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INTERNSHIP REPORT

**How to approach complex problems in an
organisation using collective intelligence: A critical
Case study of Circulab's tools and methods**

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GLOSSARY

CPS: Complex problem-solving

CSI: Critical-systemic intervention

ESG : Environmental, Social and Governance

VOTAT: Vary one thing at a time

SES: Sensorial, emotional, spiritual

ABSTRACT

In an increasingly globalised world facing the threats of climate change, organisational problems have become progressively more complex. The traditional problem-solving methods, tools, and processes, largely grounded in linear and rational assumptions, are no longer effective in addressing these challenges. New approaches should be explored and implemented to effectively address these challenges. This paper examines the processes and methods employed by Circulab, a French design and consulting company, to address complex organisational problems. Using an interpretive case study approach, it analyses a one-day workshop conducted with an international logistics firm. The analysis highlights a combination of methods and tools designed to foster collective sense-making, exploration, and interdisciplinary collaboration. Rather than identifying a single optimal method, the findings suggest that addressing complex problems requires the flexible orchestration of multiple approaches tailored to context and participants.

By providing a concrete empirical example, this paper contributes to the understanding of how organisations can move beyond conventional problem-solving standards and experiment with alternative practices better suited to complexity.

KEYWORDS : Collective thinking, complex problem-solving, transdisciplinarity, Design thinking, systems thinking, Theory U, process methodology, circular economy

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AI DISCLOSURE

This internship report was developed in strict accordance with the university's integrity norms and procedures. For the sake of transparency, I hereby disclose that certain artificial intelligence (AI) tools were used in the making of this report as follows:

- An AI-based paraphrasing tool (ChatGPT) was utilised to rephrase selected quotes from other authors for the literature review, nevertheless, ensuring that the original authors' own ideas or data were always properly cited.
- An AI-assisted grammar-checking tool (Grammarly) was used to improve readability while always ensuring my original content and ideas.
- A generative AI tool was consulted for outlining and brainstorming purposes only. All final writing, thoughts, synthesis and critical analysis are my own work.

Nonetheless, I have ensured that the use of AI tools has not compromised the integrity or originality of my work. All sources of knowledge, whether traditional or AI-assisted, have been properly cited in accordance with the guidelines. This report was prepared with an ethical approach to AI research and writing in mind, and I take full responsibility for the ownership of its content.

1. INTRODUCTION

Facing a problem is a common experience in an individual's lifetime. Challenges are inherent to social and organisational systems and play a crucial role in fostering doubt, learning, and innovation by prompting reflection, experimentation, and the search for novel solutions (Simon, 1955; Dorst, 2011; Funke, 2021). A problem can be understood as a set of interacting elements, including actors, goals, constraints, resources, and context, shaping both how it is understood and how solutions are developed. In professional contexts, problem-solving is a recurring task for which individuals are often rewarded for finding effective solutions. Professionals such as business consultants, accountants, and researchers are responsible for tasks that may encounter problems and are expected to diagnose these issues and implement effective solutions (Kamensky, 2011). This work relies on competencies developed through education, professional experience and critical reflection (Fischer et al., 2012; Risopoulos-Pichler et al., 2020). Standards and methods have since then been developed to tackle such challenges and are now widely taught in higher education. Although these methods have shown effectiveness, it also shows constraints in cognitive and informational limits due to its grounding in rational decision-making when faced with challenges of different natures (Simon, 1955). The widely discussed challenge of climate change is a clear example of the increasingly prominent complex problems we face. Although such challenges are not new, they are growing in urgency and importance. At the same time, other critical issues, such as mass migration, biodiversity loss, and housing crises, are often overlooked, yet they too exemplify what is commonly defined as complex problems. Despite the evolving nature of these challenges, our methods and tools to tackle them are not. Traditional methods of problem-solving are becoming less efficient and do not fully grasp the complexity of the problems we face. Reductionist and conventional linear problem-solving are claimed to be insufficient and ill-suited to tackle the dynamic, interconnected problems of our modern world (Dorst, 2011; Funke, 2021; Midgley, 2015; Midgley, 2023). As noted by Da Costa Junior et al. (2019), a paradigm shift is needed for problem solvers to deal with high levels of complexity. This growing gap between the complexity of modern problems and the limits of traditional approaches motivates the rise of new methods designed to better understand and address complex challenges (Brown, 2008; Dorst, 2011; Harvey & Kou, 2013; Midgley, 2015)

Over the last 6 months, I carried out an internship as part of the Master's Final Work at Circulab. They are a design company based in Paris dedicated to accompanying organisations towards the circular economy. The circular economy is a fairly recent model that has gained popularity over the last 10 years. Its process cannot be traced back to a single author, but rather to a mix of schools of thought that it draws on, such as biomimicry, cradle-to-grave design, industrial ecology, and the blue economy (Dabija & Năstase, 2024; Kirchherr et al., 2017). This concept has been given numerous definitions over the years, but according to Kirchherr et al. (2017) it can best be defined as:

An industrial system that is restorative or regenerative by intention and design. It replaces the 'end-of-life' concept with restoration, shifts towards the use of renewable energy, eliminates the use of toxic chemicals, which impair reuse, and aims for the elimination of waste through the superior design of materials, products, systems, and, within this, business models.

In: Kirchherr et al. (2017), p.226.

It sets itself in contradiction to the linear model our society primarily functions under and is meant to be more in sync with the way we produce and consume products and services within the limits of our planet (Dabija & Năstase, 2024). The circular economy can be applied at different levels, including business models, products, and services. However, implementing such a transformative model remains a challenge and is lacking tools and methods to implement it (Bais et al., 2025). As the nature of contemporary challenges evolves, there is a growing need for new processes, ways of thinking, interdisciplinary cooperation, communication and a plurality of perspectives to address them (Bammer, 2013; Risopoulos-Pichler et al., 2020; Stein, 2023). What Circulab does, and rightfully so, is put collective thinking at the centre of their problem-solving strategies. Through interactive workshops, they bring project stakeholders together to collaboratively develop their own solutions. Different literature confirms that in tackling future complex problems such as global climate change, collective thinking and collective intelligence should be more highlighted and used (Centola, 2022; Gregory et al., 2020; Jones et al., 2025; Malone & Klein, 2007; Galesic et al., 2023; Zhang et al., 2025). This implies moving beyond traditional heuristics and judgment standards to create space for more imaginative, open-minded, and exploratory forms of thinking (Bais et al., 2015).

The aim of this paper is to examine the methods and tools used by the French design company Circulab to foster collective thinking in a professional context, addressing the following research question:

How does a French company apply collective thinking methods to identify and develop solutions to complex circular economy challenges?

The paper is structured in several steps. First, a literature review examines the differences between complex and complicated problems, providing insights into emerging methods for CPS and their shared characteristics. This is followed by an interpretive case study analysing Circulab's methods and tools. Finally, the paper discusses limitations and concludes with a summary of key findings and reflections. After the conclusion, two additional sections are dedicated to the roles and contributions made during the internship, as well as a short reflection on the academic trajectory and internship experience.

2. LITERATURE REVIEW

2.1 DEFINING COMPLEX PROBLEMS

The notion of complexity has been extensively discussed in previous theory. Nevertheless, literature does not always align with the key points defining the concept. This section is meant to provide clarification and general alignment on the topic and to highlight the importance of addressing complexity in organisational contexts.

A complex problem may be defined as a challenge situated in a dynamic system involving interdependent variables (Fischer et al., 2012; Midgley, 2023). The key characteristic defining complexity is the continuous evolution of the elements it involves, and the impossibility of controlling them all (Funke, 2021; Malekpour et al, 2016). Sydelko et al. (2021) and Fischer et al. (2012) claim that the complexity of relations can be quantified by the number of variables related to each other. As such, the more features a problem involves, the more complex it becomes. The degree of complexity is also influenced by the diversity of those elements, according to Kamensky (2011). From this perspective, complexity can be observed in both everyday situations and organisational contexts, from routine actions such as crossing a road to strategic decision-making processes. When faced with a complex challenge, it is therefore valuable to explore the dynamics among variables and to develop expertise in the problem's structure to identify optimal directions (Fischer et al., 2012; Sydelko et al., 2021). We explicitly use the word “optimal” and do not refer to a “solution” to highlight another key characteristic of complexity, which is that there is not one solution to a complex problem, but only ways to influence it or drive it in a certain direction (Kamensky, 2011; Loureiro & Pereira, 2024; Poli, 2013; Verissimo et al., 2024). These challenges require decision-making that focuses on influencing system trajectories rather than identifying definitive solutions. Every option gives

rise to multiple future scenarios, each with an expected outcome. This idea is captured by Fischer et al. (2012) as follows:

Each possible input vector (e.g., an action in a complex scenario) can be considered an option, with several expected consequences (e.g., changes in the output variables). Each consequence may have a subjective utility and an expected probability specific to the current context. In complex scenarios, there can seldom be an exhaustive evaluation of all possible options and their weighted consequences.

In: Fischer et al. (2012), p. 29.

A complex problem is thus highly unpredictable and ambiguous, which also exhibits the property that a complex system is more than a simple sum of the effects of its behaviours. (Kamensky, 2011).

In some strands of the literature, complex problems are also referred to as wicked problems (Stein, 2023; Sydelko et al., 2021). In the context of climate change, Stein (2023) describes this complex challenge as a “super wicked problem”. Through this concept, the author adds a notion of temporality. In addition to the dynamic, interdependent nature of the variables involved, these problems must be addressed under severe time constraints. The author also notes a paradox: those who cause the problem simultaneously seek solutions to address it. This paradox further highlights the difficulty of governing complex systems effectively.

In summary, a complex challenge holds the key characteristics of:

- Interdependent and dynamically evolving variables
- Limited controllability
- High levels of uncertainty and ambiguity
- The absence of a definitive solution, with only context-specific optimal outcomes
- Strong temporal constraints

Although most professional challenges exhibit these characteristics, they are frequently approached through solutionist logic, leading to the application of methods ill-suited to their underlying complexity (Kamensky, 2011; Stein, 2023; Sydelko et al., 2021). In the next section, we discuss the fundamental differences between complex and complicated problems.

2.2 DISTINGUISHING COMPLEX AND COMPLICATED PROBLEMS

The distinction between complex and complicated problems is a critical conceptual step in selecting appropriate strategies to address contemporary organisational challenges.

To begin with, Poli (2013) argues that the difference between complex and complicated problems lies in their type rather than in their degree. As such, complexity and complication are not mutually exclusive: a problem may simultaneously exhibit both. However, the properties that define a complicated system differ fundamentally from those that characterise a complex one.

One of the primary distinctions between the two lies in predictability. In complicated problems, outcomes can generally be predicted if the initial conditions are known. By contrast, complex systems may yield different outcomes from identical starting conditions, depending on the interactions among their elements (Kamensky, 2011). As a result, complexity requires the capacity for adaptation and in-the-moment problem-solving, which directly relates to the notion of limited controllability discussed previously.

Further differences can be identified in causality. The causes of complicated problems can typically be isolated and addressed sequentially, with each input producing a proportionate and largely predictable output (Poli, 2013; Kamensky, 2011). In contrast, complex problems arise from networks of multiple interacting causes that cannot be disentangled and must be addressed at the system level as a whole, a process referred to as functional analysis (Poli, 2013; Sydelko et al., 2021). The same authors further emphasise that while systems may consist of a finite number of structural components, the range of functions they can perform is potentially unlimited. This distinction has important implications for modelling and decision-making. Complicated problems can generally be modelled and understood to a certain extent, whereas complex problems are never fully graspable through models. Even in principle, models of complex systems remain incomplete and tend to diverge over time. Simon (1955) supports this argument, noting the impracticality of exhaustively identifying and evaluating all possible options in complex decision-making processes. The multiplicity of potential future scenarios compels decision-makers to rely on cognitive frameworks such as information reduction in order to select an optimal course of action (Fischer et al., 2012).

Another key distinction lies in the dynamic and creative nature of complex systems. Complex problems possess the capacity to change, learn, and evolve over time, becoming fundamentally different from their initial state. Complicated problems, by contrast, are largely static and lack this capacity for transformation (Loureiro & Pereira, 2024; Poli, 2013). Moreover, while

complicated problems have identifiable solutions and can be addressed by experts, complex problems are novel in nature and lack definitive solutions, making expertise inherently limited or provisional (Veríssimo, 2024). These distinctions are often summarised as a contrast between linear, predictable systems and non-linear, unpredictable ones (Kamensky, 2011; Loureiro & Pereira, 2024; Veríssimo, 2024). Consequently, complex problems require continuous management, adaptation, and intervention in order to respond effectively to ongoing variations within the system (Poli, 2013). Meadows (2008) effectively captures this approach by describing complex challenges as systems one must learn to “dance with”.

Clarifying the distinction between complex and complicated problems underscores the importance of aligning problem-solving strategies with the type of challenge. When complex problems are mistakenly treated as complicated ones, linear, reductionist, and control-oriented methods are often applied, despite being ill-suited to dynamic, interconnected systems. This mismatch between problem characteristics and methodological responses helps explain why many conventional strategies prove ineffective in addressing complex challenges, a limitation examined in the following section.

2.3 LIMITATIONS OF TRADITIONAL PROBLEM-SOLVING STRATEGIES

Problem-solving typically relies on strategic thinking, heuristics and cognitive frameworks that help individuals make sense of situations and guide action (Funke, 2021; Simon, 1955). Yet, when applied to complex challenges, many conventional strategies fail to account for systemic interdependencies and dynamics.

To begin with, a common strategy when confronted with a problem is the VOTAT (“vary one thing at a time”) to test a hypothesis (Fischer et al., 2012; Funke, 2021). However, a change in one parameter while the rest of the system remains unchanged rarely occurs in a dynamic system with inherent interconnectivity among its variables. This strategy aligns with the reductionist mindset, which holds that one part of a system can be isolated, studied, and solved one variable at a time (Midgley, 2023). This strategy can still be effective to understand a system's dynamics; however, it does not seem effective for making decisions. Another mindset, notably criticised by Stein (2023), is the idea that all problems can be solved by technology, although the truth may be more complicated. This ideology, conceptualised by Evgeny Morozov (2014) as techno-solutionism, assumes that dealing with complex problems means treating them as discrete, predictable, and easily solvable with existing knowledge and practices. The author points out that we “engineered” social issues and that solutionist technologies reduce complex, multifactorial social issues (security, justice, education, health,

etc.) to quantifiable problems that can be modelled (Morozov, 2014 ; Stein, 2023). The authors argue that this approach oversimplifies and restrains the possibility of interpreting complex problems in multiple ways depending on the perspective adopted. Therefore, technology should be used to manage symptoms rather than transform root causes (Stein 2023).

In organisational contexts, problem-solving is often guided by formalised and standardised methods. One traditional structure followed in companies includes identifying the problem, analysing it, and defining solutions. Loureiro and Pereira (2024) point out that most organisations lack the final phase of prioritising and selecting solutions. The authors claim that companies often seek a single “perfect” solution early in the process rather than exploring several possibilities before identifying the most appropriate approach. In this same traditional process, managers tend to start by establishing a well-stated problem and take a solution-based approach to this problem. However, Edmondson and Harvey (2017) argue that a well-stated problem can hinder brainstorming and the implementation of a solution. Conversely, it suggests that maintaining a “discovery mindset” and adapting and modifying its problem statement throughout the process fosters innovation. This stands in contrast with Charles Kettering’s famous claim: “A problem well stated is a problem half-solved.” It may actually be the process of constructing a clear problem in teams over time that contributes most to implementation success (Edmondson & Harvey, 2017). Cromwell and Harvey (2025) further distinguish problem clarity from vision, arguing that the two concepts are not synonymous. Problem clarity refers to the range of possible interpretations of project goals or objectives, whereas vision denotes a valued outcome perceived as a higher-order goal. In other words, a team may agree on what outcome they want but not necessarily share an understanding of the problem that needs to be solved to reach it. Veríssimo et al. (2024) also note that, in addition to this, CPS can be facilitated by replacing the traditional authority-based hierarchies with consensus-based hierarchies, which offer distinct advantages.

Underlying many of the ineffective strategies discussed above is a broader societal and organisational tendency to overvalue individual intelligence and expert knowledge as primary drivers of problem-solving performance (Cromwell & Harvey, 2025; Funke, 2021; Loureiro & Pereira, 2024; Veríssimo et al., 2024). While analytical intelligence and domain expertise are essential for addressing complicated problems, they do not necessarily translate into an increased capacity to engage with complexity; rather, competencies in systems understanding and system control (Cromwell & Harvey, 2025; Funke, 2021; Veríssimo et al., 2024). Complex

problems are characterised by uncertainty, ambiguity, multiple perspectives, and evolving dynamics, all of which exceed the cognitive limits of any single individual (Edmondson & Harvey, 2017; Loureiro & Pereira, 2024). As a result, reliance on individual brilliance or expert-driven decision-making can reinforce reductionist approaches and premature convergence on solutions (Hays, 2016).

These findings collectively indicate that addressing complex challenges requires moving beyond individual cognition toward collective forms of sensemaking, where diverse perspectives, interaction, and shared exploration enable teams to better navigate uncertainty and adapt over time (Brown, 2008; Veríssimo et al., 2024). This shift from individual problem-solving to collective thinking forms the foundation of emerging approaches to complexity, which are examined in the following section.

2.4 EMERGING APPROACHES TO COMPLEX PROBLEM-SOLVING

Several authors emphasise the importance of innovating our approaches to understanding and addressing problems, advocating for a departure from traditional methods, which they see as ineffective for complex problems (Firescu, 2025; Veríssimo et al., 2024; Malekpour et al., 2016). In the following section, we will first provide insights into unconventional methods, tools, and concepts increasingly used in professional settings to address complex challenges. We will then highlight the common attributes of these emerging approaches, identifying patterns and principles that underpin their effectiveness.

2.4.1 DESIGN THINKING

Design thinking is not a new concept or a new methodology. It is a skill widely democratised, particularly in engineering, utilised by almost every successful company to design effective solutions. However, as Razzouk & Shute (2012) note, it has only recently gained more attention in business contexts. When applied to organisational processes, design thinking can support critical reading, logical thinking, and reasoning (Razzouk & Shute, 2012). Design thinking is not limited to a specific category of professionals or to a specific moment in the problem-solving process, but rather a new way to approach issues (Brasset et al., 2019; Razzouk & Shute, 2012). Initially focused on improving the attractiveness of already mature ideas, design thinking has evolved into a strategic process. It is now widely used in strategic decision-making and organisational processes (Razzouk & Shute, 2012; You, 2022). This shift is reflected by Brasset et al. (2019), who describe design thinking as “the strategic role of design.”

Design thinking is a human-centred methodology that uses designers' tools to understand user needs and translate them into solutions that are both technically feasible and economically viable (Brown, 2008; Razzouk & Shute, 2012; You, 2022). It is characterised by an iterative process that moves back and forth between phases of inspiration, ideation, and implementation, distinguishing it from linear problem-solving approaches. This process relies on a set of cognitive operations, namely generation, exploration, comparison, and selection (Cai et al., 2023). While generation and exploration expand the problem space, comparison and selection progressively narrow it to converge on actionable directions (Razzouk & Shute, 2012). In addition, design thinking extensively uses visualisation tools, such as diagrams, maps, and illustrations, to support sense-making and shared understanding. The approach is inherently systemic, collaborative, and team-oriented, and fosters creativity while maintaining a strong focus on human and environmental considerations (Brown, 2008; Razzouk & Shute, 2012).

Some criticism can arise from the literature found. First, although design thinking advocates a holistic perspective, the emphasis on human-centeredness often outweighs attention to environmental dimensions, which are only briefly addressed in theoretical discussions. For example, Brown (2008) and You (2022) primarily focus on economic and social aspects, while largely overlooking environmental considerations. This suggests that, although design thinking integrates social perspectives into problem-solving processes, environmental dimensions are not yet afforded equal importance. Second, Razzouk & Shute (2012) suggest that expert design thinkers tend to adopt a solution-focused orientation, which can lead to reduced information gathering in the early stages of problem-solving. This perspective overlooks the consequences, or externalities that products or business models may have on social and ecological dimensions. This contrasts with the tools and techniques promoted by authors addressing complex problems, who emphasise the importance of thoroughly exploring and dissecting the problem space before acting (Edmondson & Harvey, 2017; Poli, 2013; Veríssimo et al., 2024). In this paper, we argue that such a solution-oriented mindset within design thinking may, in some contexts, constrain the problem-solving process.

In summary, design thinking can be understood as an analytical and creative process that, while not new, is receiving increasing attention in strategic business contexts. While it has some limitations, this process encourages out-of-the-box thinking and creates greater space for exploring novel options (Razzouk & Shute, 2012).

2.4.2 THEORY U

The theory U was conceptualised by Otto Scharmer and his colleagues at the Massachusetts Institute of Technology (MIT) as a technology for social change that starts with inner transformation and explains how individuals, groups, and systems can transform the way they think, act, and organise in order to address complex, systemic challenges (Briciu, 2024; Hays, 2016; Heller, 2018). The framework is commonly represented through a U-shaped process that illustrates different stages of learning and transformation. This process unfolds through the following 5 key steps: co-initiating, co-sensing, presencing, co-creating, and co-evolving (Briciu, 2024). The objective of this process is to challenge deeply held assumptions, disrupt automatic patterns of thinking and behaviour, and encourage participants to critically examine their beliefs, emotions, and mental models (Scharmer, 2009; Briciu, 2024). Rather than attempting to eliminate cognitive shortcuts or heuristics, Theory U emphasises developing one's awareness of one's mental structures to broaden and diversify understanding of complex situations (Scharmer, 2009). A central component of Theory U is the notion of becoming conscious of the “voice of judgment,” the “voice of cynicism,” and the “voice of fear,” which are seen as internal barriers that constrain individual and collective capacity for change (Scharmer, 2007). By fostering deep listening, reflection, and collective sensemaking, the process enables participants to step away from habitual frameworks of interpretation and create space for imagination, experimentation, and the exploration of untested approaches (Hays, 2016). Empirical insights from Briciu (2024) suggest that participation in a Theory U process can enhance emotional awareness, generate meaningful insights, strengthen collective action, and help groups identify a broader range of opportunities and threats when addressing complex problems. Rather than framing challenges as purely technical issues, through the U-shaped movement of letting go of past assumptions and allowing new possibilities to emerge, the framework posits that sustainable change arises from the integration of inner transformation with collective action (Scharmer, 2007; Hays, 2016). This process is often summarised as “opening the mind, opening the heart, and opening the will,” encouraging participants to confront and question deeply embedded beliefs, an experience that may be uncomfortable but can ultimately lead to transformative ideas and practices (Briciu, 2024).

Despite its conceptual appeal, Theory U has been subject to several critiques in the literature. First, core concepts such as “presencing” are often perceived as vague or metaphysical, making them difficult to operationalise and assess empirically (Zick et al., 2026). Additionally, critics point to a lack of robust empirical evidence demonstrating the effectiveness of Theory U across

different contexts (Heller, 2018). Zick et al. (2026) further argue that the framework requires long-term commitment and complementary entrepreneurial or learning-oriented structures in order to sustain awareness and reinforce learning loops. Finally, Heller (2018) questions Theory U's ability to fully capture real-world complexity, noting that its references to philosophical traditions are sometimes unclear or internally inconsistent, resulting in a weak or insufficiently articulated epistemological foundation.

Nevertheless, despite these limitations, Theory U provides a valuable conceptual framework for rethinking leadership, problem-solving, and decision-making in complex environments (Hays, 2016; Heller, 2018). Its emphasis on inner awareness, collective sensemaking, and systemic transformation offers important philosophical insights and practical implications for organisations seeking to move beyond linear and reductionist approaches to complex challenges.

2.4.3 PROCESS METHODOLOGY

The ProCESS methodology is an unconventional approach that has only recently begun to be studied in practical research. It emphasizes integrating sensorial, emotional, and spiritual (SES) skills alongside traditional analytical reasoning to better equip managers and decision-makers to navigate complex organisational challenges (Firescu, 2025; Ludviga et al., 2025). Rather than focusing on the application of predefined tools or techniques, ProCESS conceives “process” as a means of activating latent human capacities that are often underutilised in conventional managerial approaches. It encourages temporarily setting aside purely rational thinking to engage other human capacities (Ludviga et al., 2025). This methodology differs from others in that it requires a dedicated, organised period for its application. While it does not have a fixed time limit, it takes place within a specifically allocated timeframe. A central feature of ProCESS is the use of art-based and embodied activities, such as music, dance, meditation, poetry, sculpture, and theatre, which are designed to foster creativity, encourage freedom of thought, and support the emergence of “out-of-the-box” responses to real-world challenges (Firescu, 2025). The activities implemented during the process create conditions in which participants can explore problems from multiple perspectives, expanding the range of options from a single problematic, and in contrast with the design thinking mindset, allowing the problem definition to evolve (Firescu, 2025). This adaptive and iterative understanding of problems resonates with the claim by Edmondson and Harvey (2017), which highlights the importance of allowing problem framing to shift when addressing complex systems. Empirical

insights from Firescu (2025) suggest that the ProCESS methodology positively contributes to team collaboration and communication, while also enhancing employee well-being and the overall impact of professional training initiatives. Activities aimed at improving well-being are reported to have direct positive effects on both mental and physical resilience, leading to increased empowerment and productivity in the workplace (Firescu, 2025). Ludviga et al. (2025) argue that training in SES skills positively impacts awareness, a sense of community, better self and other reflection, and a sense of life for individuals. By fostering creativity and psychological safety, ProCESS supports more inclusive and collaborative modes of engagement, which are particularly relevant in contexts characterised by uncertainty and interdependence (Firescu et al.; Ludviga et al., 2025).

Despite these contributions, the ProCESS methodology also presents notable limitations. The existing literature remains scarce, with only 2 known peer-reviewed scientific papers addressing this approach. As a result, the methodology's theoretical foundations remain underdeveloped, and there is a lack of robust quantitative analysis to empirically assess its effectiveness across different organisational contexts. This gap highlights the need for further theoretical refinement and empirical validation to strengthen the academic credibility of ProCESS as a methodology for addressing complex problems.

2.4.4 CRITICAL-SYSTEMIC INTERVENTION METHOD

This method is grounded in systems thinking (Sydelko et al., 2021). Systems thinking provides individuals with tools to explore the interconnections among issues and to see how the parts of a wicked problem interact to create a whole that is more than the sum of its parts (Midgley, 2023; Sydelko et al., 2021). Multiple systems approaches to tackle complex problems have been analysed in past literature, such as system dynamics computer modelling, causal loop diagramming and qualitative group model building, or soft systems methodology (Sydelko et al., 2021). The critical-systemic intervention (CSI) approach combines techniques from these multiple systems intervention methods, promoting methodological pluralism and is sometimes referred to as a mixed-methods approach. What sets CSI apart from other approaches, above all, is its explicit focus on boundary critique (Midgley, 2023; Sydelko et al., 2021). Boundary critique refers to the systematic examination of the boundary judgments we undertake cognitively that determine what is considered relevant, legitimate, and valuable within a given system (Midgley, 2015; Midgley, 2023). These boundaries shape how a problem is defined, who is included or excluded, and which outcomes are prioritised. Boundary critique encourages

reflexivity by making explicit the assumptions underlying these choices and by assessing their practical and ethical consequences. For instance, in the case of waste management in a given city, a restaurant, a resident, and a municipality will identify different problems and actions to implement because of their divergent interests and perspectives on the same topic. By opening these boundary decisions to dialogue and collective reflection, boundary critique seeks to transcend conflicts and broaden the range of possible interventions (Sydelko et al., 2021). The same authors add that when combined with methodological pluralism, boundary critique strengthens systemic intervention by ensuring that no single method or perspective dominates the problem-solving process. This synergy allows different approaches to compensate for one another's limitations, leading to more inclusive, robust, and context-sensitive interventions. As its name suggests, this approach is inherently interventionist, referring to a structured, time-bound process that brings together multiple actors around a shared issue. During such interventions, particular emphasis is placed on visualising the situation and mapping the interconnections between stakeholders. According to the literature, these practices enhance mutual understanding among the parties involved and help to mitigate power imbalances within the system (Sydelko et al., 2021). This methodology adopts a holistic approach, engaging as many stakeholders as possible to address a problem and identify the most effective or optimal solutions.

Many other methods exist for addressing complex problems, and this review does not aim to provide an exhaustive list of unconventional approaches. Its goal is not to identify a single best method, as the literature suggests that a method's relevance depends on the specific problem and context (Briciu, 2024; Midgley, 2023; Riley et al., 2015; Sydelko et al., 2021; Veríssimo et al., 2024). Instead, it provides an overview of selected methods to illustrate how complexity can be approached in different ways. Despite their differences, these methods share several common characteristics, which are discussed in the following section.

2.5 SHARED CHARACTERISTICS ACROSS EMERGING APPROACHES

All these unconventional approaches to complexity share common attributes. Firstly, they all address the challenge holistically (Funke, 2021). These approaches encourage taking a bird's-eye view of problems rather than focusing on simple cause-and-effect chains. Secondly, they encourage tackling complex problems through collective thinking. They all share the idea that transparent communication and collaboration have a positive impact on CPS (Grasso & Convertino, 2012; Harvey & Kou, 2013; Kamensky, 2011; Veríssimo et al., 2024). By creating

the right environments, individuals can be encouraged to take more initiative and use their creative thinking to tackle complex problems. Cromwell & Harvey (2025) and Harvey & Kou (2013) also note that interacting with other team members and reflecting on progress can help clarify roles, foster a sense of belonging, and build self-efficacy. They can also help clarify the team's goals, norms, and routines, thereby shaping collective states. Thirdly, they all share this concept of transdisciplinarity. Not only for tackling complex problems but also for boosting innovation. It is argued that cross-boundary teaming is an increasingly popular strategy for innovation and CPS (Edmondson & Harvey, 2017). Other research notes that rapid co-specialisation across technological and business fields is making companies increasingly interdependent in the supply and demand for knowledge, which could fuel innovation (Van de Ven & Zahra, 2016). However, collaboration within teams and across disciplines remains rare and is not sufficiently encouraged (Lennon et al., 2023). We often discuss open innovation by encouraging the search for external knowledge, but we rarely discuss the fluidification of knowledge within a company (Salter et al., 2013). Knowledge integration processes are likely to be as complicated within firms as across them (Van de Ven & Zahra, 2016).

The common attributes are best summarised in the table below:

Table I

A SYNTHESIS MATRIX OF THE EMERGING METHODOLOGIES AND THEIR OPERATIONAL ATTRIBUTES

Approaches	Design thinking	Theory U	ProCESS Methodology	Critical-systemic intervention method
<i>Holistic approach</i>	<i>x</i>	<i>x</i>	<i>x</i>	<i>x</i>
<i>Iterative process</i>	<i>x</i>			<i>x</i>
<i>Visualisation tools</i>	<i>x</i>			<i>x</i>
<i>Collective approach</i>	<i>x</i>	<i>x</i>	<i>x</i>	<i>x</i>
<i>Boundary critique</i>		<i>x</i>		<i>x</i>
<i>Imagination/creativity</i>	<i>x</i>	<i>x</i>	<i>x</i>	
<i>Challenge deeply held assumptions</i>		<i>x</i>	<i>x</i>	

Despite the growing body of literature on CPS frameworks, important gaps persist between theory and practice. Lennon et al. (2023) and Jones et al. (2025) highlight that these emerging

methods are often difficult to operationalise, particularly with regard to implementing collaboration among diverse experts, managing divergent understandings and interests, and co-creating value. The creation of transdisciplinary teams requires sustained effort and continuous adaptation from participants. Furthermore, the limited number of operational and empirical studies suggests that additional research is needed to assess the effectiveness of these methods in real-world settings (Loureiro & Pereira, 2024). Additionally, collaboration between teams remains rare and is hard to implement (Lennon et al., 2023). Finally, it is important to recognise that conventional approaches have been part of organisational practices for a long time, and moving toward alternative methodologies does not happen quickly. Research shows that individuals and organisations need time to adapt, experiment, and become comfortable with new methods, especially if they challenge established routines and dominant ways of thinking (Stein, 2023; Loureiro & Pereira, 2024; Midgley, 2023). This study aims to address these gaps by providing empirical insights into the methods used by the French design company Circulab.

3. ANALYSIS OF CIRCULAB'S METHOD FOR ADDRESSING COMPLEX PROBLEMS

3.1 METHODOLOGY

This research adopts a practice-based, interpretive case analysis approach aiming to generate practical insight through the qualitative interpretation of a single professional workshop organised by the French design company with an international logistics company (Stake, 2010; Yazan, 2015). The case was selected for the author's involvement in this project during his internship with Circulab and for its illustrative, information-rich example of how design-based methods are operationalised in professional contexts to address complex problems. The analysis is guided by the theoretical frameworks discussed in the literature review, namely design thinking, theory U, proCESS methodology, and CSI approaches to CPS. For confidentiality reasons, the identity of the client organisation is not disclosed.

The empirical material for this case study comprises documentation produced before, during, and after the workshop, including preparatory materials, facilitation tools, and workshop outputs, as well as observations of interactions throughout the workshop. The material was analysed by first describing the workshop's context and objectives, followed by an interpretation of Circulab's facilitation practices and methods used during the project in relation to the selected theoretical frameworks. This qualitative case study follows Stake's definition of

case study research as an in-depth examination of the particularity and complexity of a single case, with the aim of understanding how it operates within its real-life context (Yazan, 2015). Such an approach is characterised as holistic, empirical, interpretive, and emphatic (Yazan, 2015). This method does not try to justify cause-and-effect relationships, but rather to understand a specific situation using new problem-solving methods and the human dynamics underlying them (Stake, 2010, p. 38).

The analytical process follows an abductive reasoning approach, iteratively moving between empirical material derived from the workshop and relevant theoretical frameworks to develop a theoretically informed interpretation of how alternative problem-solving methods can be mobilised to address complex problems.

3.2 RESEARCHER POSITIONING

To conduct this study and analysis, I adopted the role of an external observer while simultaneously representing Circulab, the design company responsible for organising the workshop. During a two-week preparation phase, I worked alongside my supervisor, gaining access to internal company data to better understand their specific challenges. Through a series of meetings and shared documents, we defined the workshop's scope and built the agenda, which included three collaborative exercises and a supporting presentation that I designed. During the workshop itself, I attended as a Circulab representative. Unlike my supervisor, I did not act as a primary facilitator; instead, my main responsibility was to take comprehensive notes on participant discussions and outcomes. However, during small-group sessions, I occasionally stepped in to offer corrections or redirect conversations. Following the workshop, I helped develop the final deliverables requested by the client.

My deep involvement throughout the entire lifecycle of this project gives me a strong, well-informed perspective for this analysis. However, I recognise certain limitations: my understanding of the participants' internal viewpoints is restricted to what they openly expressed during the workshop and in online discussions before and after the session. Consistent with interpretive research principles, the findings therefore constitute a situated analysis shaped throughout my role and access to the case, rather than a claim to objective or exhaustive representation.

3.3 WORKSHOP CONTEXT AND OBJECTIVES

The logistics company that we will call LogiK requested support during a strategic transition, as it was beginning to experience the impacts of increasing resource constraints and heightened competitive pressures. The objective of the collaboration from LogiK's perspective was to brainstorm circularity opportunities and draft a circularity offer pilot that could be scaled across the group. Prior to the workshop, three online meetings were held between the two parties to discuss LogiK's challenges and identify ways in which Circulab could support them. A defined scope was established before the workshop to focus discussions and ensure productive brainstorming. The workshop was held on the 2nd of October 2025 in a rented workspace in Paris and lasted one full day. Seven employees from LogiK participated in the workshop, all occupying managerial-level positions. The workshop and the activities are moderated by a Circulab member. In this case, it was moderated by my internship supervisor, Justine Laurent. The detailed structure of the workshop is shown in Figure 1. Following the workshop, the Circulab team had two weeks to synthesise the discussions and deliver the requested outputs to the client.

The goal of Circulab in this project was to identify Circular economy opportunities for LogiK's packaging products, conceptualise a first circular economy offer for the most relevant segments (industries, materials, regions), and elaborate a short-term roadmap to launch a pilot project.

Section	Duration	Overview	Content
Welcoming coffee	9h-9h15	-	-
Introduction	9h15-9h30	Workshop intro.	- 5' Icebreaker - 5' Context (): (group objectives and strategies, circular economy) - 5' Objectives & Agenda
Risks of the linear economy models and circular economy opportunities	9h30-10h	Macroeconomic context	- Key figures and macroeconomic facts on value chain
	10h-10h15	Main principles of the Circular economy	- Indicators and principles upstream and downstream to preserve resources while maintaining needs satisfaction
Comparison of the potential for packaging solutions	10h15-11h	Application on NEFAB's context	- workshop
	11h-11h15	Selection of the best segments	To narrow down the next steps
BREAK			
Formulation of circular economy possible offers	11h30-12h	Circular economy value loops (focus on reuse-broad)	- Presentation of the R's of Circular Economy as a solution to linear economy risks - Illustrations through examples (from logistic and segments - close enough but not too narrow)
	12h-12h45	Application on the selected segments	- Using the How might We (HMW) formulation
LUNCH			
Priorization of the top 1 or 2	13h45-14h15	Prior the HMW using 3 criterias	- Score each HMW with the 3 criterias to select the highest
Projection into existing pilots	14h15-15h	Present 3 pilots in the Circular Canvas	- Introduce the Circular Canvas - Present the projects - Open discussion
BREAK			
Ideation on the 1 or 2 selected offers	15h15-16h	Brainstorming	- Brainstorming to complete the Circular Canvas on the ideal offer based on previous learnings and selected HMW
	16h-16h15	Sum-up	- Sum-up the first parameters of the offer to be kept
Next steps	16h15-16h45	Draft a short-term roadmap	- Next steps to design and launch a pilot
Wrap up	16h45-17h		

FIGURE 1- Detailed rollout of the workshop with LogiK

3.4 WORKSHOP PREPARATION AND IMPLEMENTATION

For a workshop to be effective and for collective thinking to be productive, it must be thoroughly prepared. Circulab always dedicates at least two meetings with the client to understand the nature of the challenge they face. In this alignment phase, Circulab reviewed the client's narrative to propose potential workshop directions. The process began with an exploratory "test" meeting. After introductions, LogiK outlined the specific problems they wanted to solve. Justine then explained how Circulab operates, detailing their collaborative framework and terms. With the scope clear, Logik officially approved the collaboration, and the initial invoice was issued. Once the invoice was signed, the project officially kicked off. I began with a comprehensive analysis of the client, examining their industry, target markets, market share, and known challenges, paired with an in-depth evaluation of the broader logistics sector. I then cross-referenced these findings with LogiK's specific challenges and projects to create a concise, one-page summary for the Circulab team working on the project (3 in total). Following my presentation, we held an extended briefing session to map out the structure of the upcoming workshop. This opened up to discussions and debates, where everyone exchanged their opinion and perspectives to build a coherent structure. It is important to note

that throughout this preparatory phase, our goal is not to hand the client a pre-packaged solution. While we may identify potential strategic pathways, our primary focus is to design an optimal workshop environment. We want to ensure that the participants have the right tools to co-create and develop actionable strategic directions during the workshop. In the second client meeting, Circulab presents the workshop structure and what can be expected from it. The client can then give his opinion and ask to modify it. Logik was satisfied with the workshop plan and what they could expect from it and approved the proposed structure.

Literature confirms that effective problem framing is a critical condition for successful problem solving (Dorst, 2011). It identifies framing as one of the core design practices that can be adopted for organisational problem-solving and innovation (Dorst, 2011; Sydelko et al., 2021). Circulab's approach aligns with what Midgley (2023) defines as boundary critique, as it investigates, through discussion, what should be included and what is not relevant to the workshop's framing. A perimeter, that is, a framing of the problem, is settled by Circulab with the agreement of the client. However, this does not imply the perimeter is fixed and cannot be modified during the workshop. Instead, Circulab develops a problem statement that provides direction while preserving flexibility and openness in exploring possible pathways (Veríssimo et al., 2024). This flexibility inspires itself from a team-problem discovery approach that is essential to maintain openness (Edmondson & Harvey, 2017). This flexibility was illustrated during the workshop, as the resources wood and plywood were grouped while fibre was added. The boundary shift occurred after an open discussion of the main materials requested by the market's main clients, highlighting the importance of fibre for future opportunities. Additionally, Circulab adopts a stance of methodological pluralism, allowing it to adapt its methods in response to the initial boundary critique and the evolving understanding of the problem (Midgley, 2023). It does not follow a fixed methodology for every client and adapts its workshop, tools, and approaches to the client's demands and challenges. In this case, the workshop's perimeter was kept wide because the LogiK's challenge was structural (Figure 2).

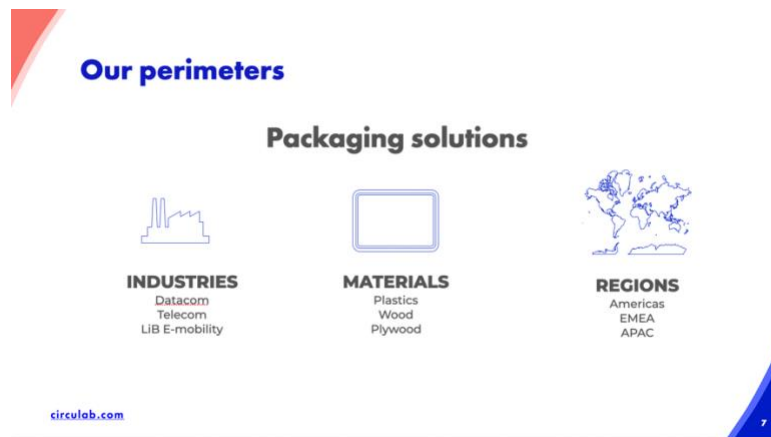


FIGURE 2 - workshop perimeter

The objective of the workshop is to bring together participants from across the company to collaborate on a shared topic. In this sense, the workshop can be understood as a boundary-spanning activity within the organisation. Van de Ven & Zahra (2016) describe such spaces as transaction spaces or trading zones, where individuals with different areas of expertise interact to translate an issue into a set of concrete activities. By creating a dedicated space for collective reflection, the workshop enables participants from different teams or functions to exchange ideas and perspectives on a common theme. This interaction supports the development of interdisciplinary knowledge and a shared understanding of the project, thereby reducing semantic boundaries and misunderstandings (Dougherty, 1992). However, organising such workshops is particularly challenging for organisations, as it requires coordination across departments, building trust among participants, and adopting new ways of working and interacting (Lennon et al., 2023). Therefore, the intervention of a third-party organisation such as Circulab appears essential to bridge transdisciplinary gaps through the organisation of workshops.

The workshop always starts with an icebreaker to let every participant speak and build confidence. This takes many different forms. It can, for instance, be an activity in which each individual presents himself to someone, and vice versa, and each participant then presents their pair to the whole group. Or, in a larger group, you can ask open questions and place different possible answers around the room. Participants must then go to their preferred answer, and the few groups that are formed can start discussing a topic assigned by the moderator. This icebreaker method is commonly used in collective projects (Zick, 2026), and its importance should not be undermined, as it impacts the rest of the workshop. The time spent on the interpersonal relationship at the beginning of the workshop is crucial to create psychological

safety and positively impact the learning, collaboration and listening between the participants (Edmondson, 1999). In LogiK's case, the icebreaker was shorter than expected because all the participants knew each other well. It is also a time for the Circulab members present to understand each participant's role in the company.

The icebreaker was followed by a brief presentation of the risks and limitations associated with the linear economic model within the LogiK's sector (Figure 3), as well as an introduction to the principles of the circular economy and its opportunities (Figure 4). These concepts were presented using concrete visual materials to support understanding and engagement.



FIGURE 3 – A few of the slides shown to the participants about the fragility of the linear economy

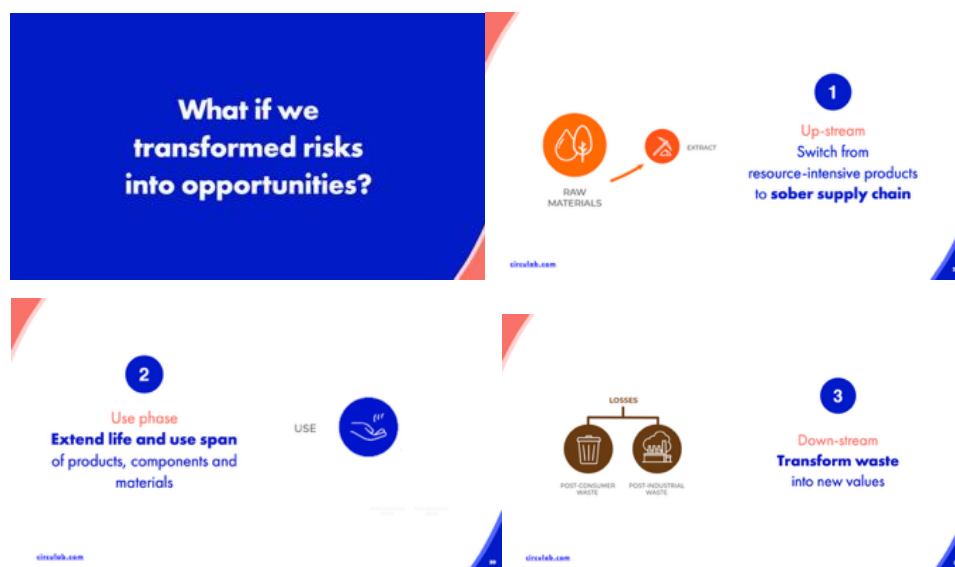


FIGURE 4 – A few of the slides shown to the participants on the opportunities for the circular economy

This phase does not have a didactic purpose, rather, an objective to align participants with basic knowledge of the circular economy and to stimulate reflection on the topic for future

discussion. The goal is to quickly transition participants into group exchanges, where they can share perspectives and collectively explore ideas. Differences in knowledge and perspectives on the topic within a group exist, but instead of fighting them, they are embraced because they allow diverse viewpoints to be exchanged, contribute to a more balanced discussion, and enhance team effectiveness (Edmonson, 1999; Grasso & Convertino, 2012; Kaner, 2014). Rather than encouraging individual problem-solving, the workshop is designed to foster collective sensemaking and idea generation through interaction, so the greater the heterogeneity, the more interesting it becomes. Moreover, participants are not required to acquire specific prior knowledge before the workshop. Instead, they are asked to utilise their existing knowledge and collaboratively build upon it with other participants. This aligns with Cromwell and Harvey (2025), who suggest that developing shared cognition during team interactions can be more valuable than establishing it before a project.

The workshop then moved on to the first group exercise. Participants were divided into small groups of two or three and asked to identify the main risks and opportunities in three different segments, namely the industries they work with (Telecom, Datacom, E-lib Mobility), the regions in which they operate (EMEA, Americas, APAC) , and the types of materials used in their activities (plastics, wood, plywood). Each group focused on only one segment and analysed it across three analytical dimensions (resources, regulations, and clients). They were given 40 minutes to discuss in groups, write down what they found, and assign a score to each parameter based on its risk level. Figure 5 gives an idea of how this was presented during the workshop.

The figure shows three overlapping comparison matrices from Circulab Foodbook. Each matrix is designed to analyze linear economy risks and circular economy opportunities across different dimensions: Industry, Regions, and Materials. The matrices are structured with columns for Resources, Regulations, and Clients, each with specific guiding questions. The 'INDUSTRY' matrix includes Telecom and Datacom. The 'REGIONS' matrix includes EMEA, Americas, and APAC. The 'MATERIALS' matrix includes Plastics, Wood, and Plywood. Each matrix also includes a 'TOTAL' column for overall assessment.

FIGURE 5 - The comparison matrix used during the workshop to identify the risks and opportunities

The objective of this activity is to activate participants' knowledge and creativity regarding risk and opportunity analysis. This activity is comparable to the traditional SWOT analysis frequently used in economics. Though it differentiates itself by incorporating three analytical dimensions that encourage participants to consider the situation from multiple angles. This aligns with an aspect of the critical systemic intervention approach, which aims to include many viewpoints and types of knowledge in order to obtain a more thorough comprehension of the issue (Midgley, 2023; Sydelko et al., 2021). Apart from the predefined analytical dimensions, no additional guidance is intentionally provided in order to preserve a high degree of cognitive freedom in the exploration process. In this context, the matrix functions as a boundary object, enabling participants to engage in collective sensemaking around a shared issue (Van de Ven & Zahra, 2016). Throughout the exercise, the moderator, in this case Justine, circulates among the groups to monitor engagement levels and, when necessary, gently redirects discussions if they stagnate. As highlighted by Harvey & Kou (2013), collective engagement is fragile and requires active facilitation to be sustained. In this setting, the moderator assumes this responsibility. By fostering a psychologically safe environment that encourages participants to think beyond habitual frameworks, this facilitation approach aligns with certain communication principles in Theory U, particularly those related to deep listening and openness to each other's opinions (Hays, 2016; Scharmer, 2007). While not explicitly grounded in Theory U, the workshop nevertheless employs techniques that lead participants along a similar path, inviting them to begin from a "blank page," step back from routine perspectives, and consider unfamiliar or overlooked dimensions of the problem.

The next step in the activity was to pool all matrices. Each group presented their thoughts and the ideas written down in relation to their segment. During this phase, participants are encouraged to intervene freely, react to one another's contributions, and share their perspectives, especially when they disagree or wish to express criticism. Providing feedback is useful to the group and positively affects its dynamics (Harvey & Kou, 2013). It is nonetheless crucial that feedback be delivered in a way that maintains positive interpersonal relationships. The participants in this activity were all involved, speaking comfortably and disagreeing with one another. Here, the emphasis is placed on active listening, flexibility of thought, and open-mindedness, all key concepts of the unconventional methods described in the literature review (Firescu, 2025; Hays, 2016; Razzouk & Shute, 2012; Sydelko et al., 2021). Nonetheless, the debates were sometimes repetitive and focused on the same very detailed points that are not relevant to the current challenge we were discussing. When the conversation was left with too much freedom, the essence of the debate got lost. Sometimes groups are distracted, fail to address the real problem, or speak too much about irrelevant topics (Hays, 2016). It is therefore the moderator's role to address the key topics and point out the elephant in the room under time constraints. The moderator successfully completed this. Another observed aspect concerned the uneven impact of participants' opinions within the group. During a heated discussion about the LogiK's most significant future risk, participants offered differing views. However, despite the lack of consensus, the opinion of the portfolio manager, who held the highest managerial position among the participants, ultimately prevailed, and the group aligned with this perspective. This observation reflects the persistence of hierarchical dynamics even within collective group work. Because of their rank, perceived knowledge, or institutional position, some participants' opinions are often given more weight. This affects which ideas are produced, who stays actively involved, and whose contributions are valued. Such power imbalances are challenging to completely resolve in cooperative situations, as emphasised by Harvey & Kou (2013).

As previously described, risks and opportunities were assessed and evaluated for each parameter. For instance, after the group discussion, the plastic resource was assigned a score of 8 out of 15, while the fibre resource was assigned a score of 10 out of 15 (see Figure 6). The group considered that there are more risks associated with fibre than with plastic. A higher score indicated greater perceived risk, but also a higher potential for opportunity. This exercise gradually helped identify which parameters the client could prioritise and target when initiating a circular project. This evaluative approach aligns with an exploratory evaluation model,

which, according to Harvey & Kou (2013), encourages idea elaboration and supports sustained collective engagement. In contrast to closure-oriented evaluation, which tends to narrow participation, freeze idea development, and disengage certain group members, exploratory evaluation maintains openness and flexibility in the problem-solving process (Cromwell & Harvey, 2025). This activity lasted one hour longer than planned, as the discussions were not given an end. The participants were passionately debating, without finding any consensus. Because of this, the afternoon schedule was adapted accordingly. Nonetheless, I do not see this change of plans as negative. The discussions could have been cut short by the moderator, but that would have left the participants frustrated with the topic they were discussing. While careful planning is important for structuring a workshop, research also shows that strict adherence to an agenda can sometimes undermine its effectiveness. Skilled facilitators are encouraged to adapt timing and activities in response to group dynamics, as this flexibility enhances relevance, engagement, and learning outcomes (Haupt, 2025; Meadows, 2008).

In the afternoon, the moderator introduced new circular economy concepts and gave real-life examples of circular economy projects implemented by different industrials of the same field. It was followed by an activity called “How Might We”. In this activity, the participants are asked to generate open questions individually, starting with “how might we”, using the knowledge created through the previous activity. These formulations are then collectively shared and discussed among participants. The objective is to compare what each participant identifies as a priority, taking into account both their expertise and the discussions held earlier in the day. The ideas generated during the workshop must eventually be narrowed to a smaller set and prioritised to enable concrete actions in the future. Cropley (2006) refers to this phase as the narrowing of alternatives toward a correct or best solution. However, given that we do not see one solution to CPS, we would describe this step as narrowing in on the core challenge the client seeks to address.

This collective discussion follows the same pooling and facilitation methodology as the previous activity. This section took longer than expected, and although one other activity with a Circulab tool called the Circular Canvas was supposed to be used, the workshop ended after this one. Due to time constraints and heated debates, the scheduled program was not fully covered. However, this is not a “negative point”, but rather a positive one, and highlights that the problem is perhaps more complex than they first thought.

[illegible]

FIGURE 6 - Industry and materials matrix completed during the workshop.

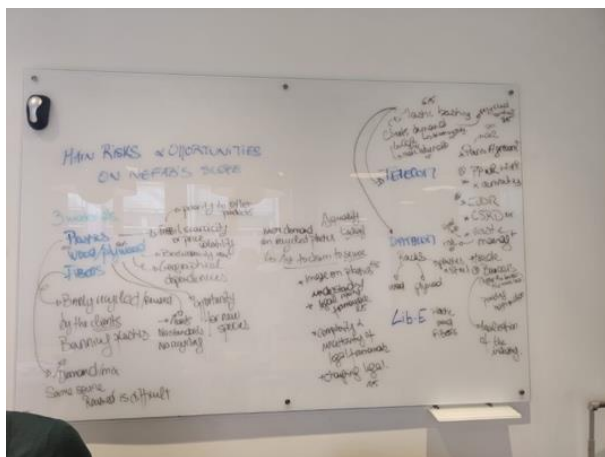


FIGURE 7 - Summary of the discussions following the matrix exercise.

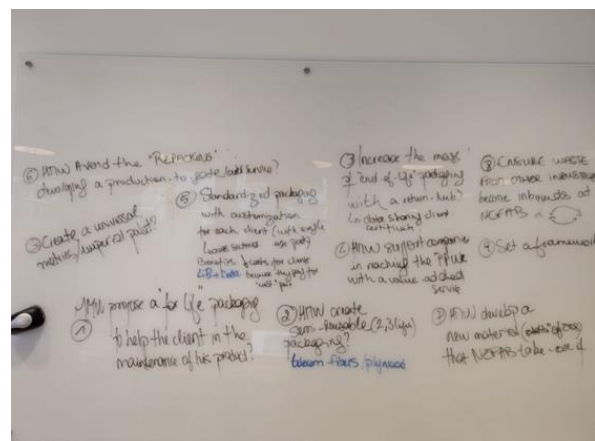


FIGURE 8 - The most important "How Might We's" questions that were selected

3.5 THE MODERATOR ROLE OF CIRCULAB

Throughout the workshop, Circulab provides the materials and facilitation necessary to encourage collaboration among participants and remains actively involved during the process. However, its role does not involve proposing solutions to the participants for two main reasons. First, complex problems do not lend themselves to a single, definitive solution (Veríssimo et al., 2024). Second, Circulab does not claim domain expertise in the company's specific field of activity. Rather, its role is to create the conditions under which relevant ideas can emerge from the participants themselves. It is argued that this approach enhances the benefits of shared cognition arising from collective interaction (Cromwell & Harvey, 2025). In this context, Circulab plays the role of an integrator, also called a boundary spanner by Van de Ven & Zahra (2016) or even a broker by Long Lingo & O'Mahony (2009) in the music industry. Although these roles are labelled differently, they fulfil a similar function: create bridges between different knowledge departments and increase coordination (Kamensky, 2011). The workshop participants are from different sectors of the LogiK (product, ESG, finance) and thus have diverse perspectives and knowledge. Such diversity is known to stimulate creative output in organisational settings, as group members encourage divergent thinking, introduce varied viewpoints, and collectively filter out less relevant ideas (Harvey & Kou, 2013). By facilitating these interactions, the integrator plays a key role in enabling interdisciplinary collaboration. Additionally, Long Lingo & O'Mahony (2009) highlight that individuals who are between groups gain exposure to a greater range of ideas and obtain a "vision advantage". It is therefore their role to understand each stakeholder's interests and find the best ways to achieve the best outcome. Finally, the integrator helps not only to transfer knowledge, but, most importantly, to synthesise others' ideas into a coherent, creative outcome (Long Lingo & O'Mahony, 2009). This final point is what Circulab does during the post-workshop phase.

3.6 POST-WORKSHOP REFLECTION AND SYNTHESIS

Following the workshop, Circulab's role is to synthesise the discussions, drawing on its facilitation, note-taking, and attentive listening throughout the session. The objective of this synthesis is to clearly articulate the key insights that emerged from the exchanges and to indicate the directions suggested by the collective reflection. This process aims to provide LogiK with a coherent understanding of the workshop's outcomes and to clarify potential next steps. Using design skills and visualisation techniques, Circulab translates workshop

discussions into clear, comprehensible graphical representations. Circulab wants to facilitate the understanding through visualisations as much as possible, rather than text (see Figure 10 and 11). Graphical representations provide a more immediate and accessible way for readers to grasp key insights and identify what stands out. In Figure 10, variations in scale and the relative strength of connections visually highlight the most significant elements, allowing the core message to be understood at a glance. This visual synthesis was complemented by a one-page explanatory text that provided additional context and clarified the key points conveyed to the client. Such visual approaches are strongly encouraged in design thinking and in the CSI method, where they are used to make visible the interconnections among elements of a system (Midgley, 2023; Razzouk & Shute, 2012; Sydelko et al., 2021). More broadly, this practice aligns with Kamensky's (2011) recommendations, which argue that visual mapping supports the organisation, contextualisation, and understanding of information when dealing with complex problems. The graphs were accompanied by strategic recommendations, and the possible next steps that cannot be displayed in this report due to a non-disclosure agreement. Those deliverables are also produced through close teamwork within Circulab and interdisciplinary collaboration between project managers and designers.

The outcome of both the workshop and the broader project with the client was overall positive. Although no formal written feedback was provided, a feedback session was organised with two of the participants. The client indicated that the workshop enabled them to view their challenge from new perspectives. While no concrete actions toward a circular project have yet been implemented, the methodology was nevertheless praised for its ability to stimulate creativity and open exploration. In addition, participants highlighted the comfortable and safe environment created during the workshop, which facilitated honest and critical discussions. The participants realised that the challenge was more complex than they initially anticipated and that it would require additional time to define an initial circular pilot project.

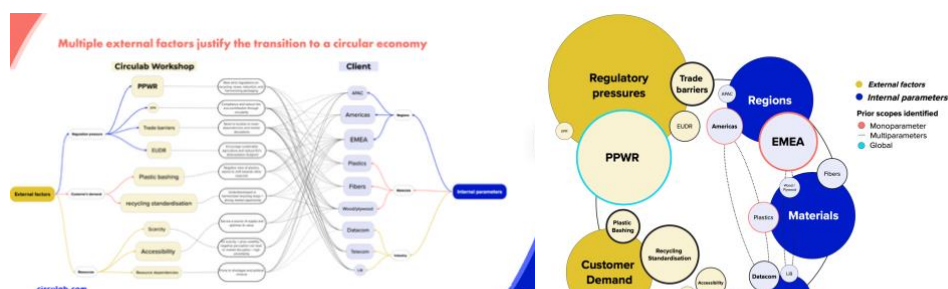


FIGURE 9 - Graphs illustrating the matrix activity of the workshop, made by Circulab

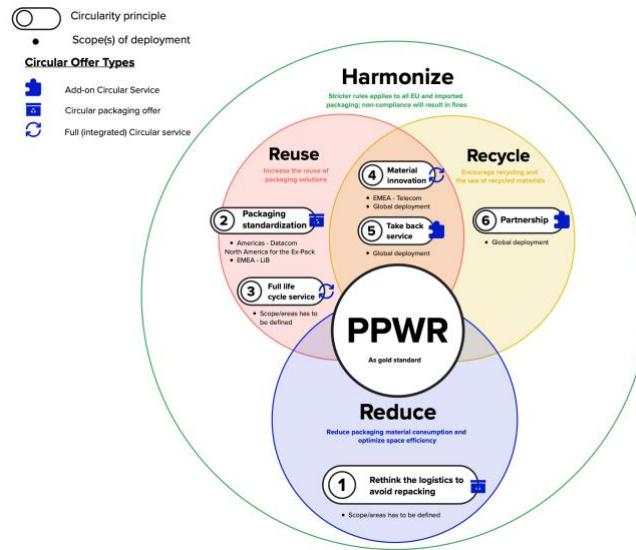


FIGURE 10 - Graph illustrating the conversations around the "How Might We" activity of the workshop

LIMITATIONS

Several limitations can be identified in this case study analysis. First, the client engagement focused solely on the idea generation phase. Circulab did not participate in the implementation of a specific project following the workshop, nor did it conduct any long-term follow-up with the client. As such, the intervention constituted a one-off engagement, similar to the experience described by Malekpour et al. (2016). Second, while the client provided positive oral feedback and expressed satisfaction with the collaboration, the absence of a formal evaluation limits the assessment of outcomes. However, it is difficult for Circulab to quantify the impact of its methodology, as they are not always involved in the project's implementation but rather in the early stages of idea generation. Third, this study is limited by the lack of empirical data. The analysis relies primarily on a descriptive case study approach, which offers valuable qualitative insights into the methods applied but does not allow for validation through quantitative or in-depth qualitative evidence. While such interpretive approaches are widely accepted in case study research, particularly in exploratory and practice-oriented studies, the absence of “hard” data nonetheless constrains the generalisability of the findings.

4. CONCLUSION

This paper aims to contribute to the literature on collective thinking by providing an interpretive case study of the methodologies and tools used by a French design company, Circulab, to support organisations in addressing complex organisational problems. In this case study, LogiK's challenges demonstrated characteristics of complexity, notably uncertainty, the absence of a definitive solution, and interdependent, dynamically evolving variables. The analysis highlights that collective thinking lies at the core of the Circulab's approach. In the analysed project, as well as in other initiatives observed during the internship, Circulab consistently organises workshops that bring together diverse stakeholders involved in the project in order to foster collective reflection and shared sensemaking. It acts as an integrator, facilitating the collaboration of diverse experts and helping to bridge differences in understanding and interests. The company effectively fosters an environment in which open communication and constructive feedback prevail. Circulab's method integrates the common attributes shared by the emerging approaches described in this paper, proposing a holistic, transdisciplinary approach through collective thinking. The tools, or boundary objects used during the workshops are strongly inspired by the design thinking methodology, being very visual, while the approach to interactions between participants draws more on awareness-based methodologies such as Theory U to foster creativity and optimise communication. The design company always tackles the projects in a holistic way, and not only accounts for the economic aspect, as it also integrates the environmental and social aspects of a project. This case study further confirms that addressing complex problems does not involve a single "magic" solution, nor the application of a standardised methodology or tool. While core concepts such as interdisciplinarity, collaboration, creativity, and visualisation methods are frequently employed or encouraged across projects, there is no universal or "best" approach applicable to all challenges. Instead, methods and practices must be adapted or combined depending on the nature of the problem, the stakeholders involved, and the specific contextual variables at play. Circulab has existed for more than 12 years and has supported more than 100 companies both in France and internationally, and demonstrates through its experience that transformative methods and collective thinking can serve as effective tools for addressing complex challenges. However, it is important to note that transformative learning takes time to be integrated by everyone and is hard to implement in organisations. It involves a confusing experience of

“disorienting dilemmas” that activate difficult emotions arising from the need to protect a familiar meaning-making system (Briciu, 2024).

ADDITIONAL ROLES AND CONTRIBUTIONS DURING THE INTERNSHIP

During my internship at Circulab, I contributed to a variety of projects with different organisations, each addressing distinct challenges. I was actively involved in three projects from start to finish, including initial client meetings, collaborative brainstorming on their specific situations, workshop preparation and planning, facilitation support during the workshops, and contributions to the development of the resulting deliverables. In addition, I contributed to several ongoing projects. The projects required a diverse set of skills, which varied according to the nature of each project. The case study presented in this paper involved graphic design, while another project with an agri-food union required mathematical skills, including univariate and multivariate analyses and the interpretation of the resulting data. Another project involving a governmental organisation demanded writing skills for a formal 70-page activity report. As such, the internship helped me develop a diversity of skills and enhance my adaptability in the workplace. It also pushed me to improve my organisational skills and be able to work on different projects at a time respecting the given time constraints.

The Circulab team comprises 10 employees and three branches: the consulting branch, the academic branch that sensitises and trains organisations, and the community branch, which comprises more than 70 freelancers who have been trained and approved to use the Circulab reputation, methodologies, and tools for their missions. My main contributions were in consulting as an assistant project manager, but in a small team, cross-disciplinary work is normal. Therefore, I also contributed to the creation of a new website exclusively dedicated to the Circulab community and the new service offer they launched in January 2026. I also produced prospecting files with more than 60 future clients. Finally, I assisted with small tasks such as photographing during a Circulab Community event and representing Circulab at a business fair in the heart of Paris.

My experience at Circulab was very enriching professionally and is a good illustration of what collective thinking and transdisciplinarity mean within a company. My responsibility extended well beyond the formal role of assistant project manager, demonstrating that while each individual brings specific expertise, everyone can contribute meaningfully to different situations. Collective thinking and collaboration are at the heart of this company.

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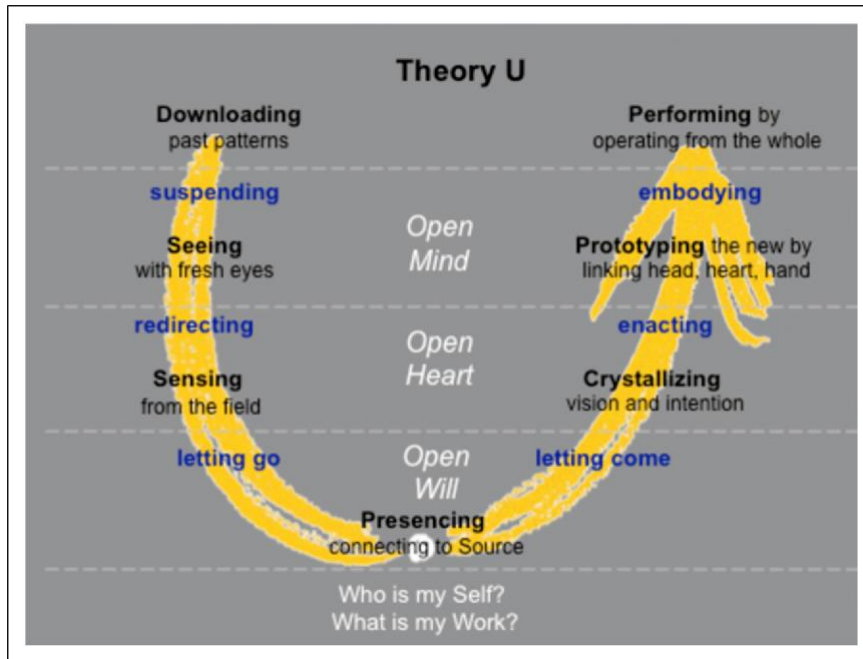
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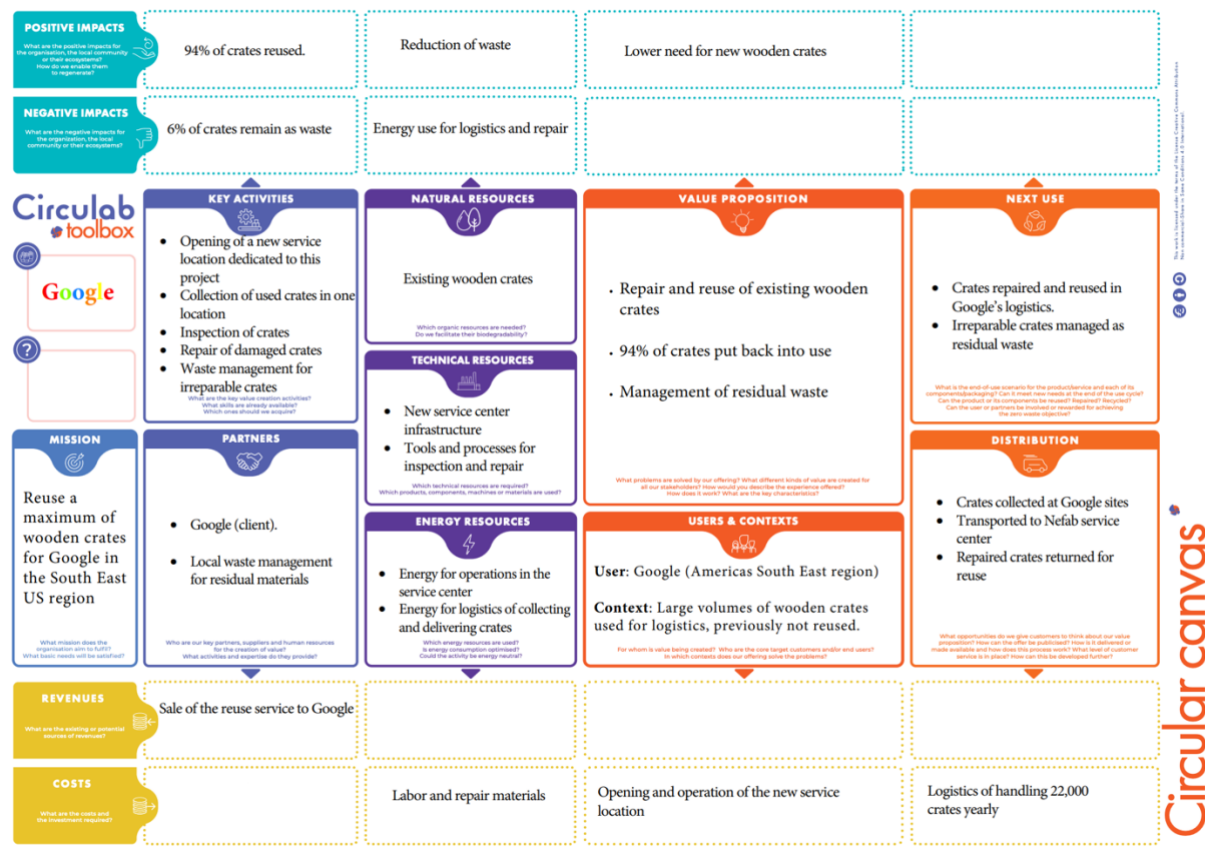
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APPENDIX



APPENDIX 1 - The key steps of theory U (Scharmer, 2007)



APPENDIX 2 - Example of a Circular Canvas, the tool that was skipped during the workshop