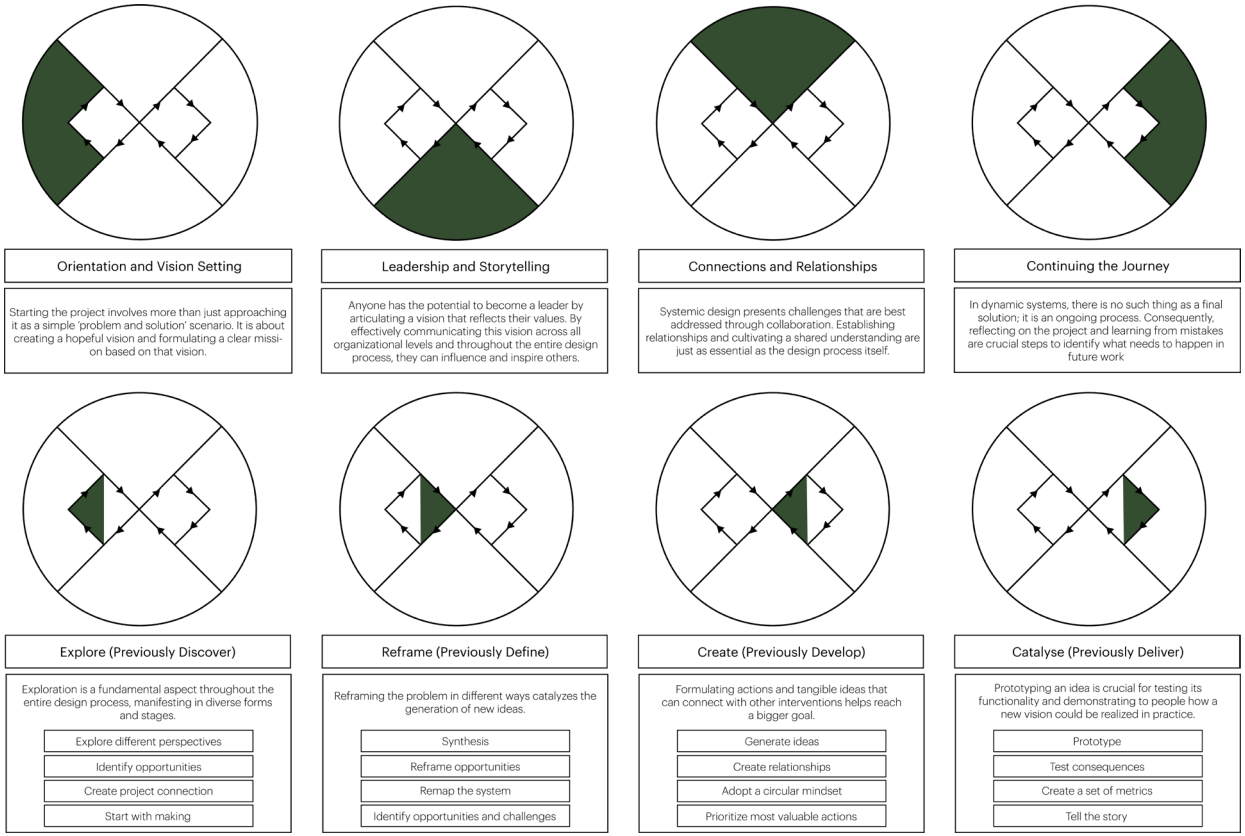

Figure 5.3. Overview of the Inner and Outer Stages of the Systemic Design Framework Process

Disruptive Design Method

The Disruptive Design Method is characterized by a creative problem-solving approach that emphasizes:

- Developing A Three-Dimensional View

This method integrates systems, sustainability, and design to explore, identify, and create interventions that leverage systemic change for positive social and environmental outcomes. It aims to inspire both creatives and non-creatives to overcome reductionist linear thinking and reconsider their actions within the world.

- Moving From Innovation To Disruption

According to Acaroglu, there is a clear distinction between innovation and disruption (see Figure 5.4). She views innovation as an iterative process focused solely on improvement, often neglecting social and ecological values. This oversight can worsen problems such as climate change, poverty, and inequality. As a result, Acaroglu advocates for a design approach that intervenes and disrupts within a system.

- Reframing Problems Into Opportunities

Understanding a system enhances creative thinking, enabling problems to be reframed as opportunities. This mindset fosters the development of non-linear, divergent solutions that will allow actions for positive change.

- Iterating Between Mining, Landscaping, And Building

The design process is iterative, circular, and system-based, comprising three main phases: mining, landscaping, and building, as illustrated in Figure 5.5. The mining phase thoroughly explores the problem and lays the groundwork for system-level explorations. Landscaping entails systems mapping and identifying intervention points within one's sphere of influence. Building involves creative ideation, iterative testing, and developing interventions for systemic change.

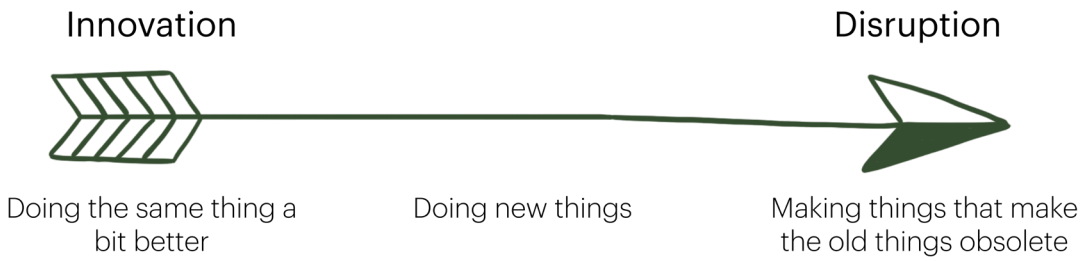

Figure 5.4 Moving from Innovation to Disruptive Design (Acaroglu, 2017b)

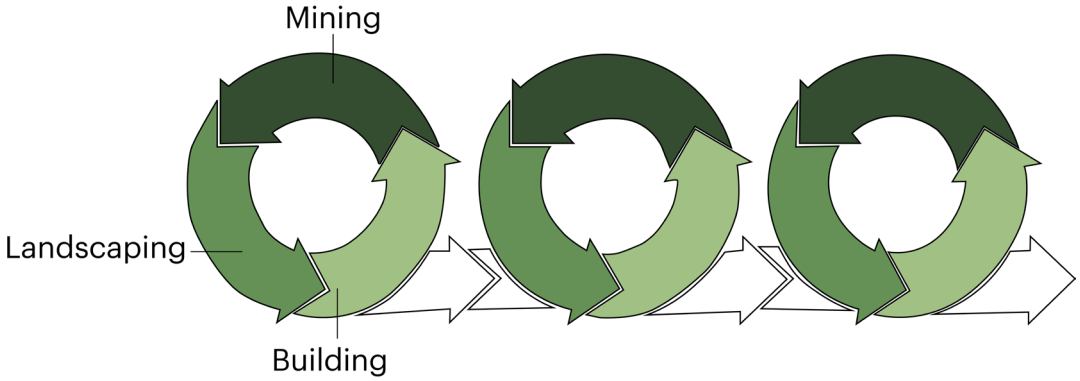

Figure 5.5. The Disruptive Design Method (Acaroglu, 2017b)

This process is further detailed in the illustration provided below:

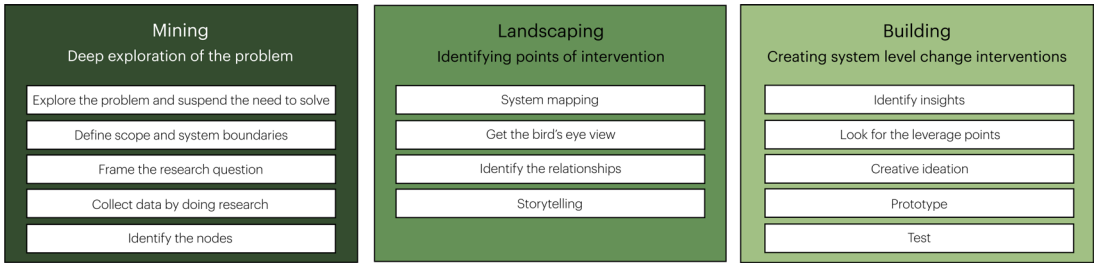

Figure 5.6. Schematic Framework of the Disruptive Design Method

Framework With Comparison Factors

The comparison between the design approaches is informed by factors derived from the Ellen MacArthur Foundation's Adaptive Strategy (see Figure 5.7). This strategy serves as a guide for organizations navigating a design-led CE transformation. I chose this strategy for two primary reasons:

1. It identifies six entry points for organizations to concentrate their efforts on to accelerate the transition. This significance makes them suitable as comparison factors for this analysis.
2. It also emphasizes the importance of adopting a CE mindset rooted in systems thinking, as outlined in Chapter 3.

COMPARISON FACTORS

The entry points used as comparison factors include:

1. Observe And Interpret The System

Analyzing the system helps to understand current outcomes, pinpoint where interventions can have the most impact, and prevent isolated efforts that might lead to unintended consequences when transitioning from linear to circular practices.

2. Envision Circular Futures

Past efforts provide guidance when iterating on the status quo. However, innovating around fundamentally new principles requires imagination to overcome uncertainty and ambiguity, uncover opportunities, and clarify steps toward a sustainable future.

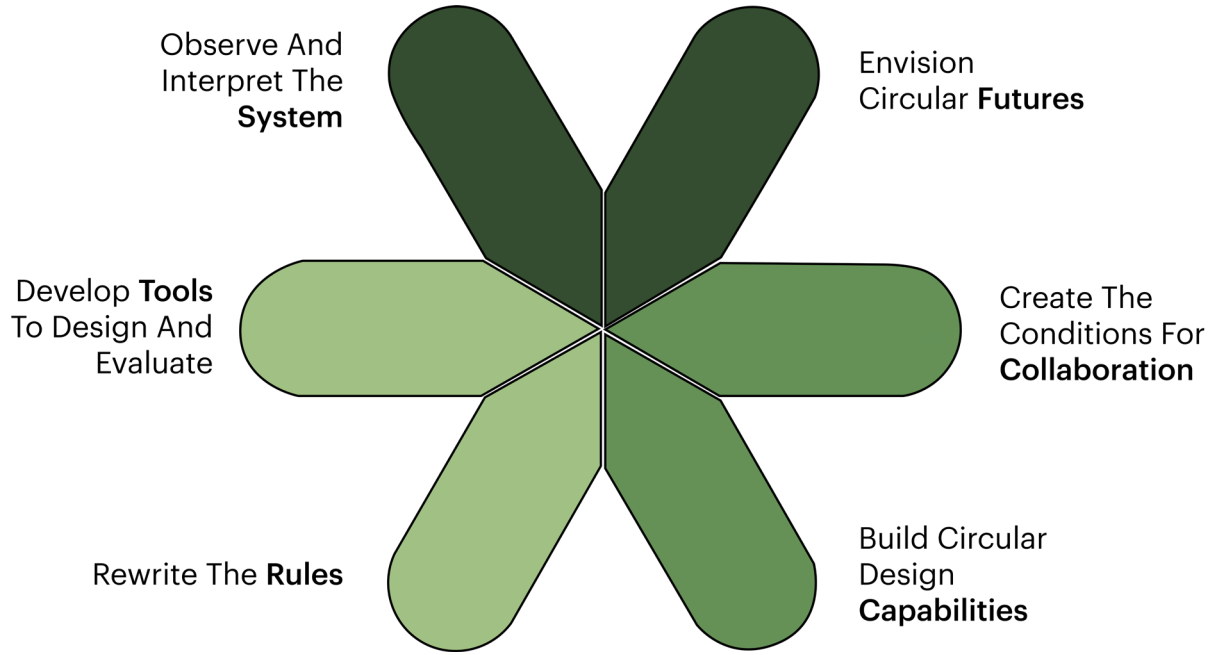

Figure 5.7. The Adaptive Strategy (Ellen MacArthur Foundation, n.d.-c)

3. Create The Conditions For Collaboration

Collaboration is crucial in shaping an organization's response to circular challenges. It is best achieved by combining unique qualities, expertise, capabilities, and resources. Moreover, collaboration is essential for gaining insights into other people's values and motivations and establishing new connections.

4. Build Circular Design Capabilities

Embracing a circular systems mindset is necessary to implement the CE principles effectively. Promoting circular literacy throughout an organization and developing a mix of specialized skills at all levels enhances this.

5. Rewrite The Rules

Designers operate within constraints established by rules such as policies, principles, and guidelines. Accelerating change means revising these rules to align with the CE principles and translating them into organizational language.

6. Develop Tools To Design And Evaluate

Thinking and acting systematically is not straightforward, especially in a linear economy when designing for a circular one. Systemic change is hard to measure. Therefore, new tools need to be developed to assess the impact of decisions and evaluate the overall goals.

FRAMEWORK

The factors mentioned above still need to be organized within a framework. Therefore, I have integrated them into a framework encompassing the scope of transformations within the design context. This framework consists of the following categories: the design process, the designer, and design resources, as illustrated in Figure 5.8.

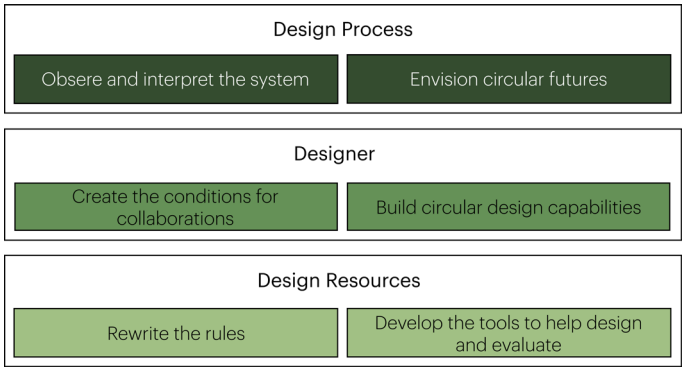

Figure 5.8. Transformation Framework

Comparing The Two Methods

The comparison is conducted by systematically analyzing the data from the documents of both approaches to identify patterns, themes, and other relevant insights. The text is deconstructed into smaller sections and categorized according to one of the comparison factors to gain an overview. This overview follows a clear structure: the top blue segment provides additional information about the specific comparison factor. The middle segment in pink presents the conclusion of the Systemic Design Framework, while the bottom segment in green addresses the Disruptive Design Method. The figure underneath can be better read in Appendix D.

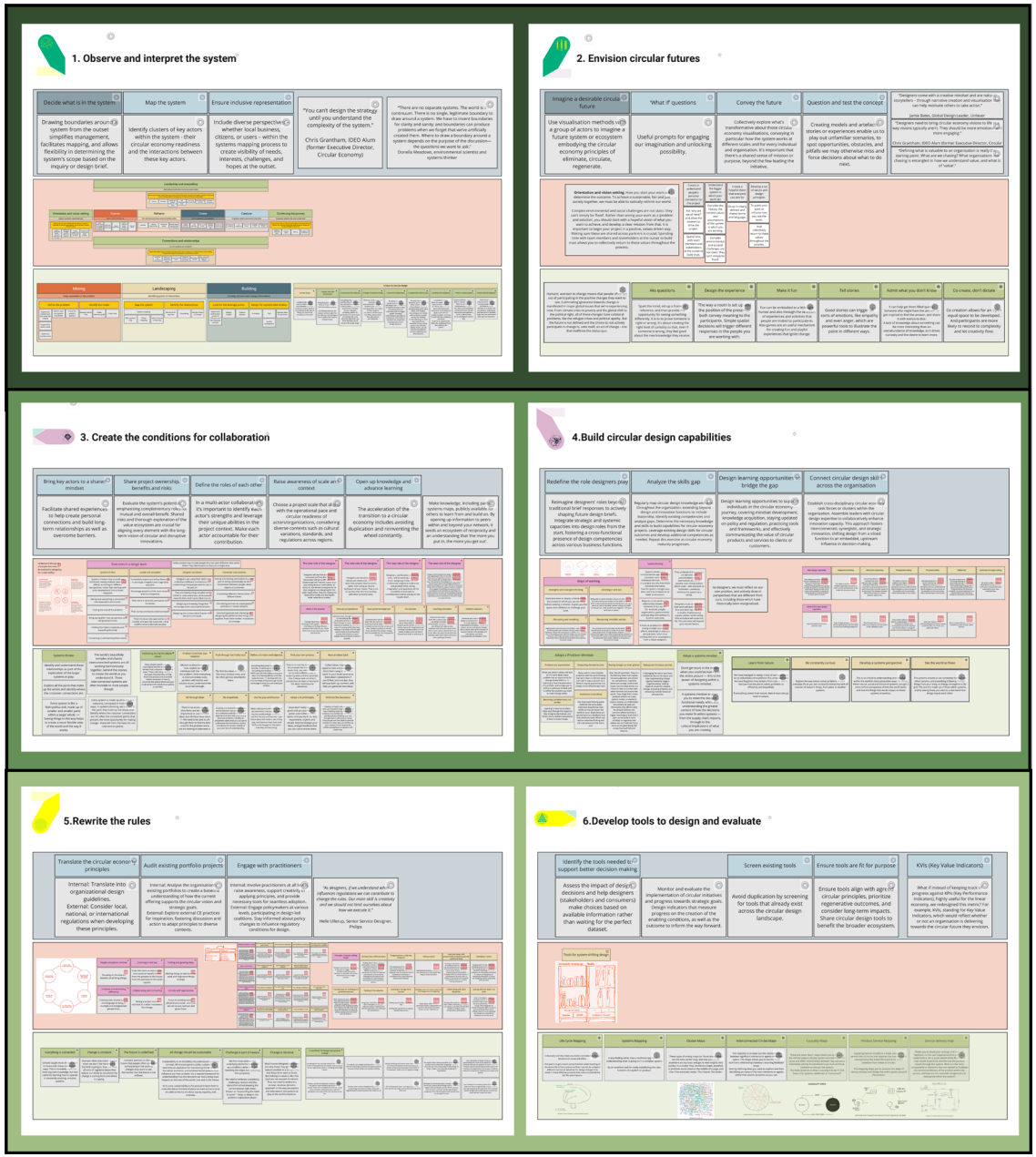

Figure 5.9. Comparative Analysis Overview

5.2 Research Findings

Several success factors and examples are identified that IN10 could integrate into its approach to become better equipped to design for systemic transformations. These insights are divided into the three categories described in the framework of Figure 5.8.

Design Process

ENCOURAGE ACTIVE PARTICIPATION

Change is a constant in life, yet people only tend to notice it when it is harmful and heading in the wrong direction. This behavior often leads to the aversion to envisioning positive outcomes. However, the future is undefined. Therefore, the decision not to participate in change should also be seen as an act of change, though one that reinforces the status quo. Consequently, active participation must be encouraged to overcome this attitude.

Another constraining factor is our cognitive biases, which expose our thinking flaws. While these biases aid in our interactions and understanding of the world, they reduce our ability to see where the change is coming from and where it is going. Additionally, they can contribute to phenomena such as choice paralysis (resulting from an overwhelming number of options), confirmation bias (the tendency to seek information confirming pre-existing beliefs), loss aversion (where losses weigh heavier than gains), and negativity bias (the tendency to focus more on negatives than positives). Recognizing and overcoming these biases is essential for fostering creative and divergent thinking, which is necessary to envision the circular economy (Acaroglu, 2017b).

IMAGINE A DESIRABLE CIRCULAR FUTURE

We must think beyond the current linear reality to avoid merely patching up this flawed system. Designers have the potential to unlock imagination and possibilities to bring this new circular reality to life. Therefore, they should use their creative and storytelling abilities to explore opportunities, visualize more engaging and emotional visions, and motivate others to take action (Ellen MacArthur Foundation, n.d.-c).

Furthermore, it is crucial to recognize that environmental and social challenges are dynamic and cannot be solved with simple fixes. Therefore, understanding and defining what is valuable to an organization is crucial as a first step. This understanding can then be translated into a project's objectives, laying the foundation for creating a hopeful vision that everyone can work towards (Design Council, 2021).

UNDERSTAND THE SYSTEM

Observing and interpreting the system is essential as it aids in identifying intervention points, prevents isolated efforts that may lead to rebound effects, and allows us to visualize the subtle forces at play. Both systemic design approaches introduced in the previous section adopt an exploratory approach, prioritizing understanding the problem and its system before seeking solutions.

Two steps need to be taken into account:

1. Decide what is in the system

Systems consist of smaller subsystems. Therefore, it is crucial to decide the scope of the system and set clear boundaries around it, which will depend on the design brief.

2. Map the system

Designers should leverage their skills to generate rich observations and interpretations of system dynamics, thereby identifying opportunities and innovation gaps. Subsequently, they should visualize these insights to communicate them effectively to others.

ENSURE INCLUSIVE REPRESENTATION

Inclusive representation is vital when designing for systemic change. This necessitates gathering diverse perspectives to ensure visibility into all system actors' needs, interests, and challenges, focusing on including marginalized voices. It is important to note that actors encompass more than just stakeholders, as some may still influence or be affected by the project despite not having a direct ‘stake’ in it. Additionally, understanding the system’s historical context and societal norms can help grasp the broader context within which the project operates (Design Council, 2021).

Designer

USE TECHNOLOGY FOR SOCIAL IMPACT

The transition to a circular economy is not solely a technical challenge but also a creative and social one. Design is critical in bridging technological innovation to apply in a social context. James Taplin stresses this importance by explaining, "*We could have any number of technical solutions, but without making the human link, they will fail*" (Design Council, 2021). Designers must, therefore, learn to utilize their skills and knowledge effectively to bridge this gap.

BRING KEY ACTORS TO A SHARED MINDSET

Bringing actors to a shared mindset is one of the most crucial aspects of collaboration. This capacity fosters personal connections, builds long-term relationships, and overcomes barriers (Design Council, 2021). Designers should consider these three aspects:

1. Accountability

Designers must identify the strengths of all actors involved to leverage their unique abilities and ensure each one is accountable for their contribution to the project (Ellen MacArthur Foundation, n.d.-c).

2. Language and Narrative

Differences in the interpretation of sustainability and circularity concepts hinder effective communication. Establishing agreement on terms is essential for achieving a shared understanding of the project's goals.

3. Competition

In many sectors, competition prevails over collaboration, with knowledge perceived as a valuable asset. However, sharing knowledge prevents duplication and promotes innovation. Therefore, designers must ensure everyone has an equal role to foster effective collaboration.

REDEFINE THE ROLE OF DESIGNERS

Systemic challenges demand that designers redefine their roles. Rather than simply facilitating user needs, they must adopt a more radical and intentional approach that empowers them to define the purpose of the new system. Therefore, finding a balance between delivering immediate outcomes to establish the client's trust and goodwill while leveraging their imagination to explore alternative possibilities is crucial.

The Design Council has identified four roles, each possessing systemic and strategic capacities, as depicted on the next page (Figure 5.10). These roles can be fulfilled by either one person or divided to include additional expertise during a project (2021).

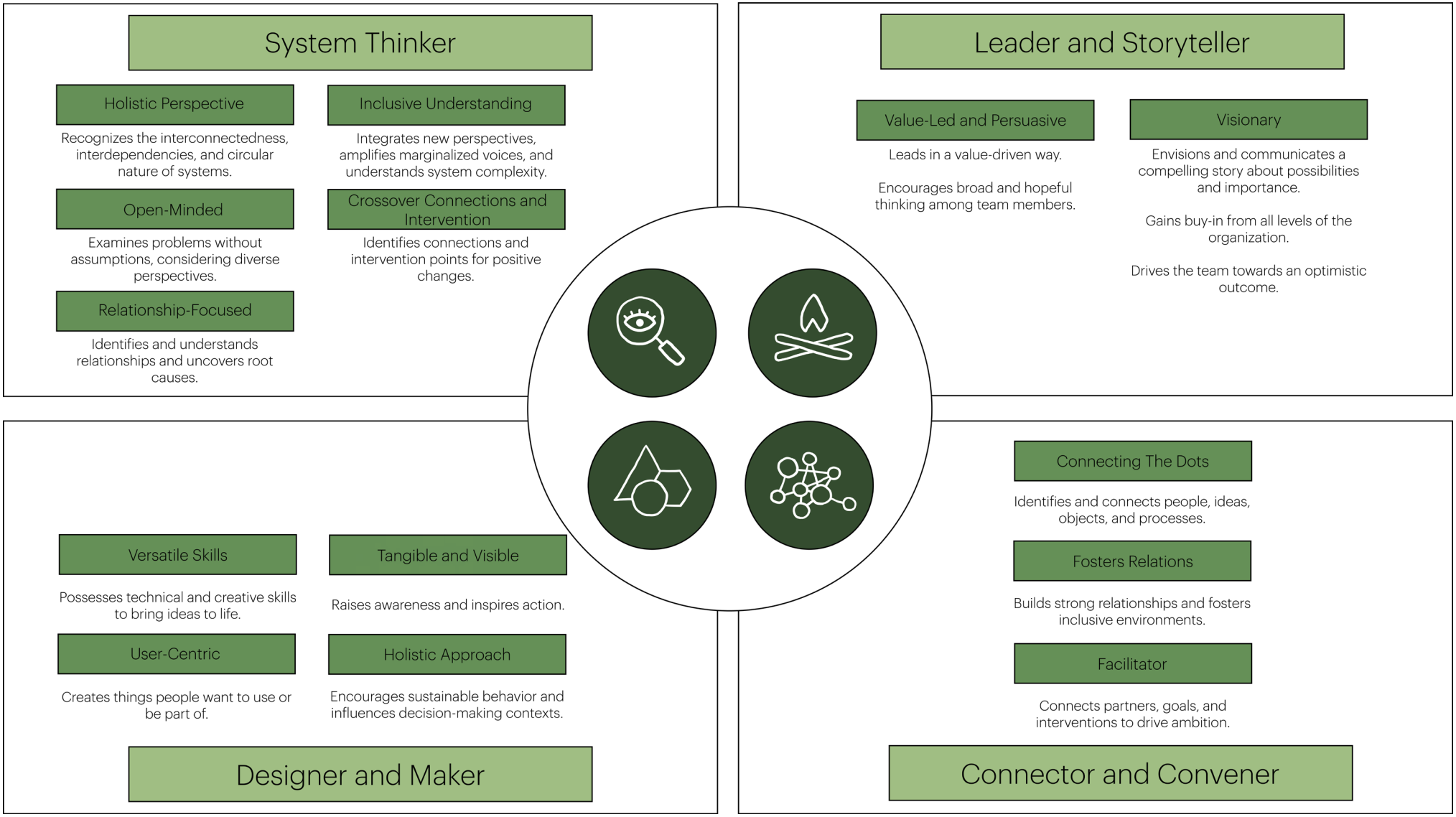

Figure 5.10. Roles of the Systemic Designer

Design Resources

TRANSLATE CE PRINCIPLES INTO DESIGN GUIDELINES

Designers should understand that rules are intentionally created and that they can use their creative abilities to rewrite them to better address the context of the circular economy. Keeping this in mind, both design approaches have developed their own set of design principles, as illustrated in Figures 5.11 and 5.12, serving as inspiration.

Figure 5.11. Design Principles of the Disruptive Design Method

Figure 5.12. Design Principles of the Systemic Design Framework

ADOPT SYSTEMIC DESIGN TOOLS

Systemic design utilizes a toolkit primarily focused on gaining insights into complex systems. This is crucial because without understanding the system you are working within, it becomes very challenging to design within it. Figure 5.12 illustrates a collection of various system maps, as described in Acaroglu's approach (2017a).

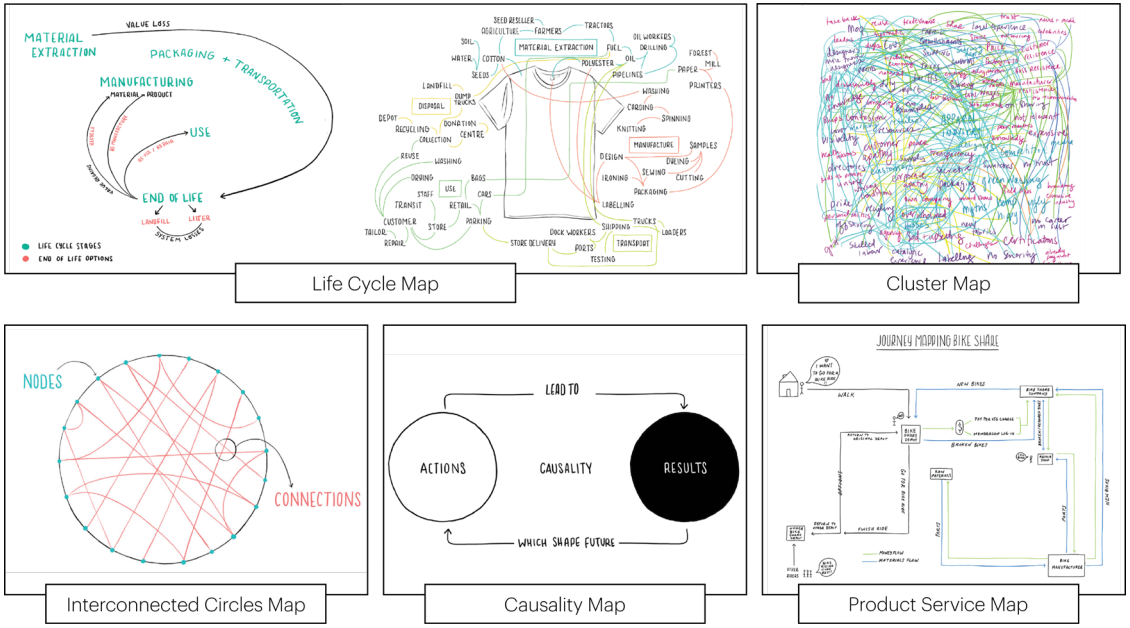

Figure 5.12. Tools for Systems Mapping

5.3 Key Insights

1. Establishing a shared language and definition with stakeholders is a crucial first step due to the various interpretations and opinions regarding the circular economy.

2. To develop a hopeful vision for the solution, designers must adopt a mindset supporting this task, ideally embracing the Living Ecosystem Mindset, detailed in Section 3.3.

3. In the design process, the designer assumes multiple roles, each requiring specific skills to navigate the complexities of systemic transformations.

4. Framing the client's problem within a broader system context is essential, emphasizing the importance of defining the system's scope and boundaries, as highlighted by both approaches.

5. Involving more actors than direct stakeholders and the end user is necessary to address the systemic aspect of the CE transformation.

6. In any project, someone needs to understand how systems work.

7. Problem analysis may be complex and time-consuming, necessitating understanding the underlying system before proceeding to the solution phase.

PART C - CREATE

06 DESIGN BRIEF

Parts A and B have laid the groundwork by establishing the innovation mindset and identifying success factors in systemic design that will aid IN10 in designing for the CE transformation. This chapter will integrate this newfound knowledge and approach into IN10's current practices. It starts by outlining the solution space for the co-creation session, followed by articulating a specific design goal alongside a set of concept criteria.

6.1 Solution Space

Several meetings were held with the strategic director, sales director, and service designer, all of whom will play vital roles in implementing this session once the project is completed, to discuss and agree on the solution space of the co-creation session. Drawing upon their internal insights and expertise in developing co-creation sprints, along with my understanding of the circular economy and systemic design, contributed to the formulation of the session's direction and ensured its alignment with their Circular Sprint Series initiative.

This project will focus on developing the inspiration session, which is anticipated to initiate any circular project, as illustrated in Figure 6.1. This session will involve raising awareness and creating a shared mindset and vision regarding the circular economy with the client.

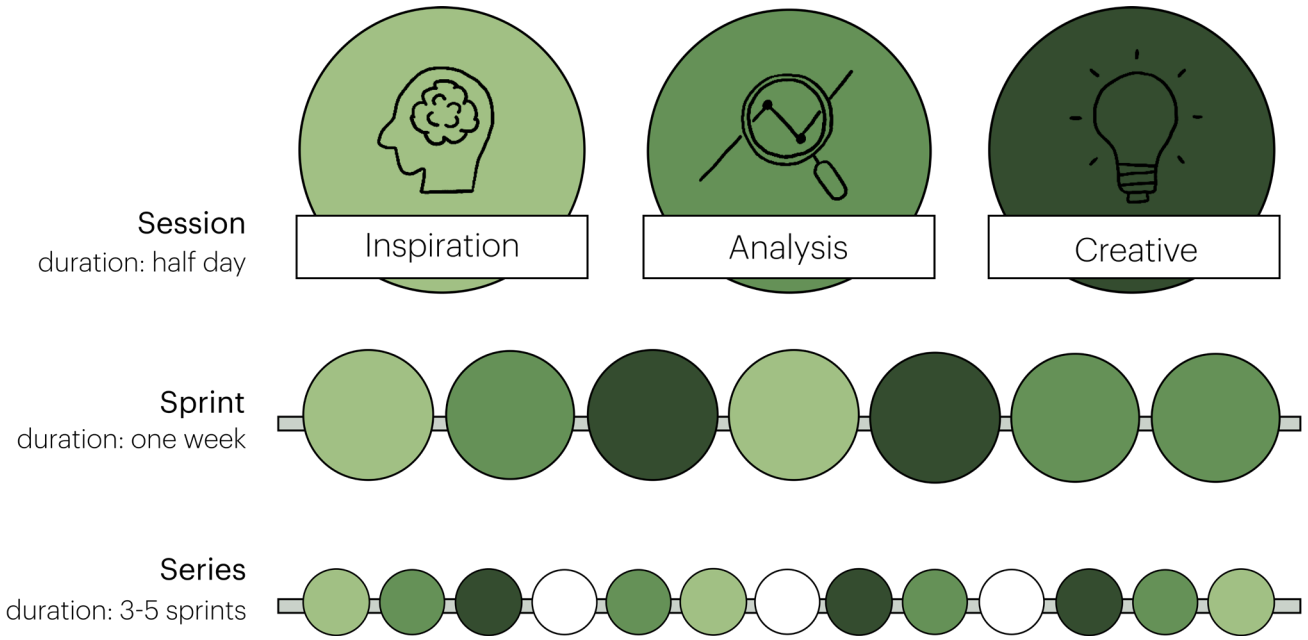

Figure 6.1. Circular Sprint Series Concept Development

6.2 Design Goal

Combining the key insights from the solution space with those from Sections 4.3 and 5.3 has led to the formulation of the following design goal:

- **Design a co-creation session to raise participant’s awareness of the circular economy and empower them to envision a desired future.**

The goal is clarified by linking design criteria to it. This breakdown emphasizes criteria relevant to IN10 and those essential for the concept's outcome.

6.3 Concept Criteria

The criteria serve as a benchmark for evaluating the concept's suitability and effectiveness. The target audience is IN10 itself, as they should be capable of applying the concept in a session with the client. Therefore, the session should also be accessible to participants without prior knowledge of the circular economy, although a basic understanding is advisable.

BOOSTS CONFIDENCE
The concept should enhance IN10's confidence in guiding clients and designing solutions for the CE transformation, as discussed in Section 1.3. Additionally, it should empower IN10 to initiate and expand upon this session to develop its Circular Sprint Series.

Concept criteria:
- C1—Inspires confidence within IN10 to tackle circularity challenges effectively.
- C2—Paves the way for IN10 to broaden its service offerings.

IS PRACTICAL
From my interactions with IN10, it is clear that they have a practical mindset, preferring to create and build solutions yesterday rather than today. Therefore, the concept should align with this approach by presenting potential and promising ideas during the session that can be further developed into actual solutions at a later stage.

Moreover, the concept must provide clear explanations, as it introduces a new domain unfamiliar to IN10. As observed in Section 4.2, it should be accessible and easy to understand to promote effective communication and adoption.

Concept criteria:
- C3—Generates ideas that have the potential to be developed into tangible and practical solutions.
- C4—Is accessible and easy to understand.

ACTIVATES & INSPIRES PARTICIPANTS
Given people's negative attitudes towards change, fostering active participation and involving participants as much as possible is crucial. This approach helps create enthusiasm, intrinsic motivation and promotes buy-in for the proposed ideas generated in the session, as evidenced in the findings of Section 5.2.

Furthermore, the concept should inspire participants to view the circular economy differently, preferably conceptualizing it through the metaphor of a forest, as discussed in Section 2.4. This metaphor helps participants recognize the value of its social dimension in the transformation.

Concept criteria:
- C5—Promotes active participation, fostering enthusiasm and optimism for taking action.
- C6—Encourages participants to expand their understanding of the circular economy.

CONCEPTUALIZES THE CIRCULAR ECONOMY
Thinking beyond the current linear reality is crucial for transforming the economic system. Therefore, visualization is an essential first step in unlocking imagination and possibility, as discussed in Section 5.2. This will be instrumental in creating a shared vision to align all stakeholders and drive collective action toward sustainability goals.

The innovation mindset, detailed in Section 3.3, is necessary for achieving this transformation. This mindset introduces a new perspective that can stimulate innovation and creativity within IN10, fostering a culture of exploration and adaptation.

Concept criteria:
- C7—Introduces a new perspective on the circular economy.
- C8—Helps to create a shared vision of a circular future.

To summarize, the concept must meet the following criteria:

What the concept needs to give IN10:

- C1—Inspires confidence within IN10 to tackle circularity challenges effectively.
- C2—Paves the way for IN10 to broaden its service offerings.

What the concept needs to deliver:

- C3—Generates ideas that have the potential to be developed into tangible and practical solutions.
- C4—Is accessible and easy to understand.
- C5—Promotes active participation, fostering enthusiasm and optimism for taking action.
- C6—Encourages participants to expand their understanding of the circular economy.
- C7—Introduces a new perspective on the circular economy.
- C8—Helps to create a shared vision of a circular future.

07 CONCEPT DEVELOPMENT

Building upon the direction and criteria established in the previous chapter, this chapter will explore the practical research conducted to develop the co-creation session. A learning-by-doing approach is adopted to mirror the approach of IN10 as much as possible to ensure alignment with their needs and preferences.

7.1 Case Study

I have created a fictional case study to provide context for the session and ensure its testability and validation. This case study revolves around one of IN10's clients, the Rotterdampas, leveraging my experience with the organization described in Section 4.1 to offer insights.

The guiding question is:

How can we encourage pass-holders of the Rotterdampas to engage in sustainable activities?

7.2 Design Process

A blueprint for the co-creation session is developed to establish the foundation for the validation tests. The first part provides an overview of this blueprint and offers insights into the session's activities and internal objectives. The activities are detailed in the subsequent part to enhance clarity.

Session Blueprint

The design process for developing the session blueprint follows these steps:

1. Establishing the session's framework.
2. Creating an activity database.
3. Defining the internal objectives.
4. Evaluating the session's aim.
5. Refining the internal objectives.
6. Identifying the activities.
7. Creating the session blueprint.

STEP 1: ESTABLISHING THE SESSION'S FRAMEWORK

Establishing the session's framework involved conducting online research to find suitable circular design sprints, drawing inspiration from how others have structured and developed their sprints, as IN10 lacks its own. The EcoDesign Sprint was chosen because it aligns well with IN10's approach, having been created by a service design agency in collaboration with CE experts (Ecodesign Circle, 2021).

The key characteristics of this sprint include:

- Generating new circular business opportunities and sustainable services.
- Providing participants with a comprehensive understanding of CE possibilities and business models.
- Encouraging a shift from a linear to a circular thinking mindset.

One significant drawback of this sprint framework was its misalignment with my design goal. To address this, the envisioning phase has been added between the understand and ideate phases to tailor the session to the goal of envisioning a circular future (see Figure 7.1).

Figure 7.1. Session Framework

STEP 2: CREATING AN ACTIVITY DATABASE

The activity database is constructed to organize and cluster findings according to the framework established in the previous step. This database, comprising circular design activities, methods, and tools, is created to identify suitable activities for the session, as illustrated in Figure 7.2.

This process involved exploring existing circular design toolkits, sprints, and planet-centered approaches to ensure alignment with the holistic nature of the Living Ecosystem Mindset. Additionally, activities from the framework of Figure 4.2 were included to assess their compatibility and potential use within the session, ensuring alignment with IN10's approach.

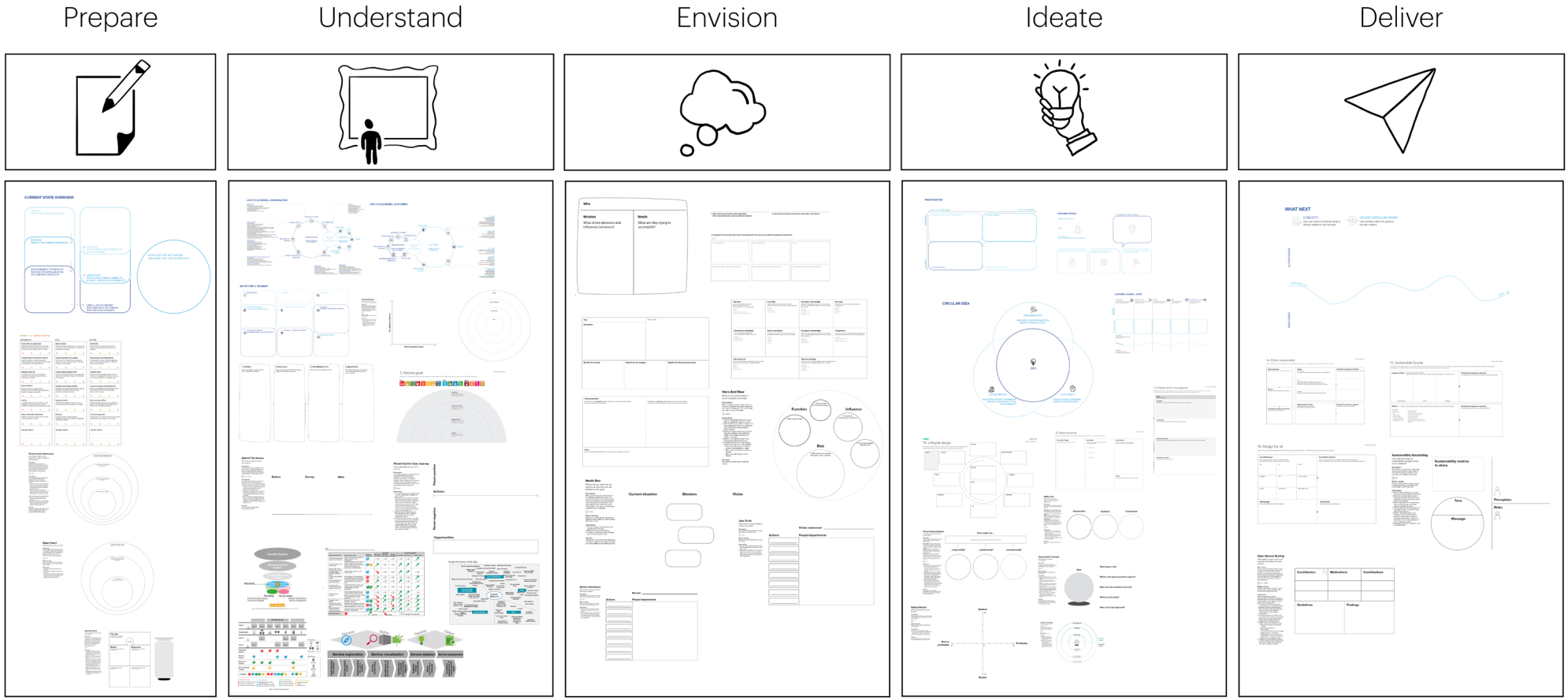

Figure 7.2. Activity Database (Ecodesign Circle, 2021; Sierra-Pérez et al., 2021; Impossible, n.d.; Palacin & Ylivainio, 2022b)

STEP 3: DEFINING THE INTERNAL OBJECTIVES

The internal objectives shape the session's flow and are defined by integrating the systemic design principles outlined in Section 5.2 as guidance. Additionally, the process flow aligns with IN10's approach by incorporating waves of divergence and convergence. Figure 7.3 provides an overview of this process.

The delivery phase is excluded due to the anticipated length of the session. There are several reasons for this decision. First, the session's primary focus is on integrating living ecosystem thinking, which requires a different approach to the analysis phase than IN10's current one. Second, since IN10 already performs well in the delivery phase, it should continue as usual. Ultimately, the delivery phase could serve as a starting point for the next session to build upon.

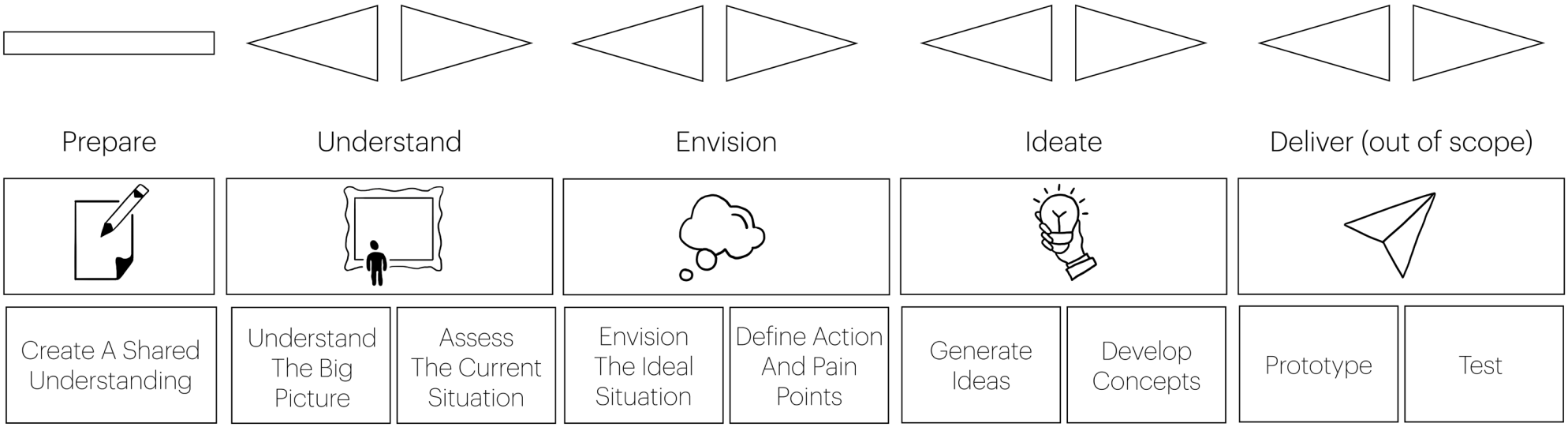

Figure 7.3. Internal Objectives Overview

STEP 4: EVALUATING THE SESSION'S AIM

Upon reviewing the database created in Step 2, it became evident that the envisioning phase should be integrated with the other phases rather than standing alone. This integration is crucial as the session's primary aim is to envision a desired future, which should be the focus throughout the session.

Consequently, the envisioning phase is merged with the other phases, and the inspire phase is included to create an opportunity to raise awareness of the circular economy and encourage participants to conceptualize it as a forest (see Figure 7.4).

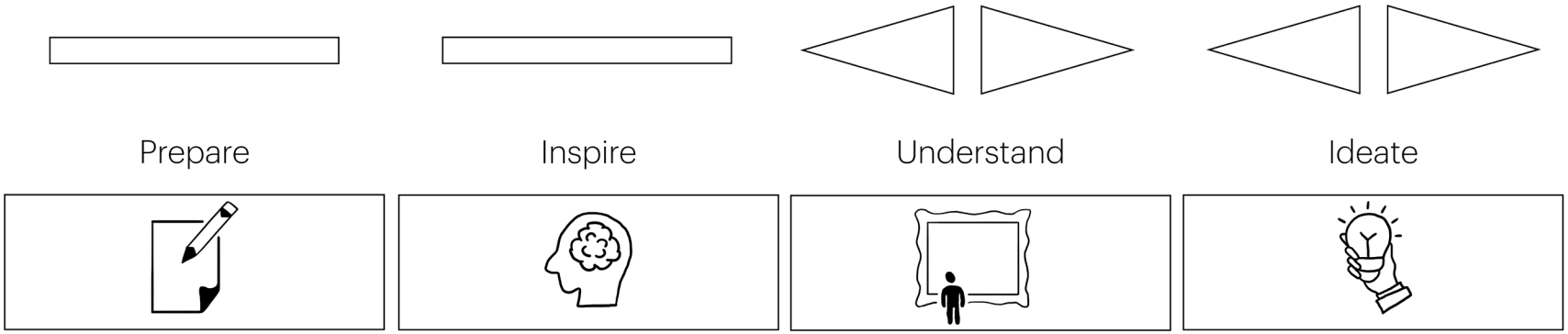

Figure 7.4. Phases of the Session Post-Evaluation

STEP 5: REFINING THE INTERNAL OBJECTIVES

With the changes to the phases, a revision of the internal objectives was necessary, as outlined in Figure 7.5.

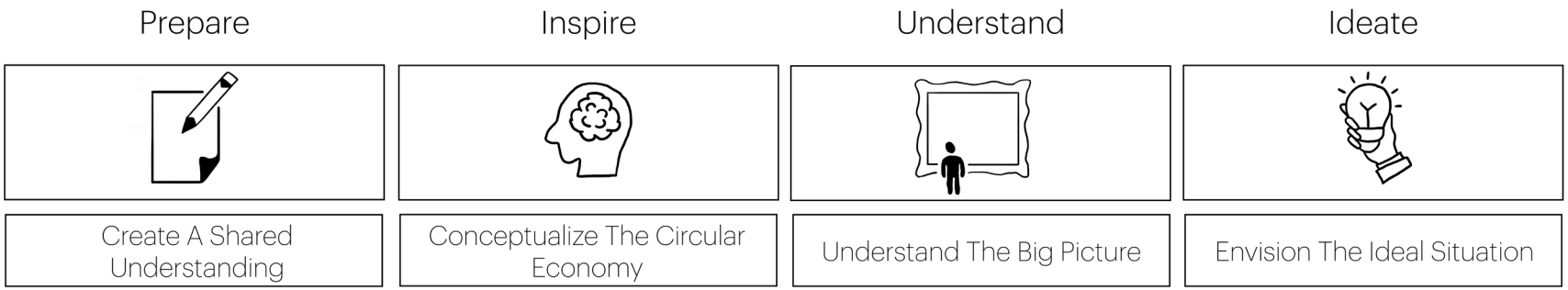

Figure 7.5. Refined Internal Objectives

STEP 6: IDENTIFYING THE ACTIVITIES

The database was filtered during this step to identify the five most promising and suitable activities. Figure 7.6 provides an overview of when the activities should occur in the session.

However, adjustments are needed to align with the objectives, which will be further discussed in the next part, covering the activity details.

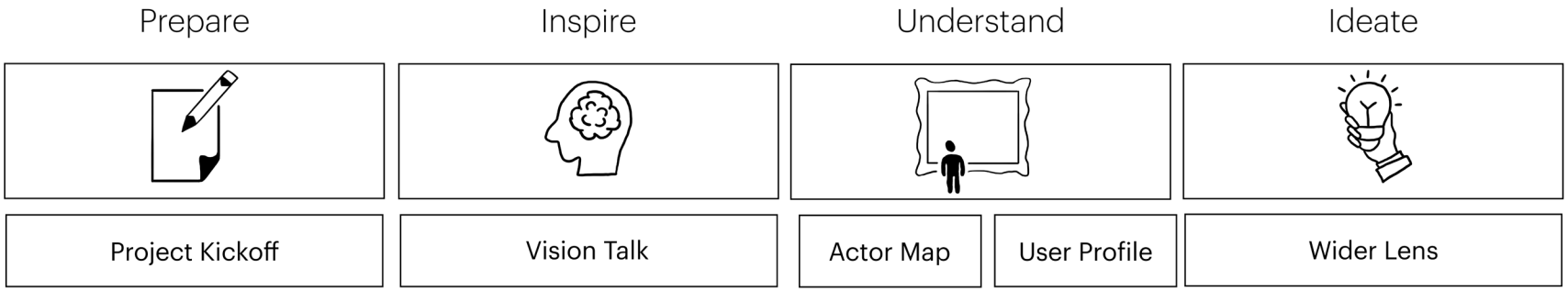

Figure 7.6. Identified Activities Overview

STEP 7: CREATING THE SESSION BLUEPRINT

The outcomes of the abovementioned steps are gathered to create the session blueprint, as illustrated in Figure 7.7.

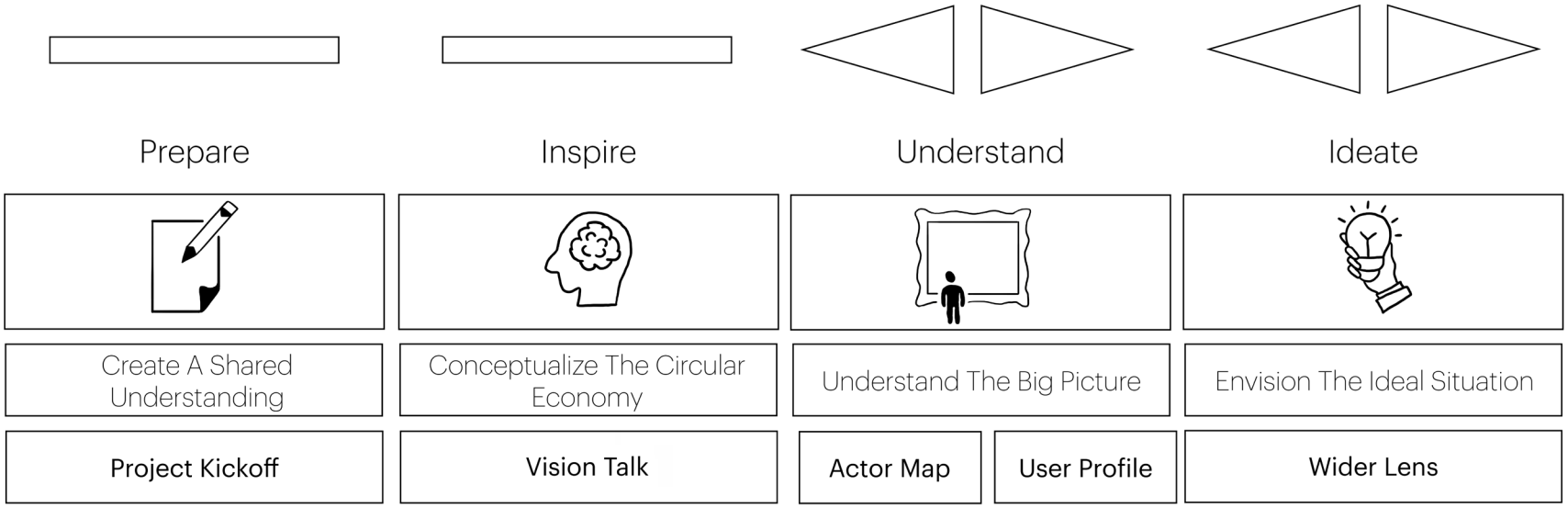

Figure 7.7. Session Blueprint

Activity Details

This part provides detailed information about each activity. The Rotterdampas case is consulted to provide context for the activities and test assumptions. Each activity follows a clear structure: it starts by describing it and continues to explain how it aligns with IN10 and integrates living ecosystem thinking.

PROJECT KICKOFF

The Project Kickoff is a pre-task to be completed before the session to ensure a smooth entry for all participants. As outlined in Figure 7.8, the activity aims to establish a common understanding of the project's objectives and how they align with the organization's broader sustainability vision. Additionally, it provides an opportunity to understand the personal motives of the individuals involved in the project.

Alignment with IN10

IN10 already prepares the client before a session by informing them about what to expect, its rules during the session, and its approach to design thinking. Therefore, there is an opportunity to integrate this pre-task into their current kickoff. The template is derived from the EcoDesign sprint and should serve as inspiration (Ecodesign Circle, 2021). Adaptation is needed to align the questions with IN10's approach and the purpose of the particular project.

Integration of living ecosystem thinking

To involve everyone and enhance collaboration, using shared terms and language is crucial to articulate the project's goal (Design Council, 2021). Drawing inspiration from the forest metaphor of the circular economy could enhance this process.

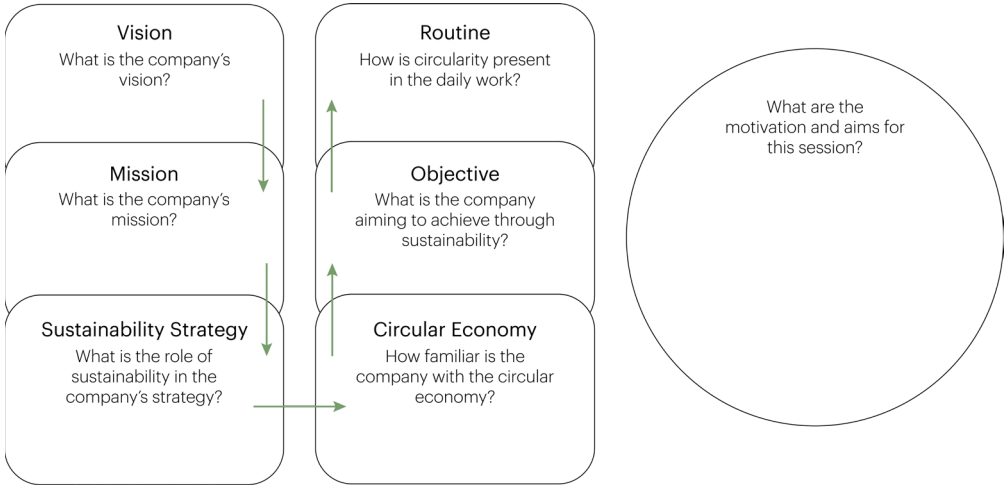

Figure 7.8. Project Kickoff Template (Ecodesign Circle, 2021)

VISION TALK

The vision talk aims to shift the narrative of the dominant technocratic view on the circular economy towards a more holistic perspective, inspiring participants with the vision of nature's CE. The presentation slide deck is shown in Figure 7.9.

Alignment with IN10

IN10 conducts lightning talks where experts discuss specific topics to deepen participants' understanding. This vision talk serves a similar purpose, with IN10 designers acting as experts to explain the desired vision of the circular economy.

Integration of living ecosystem thinking

The vision talk describes the systemic element of the economy by seeing it through the lens of its three sub-systems, as already detailed in Section 3.1. Next, it presents an alternative perspective, emphasizing the significance of the social and ecological dimensions of the transformation.

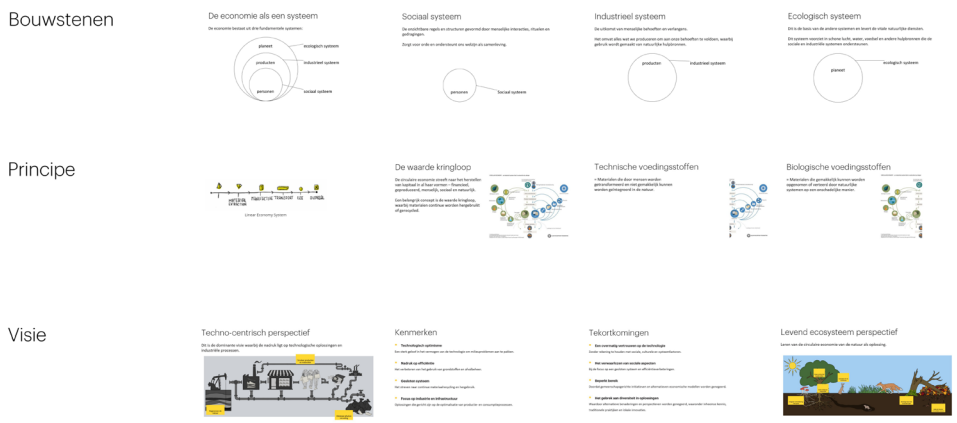

Figure 7.9. Vision Talk Slide Deck

ACTOR MAP

This map aims to visualize the project's broader system, facilitating an understanding of the dynamics and interactions among the actors and the topic, as illustrated in Figure 7.10 (FSG, 2021). However, due to time constraints, the content of the actor map was derived from a search session with ChatGPT. It requires further refinement to be effective in a real scenario, enabling it to generate more interesting relationships and connections.

Alignment with IN10

The actor map can complement IN10's user research by shifting the focus from the end-user to encompass more actors influencing the system, fostering a people-centric view.

Integration of living ecosystem thinking

This overview enhances understanding of the system to identify marginalized voices that may otherwise be overlooked and discover potential intervention points to effect systemic change.

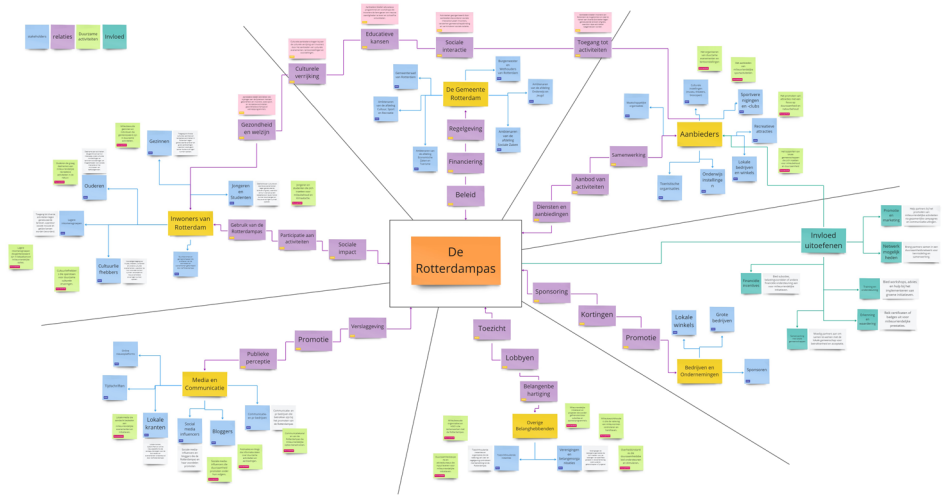

Figure 7.10. Actor Map

USER PROFILE

This activity aims to gain insights into the fundamental needs of users. This understanding helps identify the needs that the project can address and the role it can potentially fulfill (see Figure 7.11).

Alignment with IN10

This activity aligns well with IN10's user-centered focus.

Integration of living ecosystem thinking

Gaining insights and understanding users' fundamental needs is crucial for solving their problems. This activity promotes a shift from a hedonic to a eudaimonic perspective on well-being, as discussed in Section 3.3.

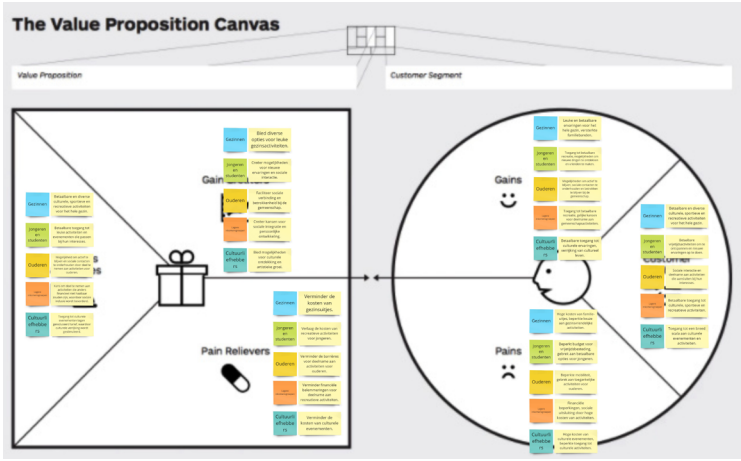

Figure 7.11. User Profile Based on the Value Proposition Canvas

WIDER LENS

This activity aims to generate ideas for a circular future using the Wider Lens card set with 'what-if' statements, encompassing nature, resources, innovation, and social perspectives on the circular economy (see Figure 7.12).

Alignment with IN10

This activity aligns with IN10's creative problem-solving approach as it encourages out-of-the-box thinking to generate ideas.

Integration of living ecosystem thinking

The statements aim to capture as much of the essence of the Living Ecosystem Mindset as possible.

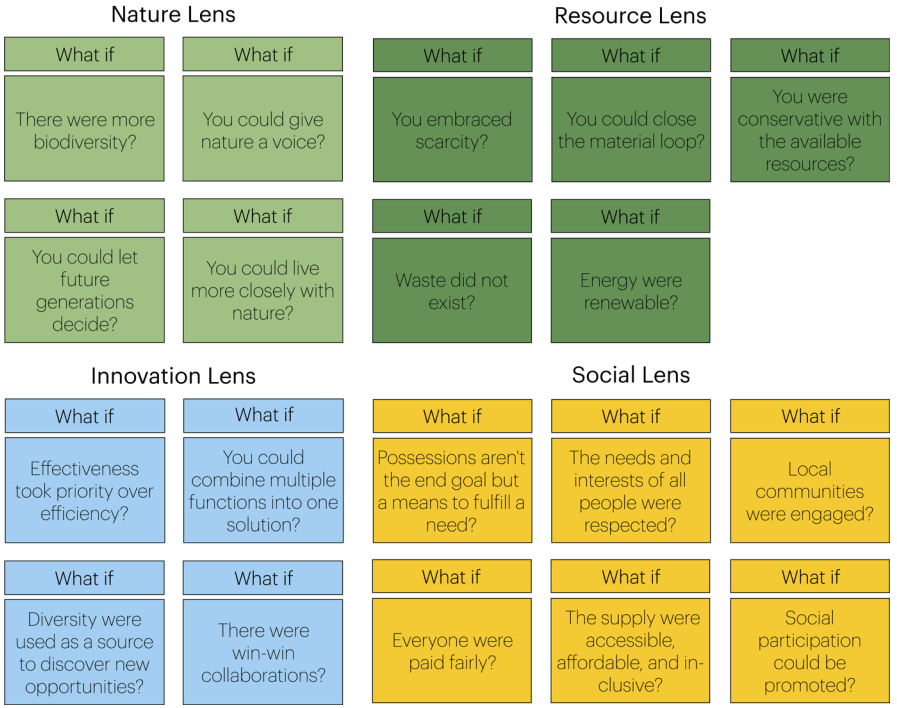

Figure 7.12. Wider Lens Card Set

7.3 Concept Validation

As illustrated in Figure 7.13, the concept underwent three iterations to finalize its prototype. Each iteration comprised a create, test, and evaluate phase, during which sessions were organized with various individuals from IN10 to validate and provide feedback on the concept. The session blueprint established in the previous section served as the initial prototype for the first testing. The evaluation process included assessing the criteria described in Section 6.3.

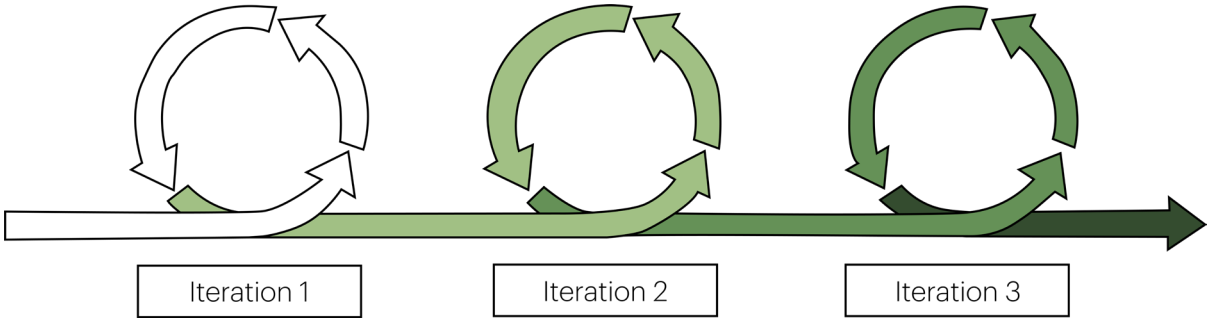

Figure 7.13. Three Iterations for Concept Validation

Iteration 1

The first iteration began with a validation session to test the concept's flow and objectives. This session also assessed its alignment with IN10's approach and gathered feedback on its gaps and ideas for improvement.

TEST

Participants

The test involved two participants: the strategic director and a service designer. Both have been involved from the beginning of the project and are thus familiar with the Living Ecosystem Mindset. This allowed them to focus on providing feedback on the process steps and evaluating the suitability of these activities during a client session.

Method

Before the test, I prepared the context of the session around the Rotterdampas case study to ensure there was a fallback option in case the participants needed additional information. This allowed me to demonstrate what I did and how I did it during the test. The test comprised four steps to generate ideas for the Rotterdampas case (described in the previous section, whereby the project kickoff was left out). Miro was utilized for the testing process as the test had to be conducted online (see Figure 7.14).

EVALUATE

The hour-long test limited the depth of exploration for each activity. However, the prepared case study was a valuable reference and discussion piece to reflect on each step. Some steps were perceived as too complicated or unnecessary and thus needed either adjustments or removal. Another important insight was that the session ended abruptly, highlighting the need for a final activity to provide a more conclusive ending.

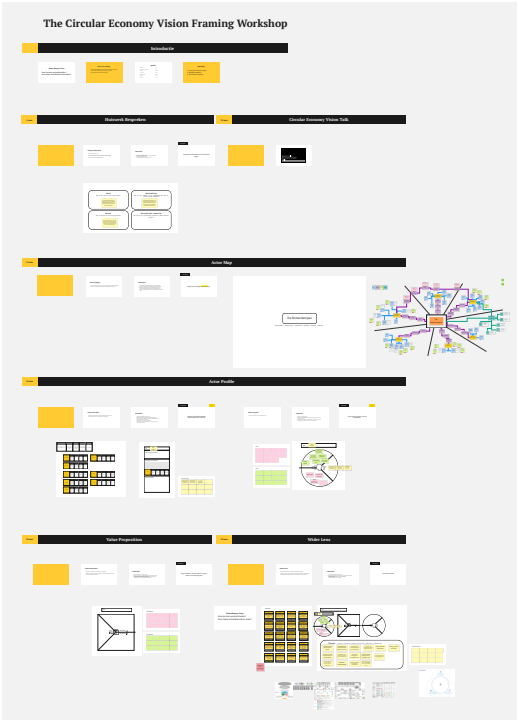

Figure 7.14. Prototype 1

Iteration 2

CREATE

The second iteration began by implementing insights from the first test to create a new prototype. The following adjustments were made:

- Vision Talk

To address feedback that the presentation was too theoretical, more visuals and examples were added, and more slides were included to introduce the other activities.

- Actor Map

Starting from an empty map was perceived as too challenging. Therefore, the new prototype will begin with a pre-filled map. Moreover, I will test whether the map can serve as a brainstorming activity to explore initial opportunities and solutions.

- User Profile

In response to feedback that the value proposition canvas was too complex, this activity will be simplified by focusing solely on the customer segment with jobs to be done.

- Wider Lens

Feedback regarding the complexity of the four lenses led to simplification by narrowing down to two lenses—nature and social—for better focus during brainstorming. Furthermore, practical examples were added to the statement cards to enhance their understanding.

- Circular Idea

To address the abrupt ending of the session, a new activity is included to summarize ideas from the Wider Lens and conclude by choosing the best ones.

TEST

This session aims to replicate a real client scenario to assess the flow of the session and the activities' understanding and effectiveness.

Participants

This test involved three individuals from various departments within IN10:

- A concept creative experienced in communication concepts, campaigns, and video content.
- A digital strategist experienced in solving a wide variety of digital problems.
- A senior content creator experienced in storytelling projects for clients.

As the test aimed to simulate a client setting, participants with little knowledge of my project were selected. At the beginning of the session, they were asked to imagine themselves as part of the Rotterdampas team. Given Rotterdampas' regular collaboration with IN10, participants were familiar with the organization, with some having prior experience working with them.

Method

Given the limited time, the test mainly focused on validating the flow of the session (see Figure 7.15).

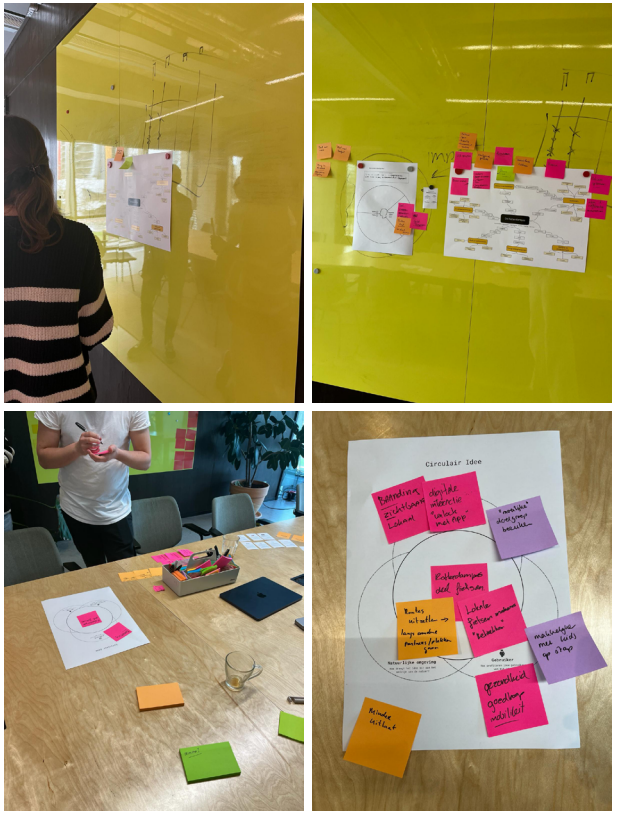

Figure 7.15. Prototype 2

EVALUATE

Overall, the session flow was effective. However, two decisions have been made to simplify the session.

Firstly, the project kickoff felt rushed, resulting in some awkward moments. This may have been because participants were unprepared, which would not be the case in a real client scenario. Also, the absence of an icebreaker

beforehand might have contributed to this discomfort. Therefore, the project kickoff will need further development. However, given the anticipated time required to tailor it entirely to IN10, this activity will fall outside the scope of the Circular Future Session and be referenced as a recommendation.

Secondly, the user profile was perceived as too complicated, mainly because the focus on fundamental needs was too abstract and complex to generate ideas. As a result, it will be removed from the session. Nevertheless, the mindset shift during this activity, focusing on reconceptualizing human well-being, holds promise and should, therefore, be further examined by IN10 to find out how they can integrate this into their current user research methods.

Iteration 3

CREATE

The following iterations were made before the start of the final test:

- Vision Talk

More visuals were added to simplify the presentation slides and enhance understanding of the theoretical concepts.

- Actor Map

The pre-filled map proved effective during the previous validation, providing context for the ideation phase. Therefore, this time, emphasis was placed on its creation. This is crucial because IN10 will need to produce such maps in the future and thus needs to understand their added value.

- Wider Lens

While the activity generally worked well, the examples provided underneath the 'what-if' questions were too prescriptive, limiting participants' thinking. Therefore, these examples are moved to the presentation to ensure participants absorb them but also will have forgotten them by the time ideation begins, thus not limiting their creativity.

TEST

Participants

The final validation test differed from the previous ones as it involved an open discussion with three experienced IN10 facilitators: a senior interaction designer, a creative strategist, and a service designer. The purpose was to explore whether and how they would apply the Vision Talk and Actor Map to their own co-creation sessions and assess whether they would be comfortable using them.

Method

The session began with my Vision Talk presentation and a discussion to gather their feedback. Subsequently, I presented the steps for creating the Actor Map, demonstrating how they could develop their own to discuss and evaluate potential use cases for such a tool.

Prototype

The presentation slide deck used for this test can be found in Appendix E.

EVALUATE

The participants viewed the activities as a promising foundation for further development and felt confident in elaborating on them in a real client setting. However, they emphasized the need for more time to properly explain and convey the idea of the concepts of the circular economy and systems thinking more thoroughly, which, due to time constraints, was not possible during this test.

- Vision Talk

The presentation leaned towards an academic tone with fewer examples than IN10 typically uses. The participants suggested that if they were to conduct the Vision Talk themselves, they would spend more time on it, possibly half a day, and incorporate additional examples, ideally tailoring them to the session's topic. They also mentioned the possibility of adding interactive elements to involve the participants more. Furthermore, they suggested dividing the talk into three parts to enhance the structure of the project: covering the circular economy and systems thinking and introducing the actor map of the project.

- Actor Map

The participants proposed starting with a finished actor map and collaborating with the client's contact person in the preparation phase to ensure accuracy and relevance, making this activity less intimidating. Furthermore, they suggested the possibility of including non-human actors in the map to highlight the ecological aspect of the system. This idea sounds promising, but due to the project's time constraints, it will be something for IN10 to explore and further develop.

08 CONCEPT

This chapter provides context for the Circular Future Session and highlights its value for IN10. Furthermore, it explains how the session enhances participants' awareness of the circular economy and empowers them to envision a desired future, detailing its design goal outlined in Section 6.2. Developed and validated through a learning-by-doing approach, as discussed in Chapter 7, the Circular Future Session ensures its ease of use, alignment with IN10, and integration of living ecosystem thinking.

Figure 8.1 illustrates the concept through the analogy of the North Star, representing a guiding light for navigation. Similar to how sailors rely on the North Star for direction, the concept is designed to assist businesses in navigating toward their circular future vision. It comprises four activities: the Vision Talk, Actor Map, Wider Lens, and Circular Idea.

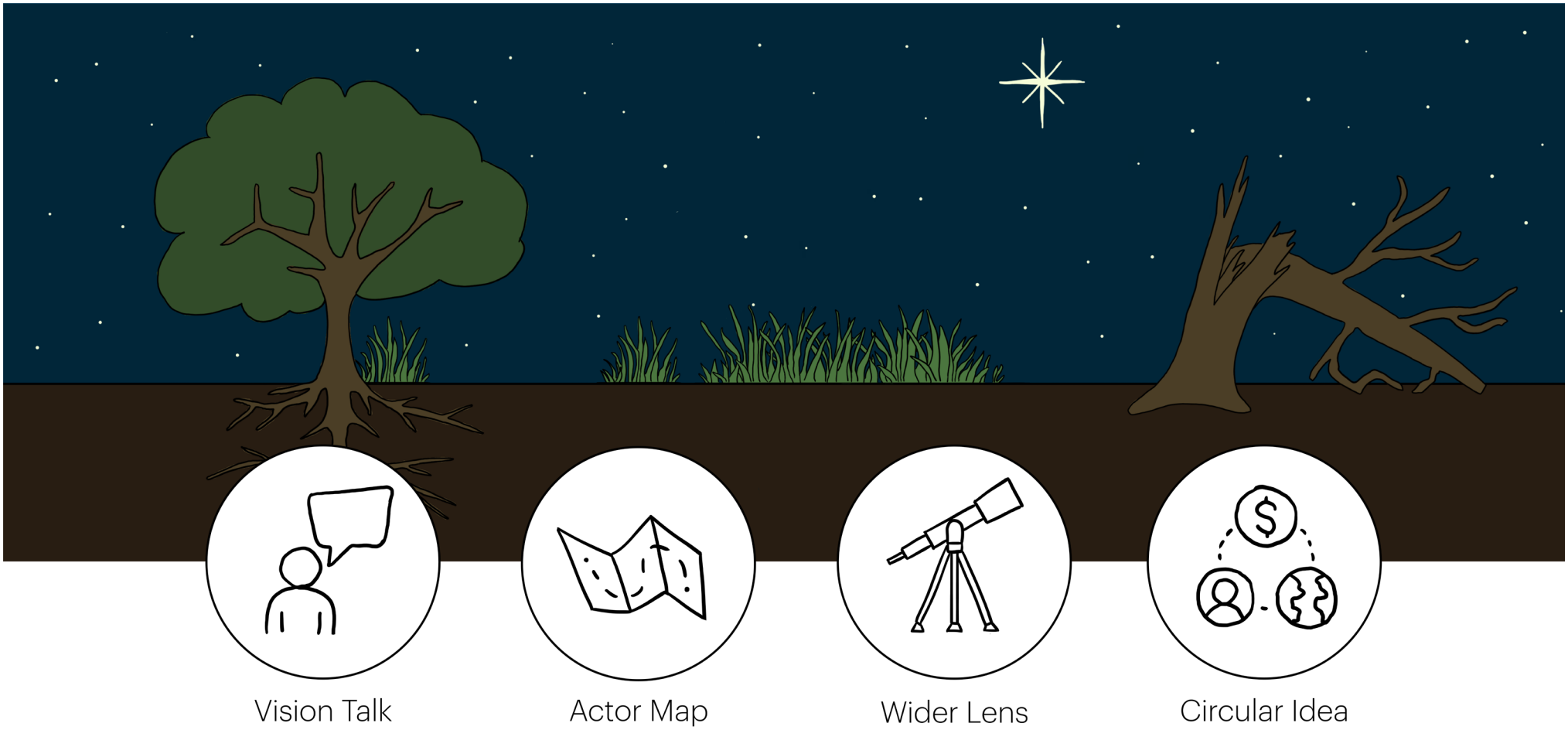

Figure 8.1. Analogy Circular Future Session

8.1 Concept Description

Context Of The Session

The Circular Future Session is a theoretical foundation for IN10's expansion toward designing for the CE transformation. Furthermore, its activities can be customized and integrated into IN10's existing toolkit to develop tailored sessions. Figure 8.2 presents an overview of the process, aligning with IN10's design thinking approach described in Section 4.2 and introducing a systemic design approach outlined in Section 5.2. The prepare, prototype and test phases are showed as suggestions and to be able to place the context in a wider context.

The session lasts around half a day and is divided into three main parts. Initially, it aims to establish a shared understanding among participants by educating them about the principles of nature's circular economy and the basics of systems thinking. Subsequently, the focus shifts to comprehending the project's broader context by mapping all the actors involved rather than solely its stakeholders. Ultimately, the session concludes by generating ideas for a circular future, utilizing the Actor Map in the second part combined with the Wider Lens and Circular Idea activities to explore ideas and identify leverage points.

The composition of the session participants depends on the project's nature. This may involve various experts within the organization or other key stakeholders relevant to the project's objectives. During the session preparation phase, actors will be analyzed to help select suitable participants. This analysis is crucial to determining the most relevant individuals to engage in the session.

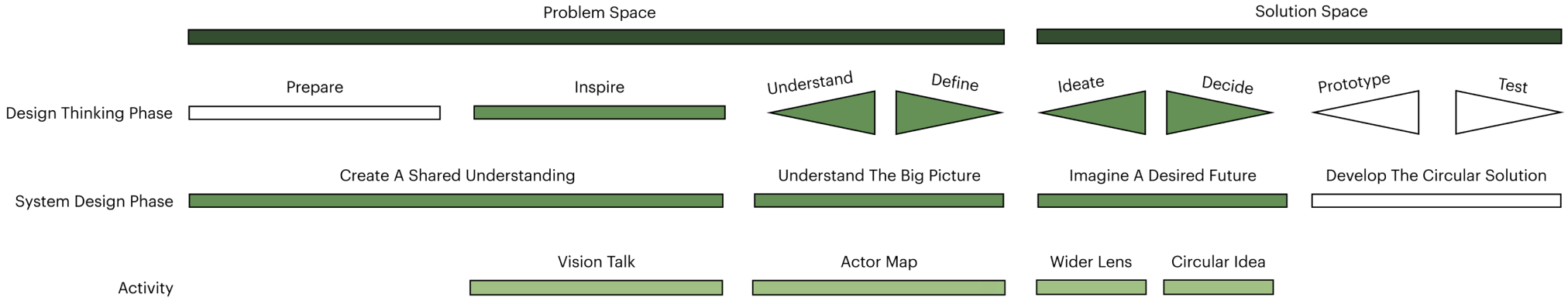

Figure 8.2. Session Process Overview

Value For IN10

The Circular Future Session contributes value to IN10 in several ways:

- Introducing Living Ecosystem Thinking

The session enables IN10 to uncover new opportunities and solutions for the CE transformation by presenting a new way of thinking about the circular economy.

- Raising Awareness About The Circular Economy

Through activities like the Vision Talk and Wider Lens, the session deepens participants' comprehension of the circular economy, highlighting both its social and ecological dimensions. This equips IN10 with the insights needed to convince clients about the importance of integrating these aspects into their CE transformation efforts.

- Leveraging IN10's Storytelling Skills

The session utilizes IN10's expertise in storytelling to convey research findings on the circular economy effectively. By creating compelling narratives that resonate with the Living Ecosystem Mindset, clients and stakeholders can be engaged in a way that promotes comprehension and motivates them to take action toward embracing circular practices.

- Including Invisible Actors

Taking a holistic approach, the session considers end-users and a wider range of actors within the system. By doing so, IN10 is able to design solutions that benefit a broader group of individuals within the ecosystem.

- Translating Client Ambitions Into Tangible Ideas

By adopting an outcome-oriented approach, the session effectively translates client aspirations into concrete ideas. These ideas can be further developed into new services, aligning with the client's goals and promoting circularity.

8.2 Activity Overview

This section describes how each activity contributes to the session's goal and evaluates how the criteria outlined in Section 6.3 are met. The concept encompasses the following activities:

1. Vision Talk
2. Actor Map
3. Wider Lens
4. Circular Idea

Vision Talk

The Vision Talk aligns with IN10's existing practice of organizing expert talks to inspire participants with knowledge about specific topics. This presentation aims to educate participants about the circular economy, focusing on its social and ecological implications derived from the Living Ecosystem Mindset discussed in Section 3.3. Consequently, delivering this presentation requires someone from IN10 to become an expert in living ecosystem thinking.

Given the dual aspect of living ecosystem thinking, the presentation is divided into two parts: conceptualizing the circular economy and introducing systems thinking, as depicted in Figure 8.3.

Match with the concept criteria:

- C1—The slide deck serves as a tool for IN10 to develop expertise in living ecosystem thinking, empowering them to articulate and conceptualize the social and ecological dimensions of the CE. This leverages their strengths as creative problem solvers.
- C6 & C7—The presentation is designed to increase awareness and provide education on the principles of nature's circular economy. Additionally, it includes a short introduction to systems thinking to prepare participants for the Actor Map activity.
- C5 & C8—The talk offers an opportunity to create a shared mindset among participants.

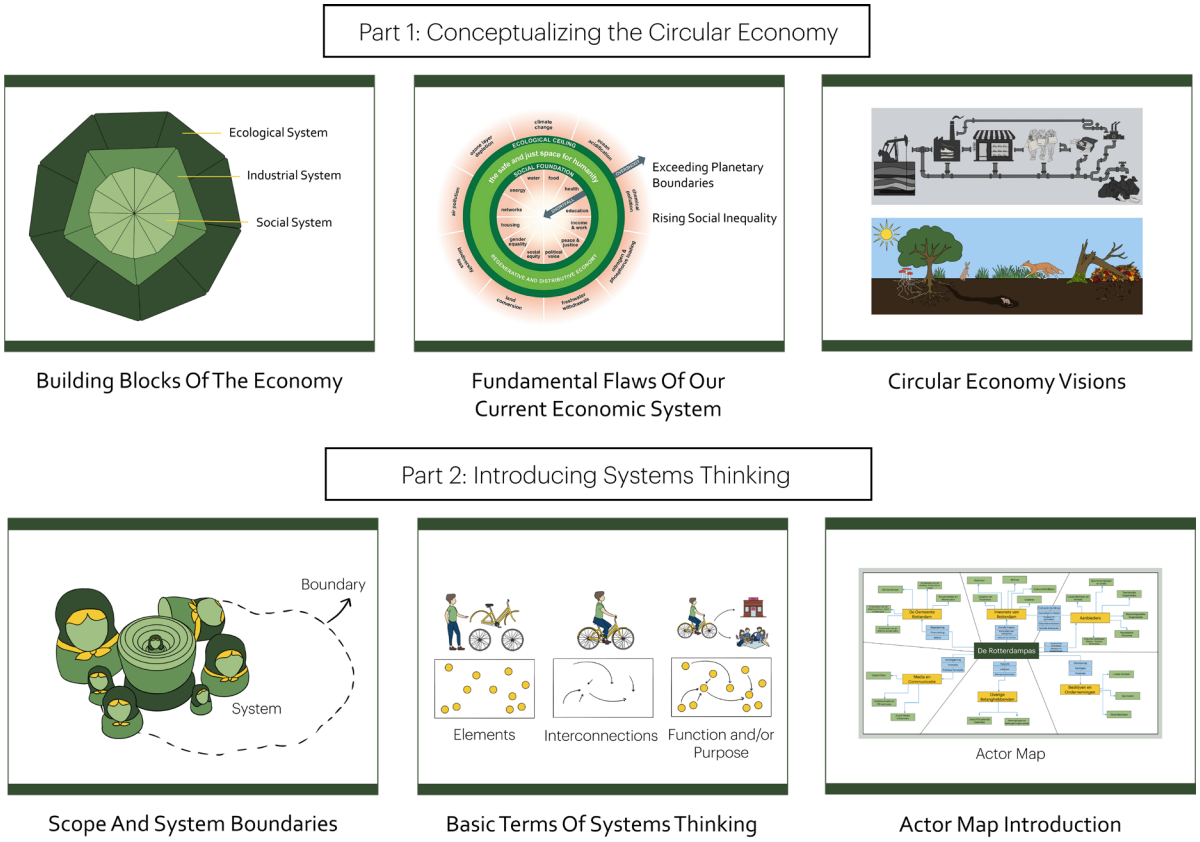

Figure 8.3. Vision Talk Slide Deck

Actor Map

This map visualizes the various actors within the system. It primarily offers insight into the broader context surrounding the topic and identifies actors who might not be immediately visible but still influence or are influenced by the topic. Additionally, this visualization can spark new ideas by uncovering unexpected relationships or connections.

Match with the concept criteria:

- C1 & C2—This activity introduces IN10 to a new tool to help them adopt a systemic design approach. It provides a comprehensive view of the system's actors and evaluates the effectiveness and impact of the solutions for a wider audience.

A manual has been developed for IN10's designers to help them create their own actor maps. The manual is organized into two phases: 'prepare,' which outlines the steps to be taken before the session, and 'facilitate,' which details the steps required during the session.

PREPARE

Step 1: Make strategic decisions

- Begin by identifying the main topic to be mapped.
- Set clear boundaries around this topic.
- Determine the level of specificity required, including geographical scale (e.g., local, regional, or national), and decide whether to focus on generic or specific actors. Tip: Simplify complexity by creating separate maps for subtopics or different levels of detail.

Step 2: Frame the system

- Define the core of the map and position it centrally on the page.
- Enclose the core with a circle and label it accordingly.
- Identify related subsystems that influence the core and allocate appropriate space around each.

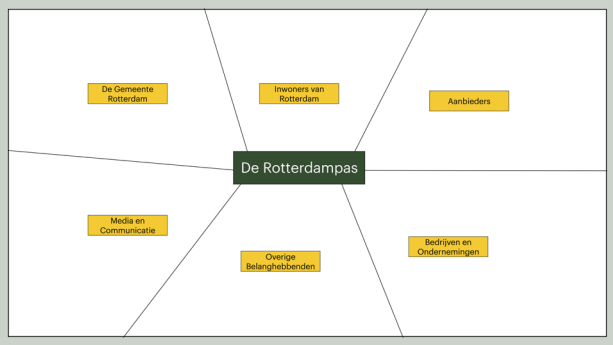

Figure 8.4. Actor Map: Preparation Step 2

Step 3: Identify the main actors in the system

- Explore the roles of various actors through internal documents and desk research.
- Select the most relevant ones and plot them on the map.

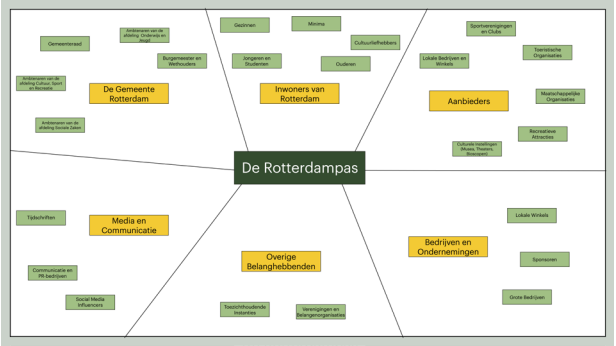

Figure 8.5. Actor Map: Preparation Step 3

Step 4: Map the actors' relationships and connections

- Define the nature of relationships between actors and the topic.
- Identify connections between actors on the map.
- Illustrate these connections using solid lines for strong or established relationships and dotted lines for weak or emerging connections.

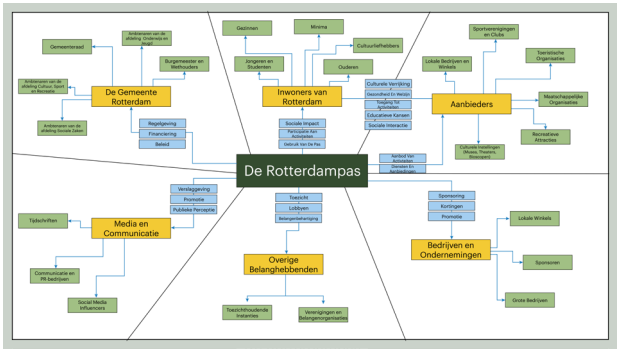

Figure 8.6. Actor Map: Preparation Step 4

Step 5: Refine the actor map

- Work closely with the client's contact person to refine the actor map.
- Seek feedback to improve and enrich the map, ensuring its accuracy and effectiveness.

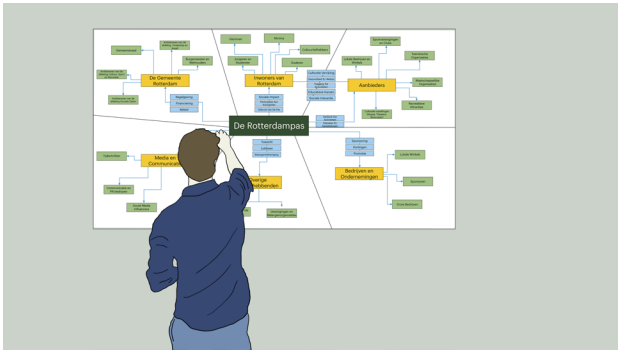

Figure 8.6. Actor Map: Preparation Step 5

FACILITATE

Step 1: Introducing the actor map to the participants

- Clearly explain the purpose of the actor map and offer examples to ensure comprehension.

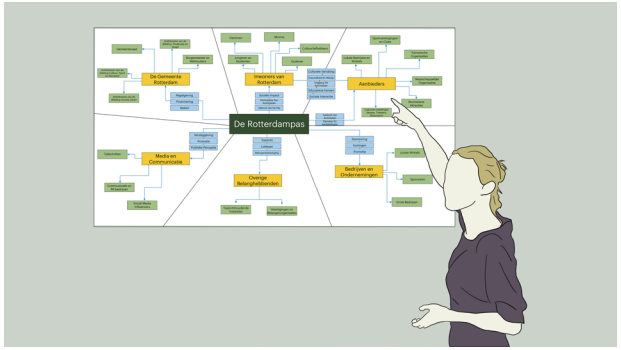

Figure 8.8. Actor Map: Facilitation Step 1

Step 2: Splitting the map

- Divide the map into sections for simplification and clarity of context. This step will complement the brainstorming session.

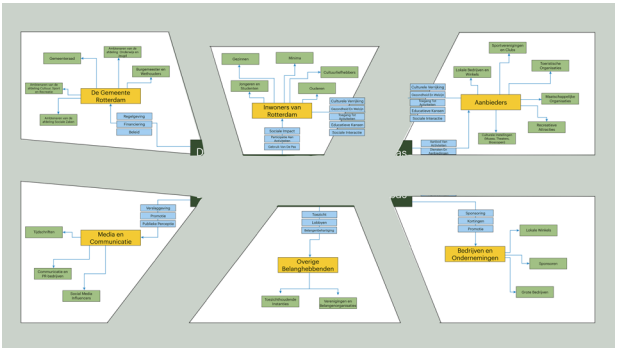

Figure 8.8. Actor Map: Facilitation Step 2

Step 3: Brainstorming solutions

- Step back and adopt a bird's-eye view of the actor map to identify potential opportunities.
- Utilize the Wider Lens cards to stimulate creative thinking and generate circular solutions.

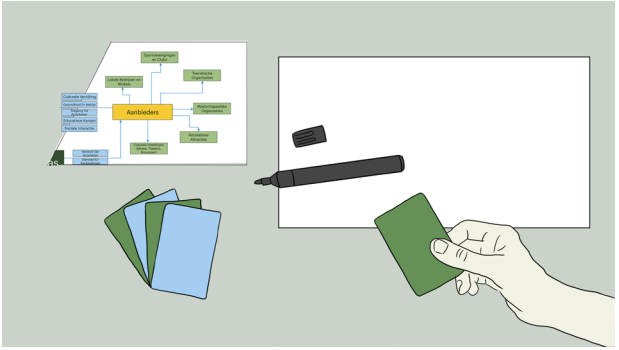

Figure 8.8. Actor Map: Facilitation Step 3

Wider Lens

The Wider Lens consists of cards designed to facilitate brainstorming and inspire new ideas influenced by living ecosystem thinking. These cards are categorized into nature and social lenses, each conceptualizing a distinct aspect of the circular economy, as shown in Figure 8.11. Currently, the card set includes 10 diverse 'what if' statements. These statements serve as a starting point for IN10 to expand upon, thereby broadening the scope of the circular economy.

Match with the concept criteria:

- C1—The Living Ecosystem Mindset is translated into a card set featuring 'what if' scenarios designed to inspire ideas. The set can be customized for specific projects.
- C3 & C4—The scenarios are formulated in a practical and understandable way, ensuring accessibility to a wider audience. They do not necessitate a deep understanding of CE's details.
- C5 & C6—The card set fosters individual brainstorming, promoting active involvement. Moreover, the scenarios offer more stimulating statements than the traditional reuse, reduce, and recycle scenarios of the 10 R-Ladder, encouraging creative and divergent thinking.

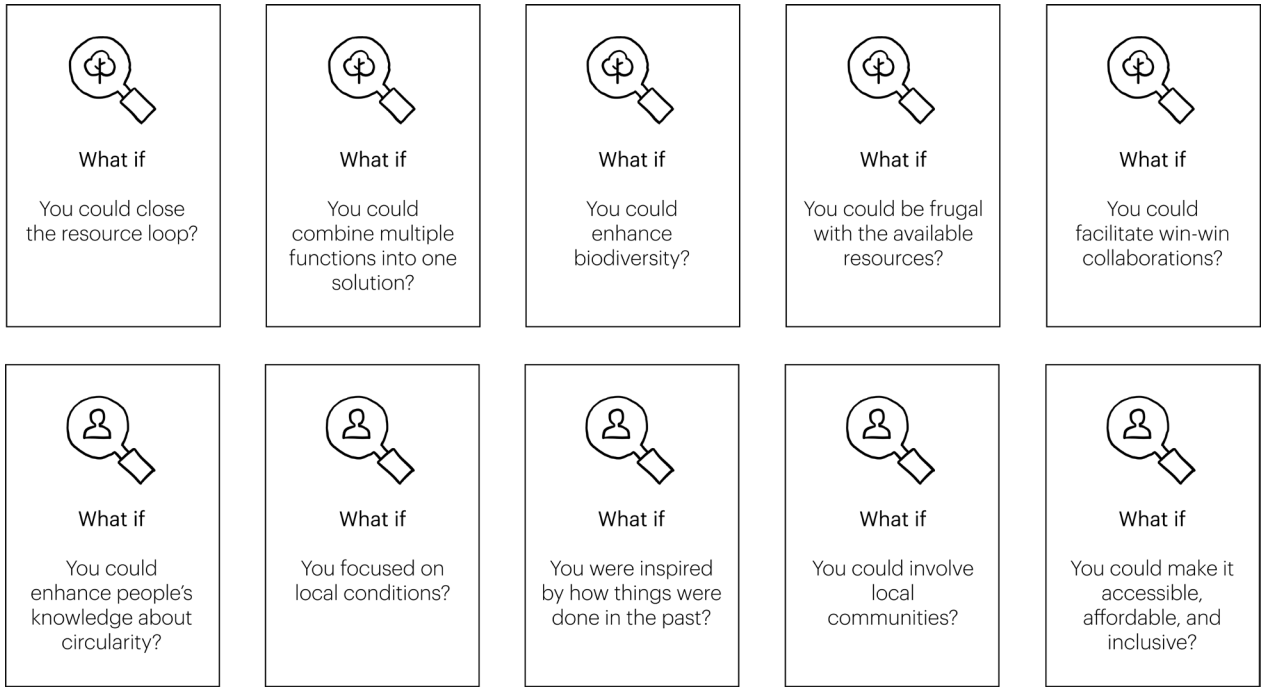

Figure 8.11. Wider Lens Card Set

Below is a step-by-step guide providing detailed instructions for the activity:

STEP 1
The facilitator should begin by defining a clearly framed problem that participants can use as a basis for generating solutions. Additionally, the actor map developed in the previous activity can offer additional context for this problem and provide an opportunity to explore leverage points within the system by considering solutions for more actors than just the user and the most important stakeholders.

STEP 2
The participants will randomly select one of the cards and use it as inspiration. They will continue generating ideas until they run out of them. At this point, they rotate to a new card. Before the session, the facilitator may choose to use all the cards or make a selection, depending on whether the client's question is already leaning in a particular direction.

STEP 3
Once the individual brainstorming session is over, participants will share their ideas. The facilitator will lead the discussion, focusing on identifying the most promising ideas. These ideas will then be improved and expanded to explore more potential solutions.

Circular Idea

In this activity, the ideas generated from the previous exercise are converged by selecting the most valuable one. Techniques like dot voting or an impact effort matrix, familiar to IN10 and commonly used in their sessions, can accomplish this. The number of Circular Idea canvases required depends on the number of chosen ideas.

Once the idea is positioned at the center of the canvas, as demonstrated in Figure 8.12, it can be enriched with supporting ideas, images, and sketches to increase its tangibility and enhance communication. Following this, the activity can detail how the idea benefits the organization, the user, and the environment. The three surrounding circles symbolize the Triple Bottom-Line dimensions of people, planet, and profit, embodying sustainability's holistic nature. The canvas is sourced from the Ecodesign Circle (Ecodesign Circle, 2021).

Match with the concept criteria:

- C2—The outcome is a starting point for further exploration of the ideas and development of concepts for prototyping and testing.
- C3 & C4—The session concludes by identifying the most valuable ideas and outlining their benefits for the organization, users, and the environment. This helps participants understand the positive impacts their solutions could provide.

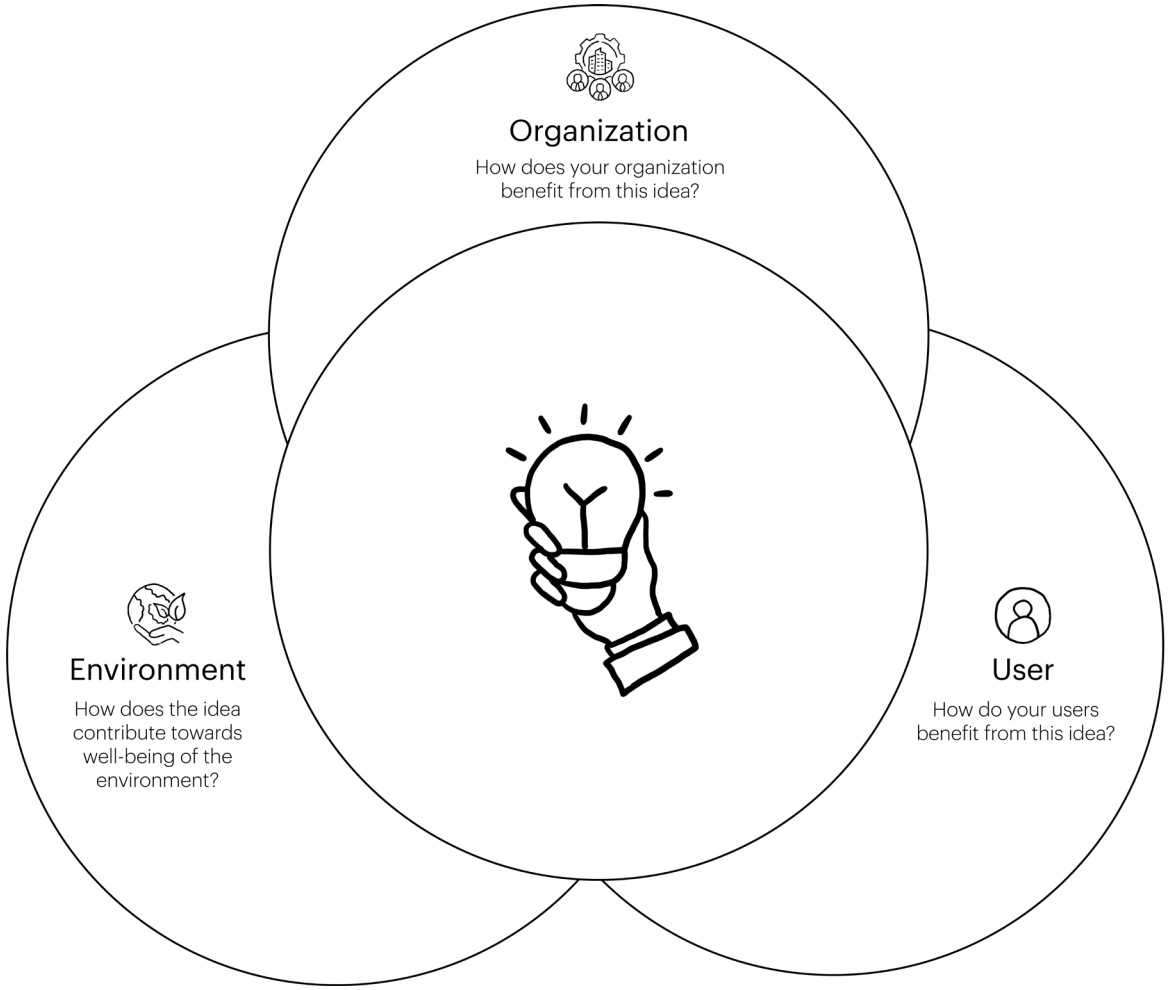

Figure 8.12. Circular Idea Canvas (Ecodesign Circle, 2021)

CONCLUDE

09 CONCLUSION

Businesses recognize the need to transition to a circular economy, but there is confusion about how to best accomplish this. IN10 aims to assist by leveraging its creative problem-solving approach to translate circular aspirations into tangible solutions. The concept contributes to IN10's ambition by enhancing their understanding of the circular economy and establishing a theoretical foundation for their first co-creation session of their Circular Sprint Series. The project addressed two main research questions:

1. What kind of innovation mindset should IN10 embrace in designing for the circular economy?
2. How can this mindset be integrated into a co-creation session?

Transitioning from a linear to a circular economic system requires a systemic innovation approach, shifting from a linear to a systemic mindset. Additionally, the dominant technocratic narrative has limitations, constraining the scope and impact of its solutions. In response, this project introduces the Living Ecosystem Mindset, detailed in Section 3.3, which includes:

- Aspiring to fit on this planet
- Advocating for distribution and inclusion
- Adopting Life's principles
- Reconceptualizing human well-being

This mindset aligns well with the Circular Future Session discussed in Chapter 8. The context analysis outlined in Chapter 4 highlights IN10's success and expertise in co-creation sessions to drive transformations, particularly within the digital domain. While the Circular Future Session is especially well-suited to this aspect, its systemic approach is new territory for IN10.

9.1 Project Evaluation

The project consists of two parts: the mindset and the co-creation session. Below, these two components are separately evaluated based on their academic and practical relevance and limitations.

Living Ecosystem Mindset

ACADEMIC RELEVANCE

Diverse interpretations and definitions of the circular economy challenge its transition, particularly when thinking remains linear. Linear thinking, evident in the machine metaphor, hampers the transition by neglecting its social dimension.

Therefore, a non-linear conceptualization is essential, with the forest metaphor offering a promising alternative. Based on this metaphor, the Living Ecosystem Mindset presents a holistic perspective on the circular economy by addressing the limitations of the technocratic narrative. It emphasizes ecological and social values with the following principles:

- Inspiration From Nature

This mindset draws inspiration from nature's flexible and open-ended cycles, aligning with biomimicry's philosophy and innovation strategies.

- Integration Of Social Sustainability

This mindset advocates integrating social sustainability considerations, broadening the scope of circular solutions beyond technological fixes.

- Human-Centered Focus

This mindset redefines the purpose of the circular economy, emphasizing meeting human needs over pure economic growth.

PRACTICAL RELEVANCE

For IN10, embracing and integrating this mindset offers clarity and guidance in navigating the CE landscape. It necessitates a shift towards systemic thinking, empowering the company to address underlying causes rather than surface-level symptoms.

Although implementation will take time, it holds the promise for IN10 to distinguish itself and secure a competitive advantage. Moreover, this mindset aligns with IN10's mission to design for positive change, inspiring a vision for a people-centered and sustainable future.

LIMITATIONS

Despite its promise, the Living Ecosystem Mindset faces practical challenges in implementation:

- Translating Theory Into Practice

Integrating theoretical insights into practical applications demands real-world experience, posing a potential barrier to effective implementation.

- Adopting A New Approach

Embracing systems thinking requires additional training and development for IN10's designers to incorporate it into co-creation sessions confidently.

- Addressing Knowledge Disparities

There will always be a gap between the depth of understanding designers require in living ecosystem thinking and what clients need to comprehend to participate in co-creation sessions. Finding the optimal balance necessitates real client experience.

Circular Future Session

The Circular Future Session consists of the systemic design phases: creating a shared understanding, understanding the big picture, and envisioning a desired future.

ACADEMIC RELEVANCE
Viewing the CE transformation through the lens of living ecosystem thinking necessitates a systemic approach. This session is inspired by the systemic design discipline, which emphasizes envisioning a positive desired future vision as its initial step.

Furthermore, the concept seeks to integrate the Living Ecosystem Mindset into IN10's approach. Given their solution-focused preference, this session's objective goes beyond raising awareness about the circular economy; instead, it aims to bridge the gap between awareness and action by connecting actionable steps to drive meaningful change.

PRACTICAL RELEVANCE
The co-creation session is a starting point for IN10 to design for the CE transformation. The session raises awareness about the circular economy and its systemic nature and promotes a positive and proactive approach to generating ideas for a circular future. These ideas can subsequently be translated by IN10 into tangible change.

Moreover, the concept capitalizes on IN10's creative problem-solving abilities by introducing the Living Ecosystem Mindset, providing a distinctive perspective on the circular economy. This approach enables IN10 to perceive a broader range of opportunities, fostering innovation and creativity in addressing them.

LIMITATIONS
There are several limitations to consider:

- Bridging Theory And Practice

The theoretical concepts introduced in the session require simplification and translation into the practical context for effective communication with participants. Further development is necessary to bridge this gap.

- Clarifying The Starting Point

While the session serves as IN10's first step, the actual starting point remains somewhat ambiguous and depends on the formulation of the client's problem. A good project kickoff can be helpful in this regard.

- Validation In Context

Internal testing of the session within IN10 does not validate its applicability in a real client context, underscoring the necessity for external validation to ensure its effectiveness beyond internal testing.

9.2 Recommendations

This section presents recommendations for adopting the Living Ecosystem Mindset and facilitating the Circular Future Session, considering the limitations highlighted in the previous section, and the feedback received from IN10 during the validation tests.

1. Validation And Practical Examples

IN10 should validate the Circular Future Session with companies and iterate it to improve its effectiveness. Using practical examples from the validated companies as references in their sessions can provide a solid basis for further improvements.

2. Simplification And Integration

IN10 should refine the session to enhance accessibility and practicality, particularly for participants unfamiliar with the circular economy. Additionally, they should explore integrating existing activities and tools to fill any information gaps.

3. Customizing The Activities

Further development is necessary to enhance their practical applicability and tailor the activities to fit IN10's approach. For example, rephrasing certain 'what-if' cards or adding extra statements to the Wider Lens activity could improve comprehension of the broader concept of the circular economy and living ecosystem thinking. Additionally, incorporating new steps into the session, such as conducting user research or integrating IN10's trend radar, could help address existing gaps or deficiencies.

4. Expanding To Systemic Design

The session introduces IN10 to systemic design. As they develop their Circular Sprint Series, IN10 can delve deeper into this discipline by expanding upon the actor map introduced in the session. Additionally, they can seek and integrate more systemic design activities and tools to fully leverage the potential of designing for systemic transformations.

5. Positioning As Circular Economy Thought Leader

IN10 can position itself as a thought leader in the CE transformation by conducting additional research and building upon the Living Ecosystem Mindset. This will allow them to develop expertise in the field and effectively tackle the challenges encountered by organizations aiming to transform. Furthermore, sharing this research at the beginning of the session can inspire and educate clients and foster a shared understanding of the circular economy.

6. Facilitating A Project Kickoff

Taking time to develop an effective project kickoff will pay off because how a project begins often sets the tone for its outcome. Therefore, aligning the project's goals using shared terms and language is essential. This ensures the involvement and engagement of all participants, provides a smooth entry for the session, and enhances collaboration.

9.3 Discussion

This graduation project aimed to broaden IN10's approach to designing for transformations, addressing the systemic change necessary to achieve a circular economy. This shift requires embracing living ecosystem thinking and adopting a systemic design approach.

To fully realize its Circular Sprint Series, IN10 needs to focus on the following key aspects:

1. Enhancing Their Understanding Of Nature's Circular Economy

IN10 must invest in knowledge about the circular economy and the fundamental principles outlined in Section 3.3 to effectively execute the Circular Future Session and successfully offer its services to clients.

2. Becoming Familiar With Systemic Design

The Circular Future Session has focused on one aspect of systemic design. IN10 must conduct further research into the subsequent steps outlined in Section 5.2 to develop additional co-creation sessions and complete their Circular Sprint Series.

3. Expanding The Skillset Of Their Designers

IN10 should expand the skillset of its designers, drawing inspiration from the design roles outlined by the Design Council, as described in Section 5.2.

9.4 Personal Reflection

This report is the result of an accumulation of challenges I encountered throughout this project, presented in chronological order:

1. Defining a manageable scope for the project was difficult and time-consuming due to my initial unfamiliarity with the circular economy.

2. The exploration of circular strategies revealed two crucial insights: first, there was an overwhelming emphasis on technical aspects, which were beyond IN10's expertise and, therefore, not useful. Second, it became clear that relying solely on these strategies would not guarantee success. As a result, the project's initial direction reached a dead end.

3. Interviews with circular design experts uncovered a flaw in my approach: I approached the circular economy with a linear mindset, which hindered the effectiveness of previously explored strategies. Fully embracing systems thinking took considerable time and effort to grasp.

4. Recognizing the shortcomings of a technocratic perspective, particularly its neglect of the social dimension within the circular economy, necessitated additional research into theories that could address these gaps.

5. Conceptualizing an alternative CE vision proved challenging, especially in managing my curiosity while staying focused on the research question. It often felt like opening Pandora's box, with each revelation triggering new insights and subsequent questions.

6. Introducing IN10 to a new way of thinking was time-consuming and required articulating and simplifying abstract theories to illustrate their practical applicability.

7. Adopting an alternative design approach capable of facilitating systemic change was uncharted territory for me, demanding thorough exploration to identify relevant elements to integrate into IN10's approach.

8. Utilizing a Miro board to document findings facilitated identifying and visualizing connections and gaps, though its infinite scroll function sometimes led to distractions from the research question. Nevertheless, this document will serve as a valuable resource for IN10 in the future, complementing this thesis.

Despite these hurdles, the project provided a valuable learning experience in the circular economy, systems thinking, designing for systemic change, and co-creation sessions, all of which were for me. Consequently, I am proud of the outcome and enthusiastic about exploring the application of living ecosystem thinking in practice.

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