



One step towards  
hybrid homecare service:

## **Enhancing the workflow of remote homecare centralists with an intergrated platform**

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A few days ago, I came across the story of wildebeest migrations in South Africa. These harmless herbivores spend their whole lives chewing grass in herds of hundreds, following one another in silence. Migration, for these creatures on the lowest rung of survival, is an understated, life-risking adventure.

Throughout their journey, wildebeests must cross rivers multiple times, avoiding countless causes of death to stay alive. In the rivers, crocodiles lie in wait, and the swift currents threaten to swallow them at any moment. Wildebeests therefore often linger by the riverbank for a long time, silently watching the ceaseless flow of water. Then, in one singular moment, they leap forward without hesitation.

When crossing the river, every wildebeest charges forward with all its strength. Some disappear beneath the surface, never to rise again, but more and more join the surge. In this way, they carve a path through a perilous world with relentless determination.

In the hesitation and courage of the wildebeests, I've seen reflections of my own struggles countless times—the physical and psychological migration I endured to reach the other side of my own river. I don't want to gloss over these hardships lightly. In truth, this thesis project has been the most solitary long march I've ever undertaken. At many crucial moments and decisions, I felt utterly lost, unarmed, and unprepared. Many nights and days, I fell asleep and woke up with anxiety and confusion.

If anyone reading this is going through something similar, I want you to know that you are neither alone nor weak. Think of that resolute wildebeest: before it leapt into the river, no one believed in its courage, but it crossed those dangerous waters nonetheless.

People rarely use words like “brave” or “strong” to describe herbivores, but the rivers you cross will remember your courage. That courage will become a part of you—a new strength in your blood and bones, carrying you forward in every run you take in the future.

# Acknowledgement.

Next, I want to express my heartfelt gratitude to the people who accompanied, guided, and witnessed my journey to this moment:

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As your only child, thank you for selflessly supporting my decision to study and live on the other side of the world. I'll never forget the moment during a phone call, when I was overwhelmed with stress and self-doubt, that I heard you both say, how deeply you believe in me and see me as a good child. Despite being separated by thousands of kilometers, I felt our hearts closer than ever.

## **To Yvonne and the Syntilio Team**

Thank you for trusting me. In the face of language and cultural barriers, you took the leap of faith to entrust me with this project and went out of your way to provide the resources and conditions I needed to enter and understand this new field. It only dawned on me after a while how incredibly lucky I am to have met such a warm, inclusive, and supportive team. With you, I truly felt safe. Your dedication and passion for healthcare also strengthened my resolve to follow my own ideals in the future.

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to adapt to each other has been truly special. Your unwavering support and guidance have been essential, not just for this project but also for helping me make it through to this point. Every time hearing from you is like a little light that gives me strength and touches my heart.

언니, 제가 계속해서 언니의 빛나는 모습을 지켜볼게요.  
꼭 항상 행복하시길 바라요.

## **To Maaike**

The day I ran into you in the hallway and brought you on board still feels like a rare, magical moment of serendipity. Beneath your laid-back composure, your thoughtfulness and compassion quietly shone through, making me feel genuinely cared for. As a novice designer stumbling into healthcare, you had a way of effortlessly illuminating my blind spots, sharp and spot-on—both in design and in life. Working with you in medesign feels like learning magic from Dumbledore, it's really a great honor:)

## **To all my friends, near and far**

Even as we travel along different paths in life, we find ways to resonate with each other, sharing those beautiful moments that make everything feel lighter. Isn't that the most romantic thing in life? Thank you for shaping my past, present, and future. I can't wait to reunite with you all, to share stories, take walks, talks, and hot pots...

## **To myself**

Thank you for having the courage to jump into this river. Thank you for your perseverance.

**Let's meet again in a land of boundless green.**

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# Executive Summary.

## The Problem

As specialized departments within homecare services tasked with addressing clients' unexpected incidents and additional needs, remote care centers in the Netherlands are increasingly struggling with a widening gap in care capacity. These centers often find themselves overwhelmed and underprepared when managing routine care demands. This challenge is not solely attributed to the growing reliance on community care to support independent living amidst an aging population. More critically, inefficiencies and systemic issues within the unplanned homecare framework hinder Centralists, making their case-handling operations inevitably disorganized and inefficient.

To alleviate this mounting pressure, this study investigates how digital work platforms can better support and empower Centralists, enabling them to take greater control and exert stronger influence in their roles. This strategic design paper seeks to chart a feasible development roadmap for software development teams, exemplified by Syntilio, while addressing the following research question:

**“How might we better encourage and facilitate Centralists of remote care centers to optimize their work experience and enhance the quality of remote care in device-initiated cases with the help of digital work platforms?”**

## Soft Approach and Affective Dilemmas

This project adopts the occupational affective well-being of Centralists as a focal point to investigate and delve into the operational burdens faced by care centers. Four representative and impactful affective challenge for Centralists have been identified:

- 1. Little control paired with excessive yet hollow autonomy**
- 2. Lack of meaningful communication**
- 3. Struggles between empathy and urgency**
- 4. A deficiency in recognition and appreciation**

Through the data gathered during the solution-finding phase, the study validates that these four emotional challenges are not independent or parallel themes. Instead, the imbalance between control and autonomy emerges as the underlying cause of the other emotional challenges.

As such, this imbalance issue is identified as the primary obstacle preventing care centers from effectively addressing the pressures of supply and demand. By addressing this foundational issue, the path to alleviating other emotional challenges and enhancing operational effectiveness becomes clearer.

## Control and Autonomy at Care Center

According to theories of occupational well-being, employees' feelings of restriction and stress often stem from a work environment that fails to fit their needs. Similarly, the sense of passivity and constraint experienced by Centralists reflects systemic issues within the organization. At care centers, limited control is evident in the lack of sufficient information, tools, and guidance provided by the system, leaving Centralists unable to take the lead in advancing the progress of care tasks. Meanwhile, empty autonomy manifests as excessive flexibility without the means to effectively leverage it for improved care outcomes.

## Intellectual data as fuel

According to theories of occupational well-being, employees' feelings of restriction and stress often stem from a work environment that fails to fit their needs. Similarly, the sense of passivity and constraint experienced by Centralists reflects systemic issues within the organization. At care centers, limited control is evident in the lack of sufficient information, tools, and guidance provided by the system, leaving Centralists unable to take the lead in advancing the progress of care tasks. Meanwhile, empty autonomy manifests as excessive flexibility without the means to effectively leverage it for improved care outcomes.

## Conclusion

The Strategic Proposal positions Intelligent Syntilio as a driving force for transforming care centers. By streamlining workflow management and delivering intelligent insights for executing treatment plans, care centers evolve from being a reactive department that merely addresses "anomalies" or "outliers" in care plans to a proactive hub for optimizing and continuously improving patient care. In the long term, this strategy fosters more responsive and personalized homecare services. It also establishes a mutually beneficial, long-lasting partnership between Intelligent Syntilio and care centers, enabling both to achieve shared success while adapting to the evolving needs of the healthcare industry.



**Point**

Where should we set off?

**of View**

This chapter provides the context in which this thesis project is situated. It begins with an overview of the Dutch homecare industry, exploring the critical role of remote call centers as an “indispensable cog” in sustaining community-based healthcare services and examining their operational dynamics.

Building on this foundation, the chapter discusses the internal and external factors contributing to the growing crisis of professional capacity deficiency.

In doing so, this chapter establishes the basis for the main research question of the thesis. It concludes by outlining the approach to addressing this question, guiding the activities undertaken throughout the project and forming the structural foundation of this report.

## Community-based Homecare Services in NL.

Most elderly people in the Netherlands strive to maintain their independence for as long as possible, leading to a preference for home care (“thuiszorg” in Dutch) as their primary form of aged care. Homecare agencies offer personalized care plans tailored to individual needs, providing skilled caregivers who assist with medical tasks like injections and medication, as well as daily activities such as bathing and eating.



Figure 1. Receiving care at Home(De Moor, 2023)

Medical resources for Dutch individuals receiving home care are regionally allocated. Home care agencies act as central coordinators, facilitating and managing interactions between clients and the local healthcare network. For example, they consult and coordinate with GPs to decide on treatment plans or report changes in a client’s condition, ensuring that various care providers remain involved in managing the client’s overall health.

In cases of temporary needs or emergency medical conditions that exceed routine planned care requirements, elderly individuals can contact home care agencies. Remote centralists promptly assess the situation and dispatch appropriate stand-by caregivers to ensure timely intervention, which can range from neighborhood support to hospital ambulance services.

## > Planned Care from Homecare Agencies

The Home Care Organization provides both planned treatments and unplanned care services as their direct support.

Planned services are delivered via pre-arranged care packages tailored to the unique needs of each patient. Following comprehensive assessments by the Case Manager, these packages typically involve scheduled home visits by field teams, supplemented by digital devices when appropriate. For example, automated tools such as Medido dispensers (Figure 2) may be provided to monitor medication intake for patients whose conditions make them suitable for such technological support.



Figure 2. Medido Medication Dispenser (Retrieved from <https://medido.com/nl/>)

## System for unplanned care needs.

Caring for unplanned needs is a central focus of this thesis project. Unexpected care needs are primarily managed in remote care centers, where Centralists play a pivotal role as coordinators and gatekeepers of homecare resources. The system map below (Figure 3) illustrates the structure of the unplanned homecare services system in the Netherlands, emphasizing the essential role of Centralists in coordinating services and maintaining an integrated care network.

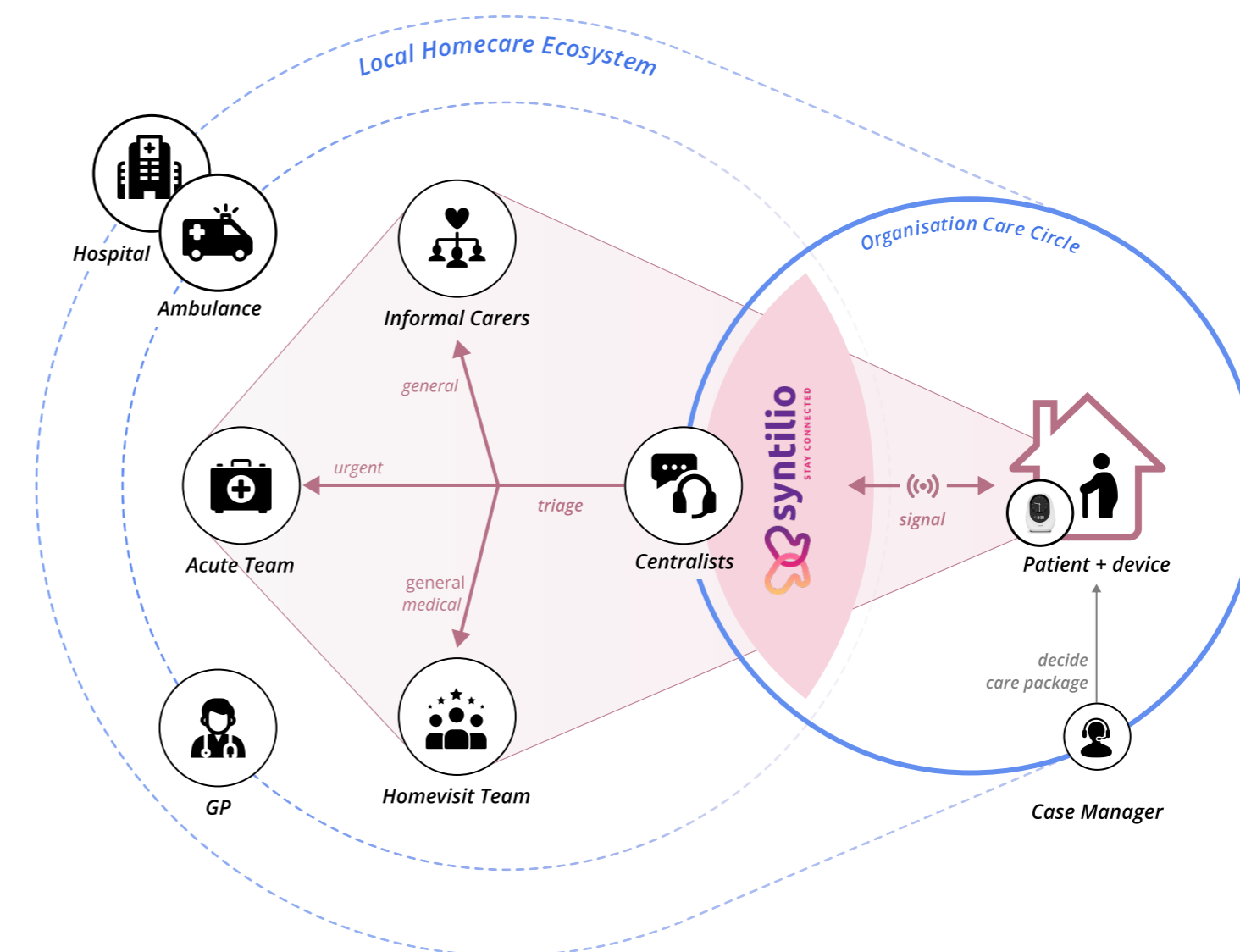


Figure 3. Romete Homecare System Map

Homecare agencies provide carefully coordinated treatment packages that enable clients to draw on stable care networks within district resources (bold circle on the right). At the same time, addressing unexpected care needs often requires activating additional interactions with the local homecare ecosystem (dashed circle on the left) to access unplanned resources.

Unplanned care requests often arise spontaneously, triggered by patients or monitoring devices, and are communicated to Centralists via phone calls or alerts. Centralists play a crucial role in assessing the situation, determining the appropriate response, and mobilizing necessary resources from internal teams or external providers. As intermediaries between clients and caregivers, they ensure an organized and effective response to these unplanned needs.

The interplay between these two spheres emphasizes the Centralists' vital role as decision-makers within the unplanned care system. Positioned at its core, they facilitate seamless connections within the care ecosystem, enabling timely and appropriate support while maintaining the continuity and quality of care. This design underscores their importance in bridging planned and unplanned care to meet patient needs effectively.

## The Tension: Surging Needs and Strained Processes.

Building professional capacity to support aging in the community is one of the most significant public health challenges in the Netherlands. There is a sense of urgency since growing numbers of care dependent older persons with chronic conditions are served in the community, along with a shortage in the primary care workforce.

The upcoming "silver wave" is expected to add approximately 860,000 people aged 65 and older to the Dutch population. More than half of this group would live with at least one chronic disease, which requires ongoing medical attention and/or limiting their ability to perform daily activities (CDC, 2022). Leading chronic conditions include heart disease, cancer, Alzheimer's disease, and diabetes, which cannot be managed solely through medication but demand continuous care and lifestyle adjustments.

While the demand for home care is anticipated to rise sharply, the growth of the care workforce is not projected to keep pace. According to the latest data from CBS (Figure 4), the home care sector faces the largest staffing shortage in healthcare, with a deficit exceeding 20,000 professionals. This highlights the critical need to expand caregiving capacity to effectively meet the demands of an aging population.

Vacatures in de sector zorg en welzijn

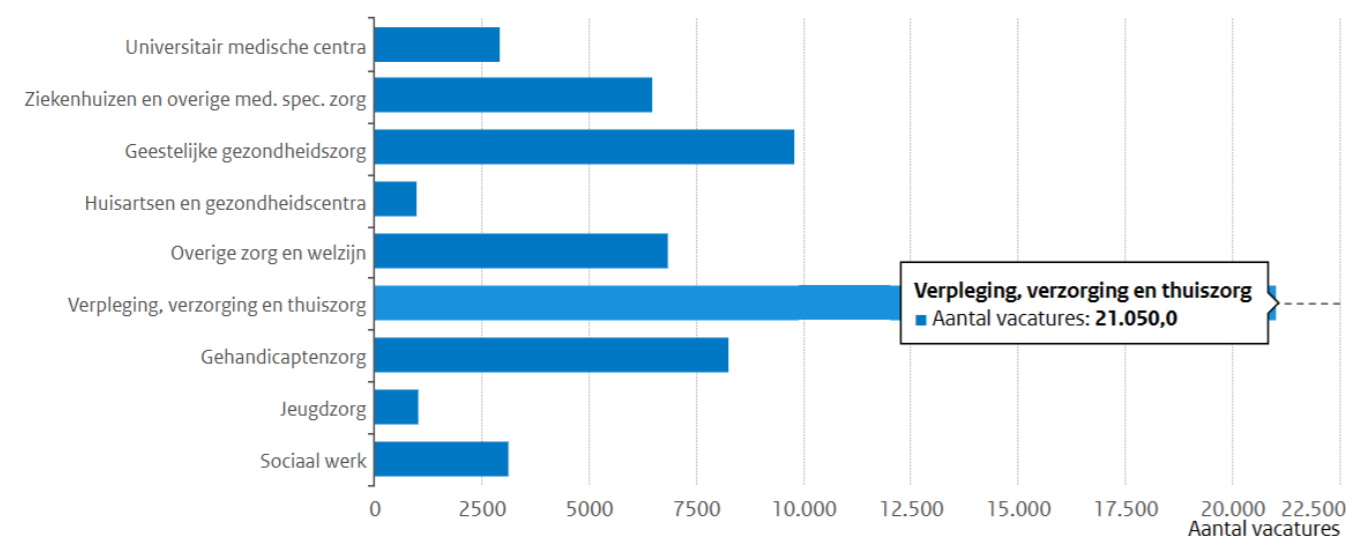


Figure 4. Vacancies in the healthcare sector (Vacatures in De Sector Zorg En Welzijn, n.d.)

With healthcare demand on the rise, the efforts of active professionals rarely translate into effective outcomes. For instance, in care centers, a significant portion of Centralists' time and energy is consumed by cumbersome activities, such as gathering fragmented patient information from multiple legacy platforms, coordinating with other caregivers, and fulfilling extensive administrative requirements.

Moreover, systemic shortcomings, such as misaligned or incomplete information and fragmented workflows across departments, frequently lead to erroneous deployments or force Centralists to initiate unnecessary interventions as a safeguard. These issues create and consume substantial amounts of avoidable effort, significantly reducing the efficiency of care centers and undermining the quality and accessibility of care services.

## Stakeholders.

The parties involved in the research are TU Delft and client company Syntilio. This network of stakeholders provides guidance through this master thesis to ensure that a relevant and optimal result is achieved for the benefit of the diverse parties.



Syntilio is a new startup focusing on developing software for homecare organizations.

Their main product is an online care hub where caregivers can manage cases efficiently. This includes tasks like routing events and completing triage questionnaires. Additionally, the platform allows organizations to manage their internal data, such as registering assets and synchronizing data.

# Research Questions.

As previously discussed, the inherent inefficiencies within the homecare system can significantly impact the professional burdens shouldered by caregivers, presenting an opportunity to unleash caregiving capacity within the existing workforce and improve delivered quality of care. Research and reform efforts often use the workflows managed by Centralists as a critical benchmark. To unlock this potential, the core questions of this study are as follows:

1. What defines an improved workflow that enables Centralists to achieve better efficiency and outcomes?
2. What long-term strategies can care centers adopt to effectively mitigate the burden of chronic diseases?

# Project Aim.

The primary aim of this project is as follows:

“Design a **working prototype** for centralists of remote Care Centers to optimize their working **experience** and enhance the **quality** of remote care in **device initiated** homecare cases.”

# Project Approach.

This project is structured around the Triple Diamond Framework developed by the Design Council, which comprises three key stages (Zendesk, 2019): Discover, Define, and Develop. Each stage represents a distinct phase in the design process, focusing on specific aspects of product or service development.

The approach emphasizes actively involving diverse and comprehensive perspectives at each stage. This includes engaging different stakeholders through various activities to collect data. Insights gathered will be utilized in subsequent analysis, interpretation, and design activities, ensuring a continuous development loop grounded in fresh feedback.

## Discover

In the understanding phase, desk research and a literature review (Chapter 1) were conducted to explore the research aim and identify the most effective research direction.

The latter half of the Discover phase focuses on user research, which I refer to as "emphasis." During this phase, three different research activities(Chapter 2) were conducted and analyzed in an integrated manner. A key method used throughout this process was journey mapping, which helped to synthesize the results of the various research activities and provided valuable insights into user experiences.

By the end of the Discover phase, a more grounded understanding of the problem space was achieved, setting the stage for the next steps in the design process.

### Define

The Define phase involved conducting interviews and co-creation activities(Chapter 3) with Centralists and the Syntilio team, which included product managers, developers, designers, IT specialists among other perspectives.

This phase facilitated a more nuanced understanding of the challenges and opportunities at hand. Through these engagements, we collected insights that were particularly relevant to the design process. These insights were subsequently transformed into design guidelines(Chapter 4) that informed the expert perspectives and the ideation of service concepts.

### Develop + Iterate

Design concepts were elaborated(Chapter 4), leading to the generation of the first version of the roadmap. This was followed by the drafting of the prototype evaluation. In Chapter 5, expert feedback was collected to refine the design proposition further, ensuring that it aligns with user needs and project goals.

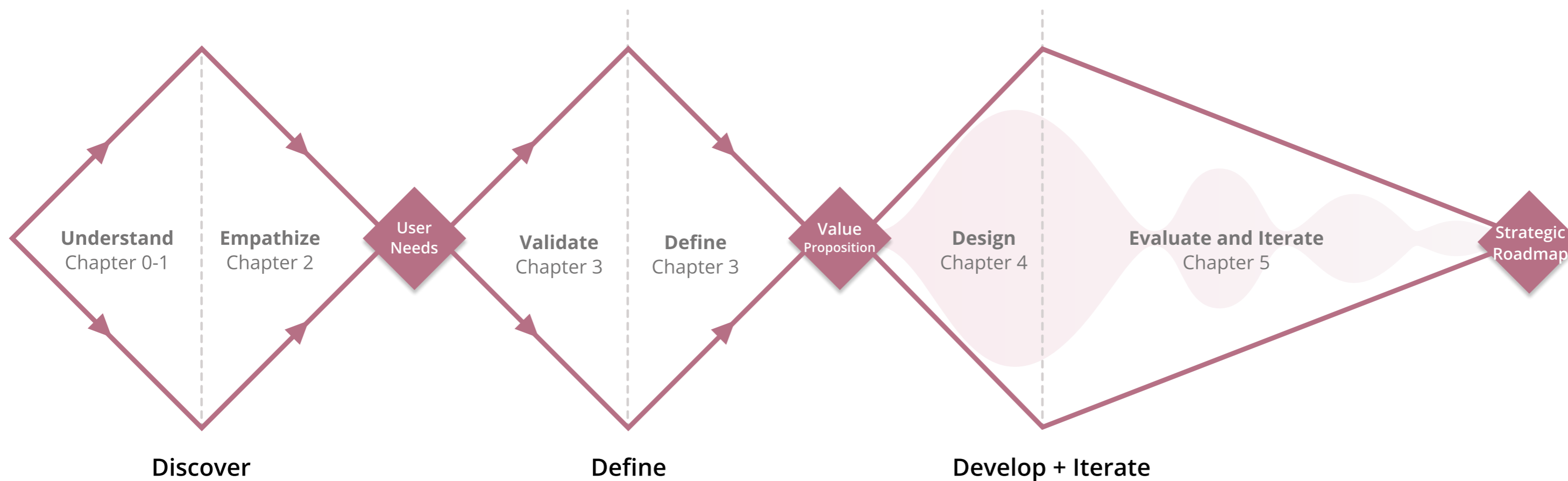


Figure 2. Design Process



1

# Understand

Theoretical exploration

Initial research from Syntilio identified a principal bottleneck impeding the efficiency of Centralists when addressing care requests. Essential data, necessary for these requests, was scattered across multiple outdated platforms, necessitating a labor-intensive manual aggregation of this fragmented information. In response, Syntilio developed an initial Minimum Viable Product (MVP), fundamentally centered on information integration as their core value proposition.

This thesis was undertaken prior to the deployment of this "all-in-one" platform, thus all research activities were to be conducted within the existing challenging context at the care centers, but with a focus on exploring long-term developmental strategies for the digital platform predicated on the integration of information. Such exploration is inherently open-ended.

Therefore, the aim of the theoretical research in this project is to identify a framework of Inquiry that allows for a thorough examination of the problem's facets, providing sufficient insights and guidance for designing upcoming research strategies.

## **Affective well-being of Centralists as a main lens approaching the problem domain.**

Syntilio's core strategy of integrated information offers a functional, task-oriented, fundamentation, which inspired me to adopt a softer approach in this project, focusing on Centralists' subjective work experiences as the main lens. However, two contrasting viewpoints have made me hesitant about this choice.

As a workplace software platform, Syntilio is primarily used by employees—mainly centralists in this project—who are the direct users and the main focus of our design research and potential testing activities. Therefore, it seems appropriate to guide the design tasks with employee-centered principles. However, when it comes to the whole “unplanned care request service” provided in homecare organizations, both Centralists and Syntilio share the responsibility of ultimately delivering higher quality service and a better experience for homecare clients.

To address this uncertainty, I conducted a comprehensive review of the relevant literature at the outset of my theoretical research. The insights gained from three particular theories not only helped clarify my thoughts but also refined the design objectives. Although these theories are not officially part of the guiding theoretical framework, they convinced me that affective wellbeing is a sufficiently rich and constructive subject for research.

# Involving employees in service design.

Focusing on employee experiences prior to those of the end-users is not a standard practice in service design. Typically, the commonly used service blueprint reveals that designers' primary concern for clients is their emotional experiences along the user journey. For service providers, however, the focus is more on the processes, tools, and systems involved in supporting the service (Pine, 2020). Even though employees are often the direct deliverers of the service experience, in many cases they are rationalized as objective influencing factors in the design process, thus their individual personalities and traits are frequently overlooked.

Vaajakallio et al. (2016) proposed that customer experience and employee experience are two sides of the same coin in service design. Employees are not merely individuals performing tasks, their interests and motivations must also align with their roles.

If designers extend their focus on emotional experiences to include employees, they will uncover a series of noteworthy pain points, needs, and design opportunities, thereby enhancing the service blueprint.

## > Syntilio as an employee exclusive touchpoint

Recent practices (Bowen, 2015; Rayburn, 2014) show that emphasizing employees' emotional experiences is becoming more common in service design. Vaajakallio et al. (2016) do not suggest treating employees and customers as equally important in every aspect but recommend adjusting the focus based on the users of touchpoints to balance the experiences of both groups. **They categorize touchpoints into three types (Figure 1.1): employee's touchpoints (channels used by employees only), customer's touchpoints and common touchpoints.**

In the context of Syntilio, only employees will use it when handling care requests, as customers will interact through other touchpoints such as mobile phones or medical devices. With this clarification, **we can greatly approach the design of the Syntilio platform with an employee-centered perspective.**

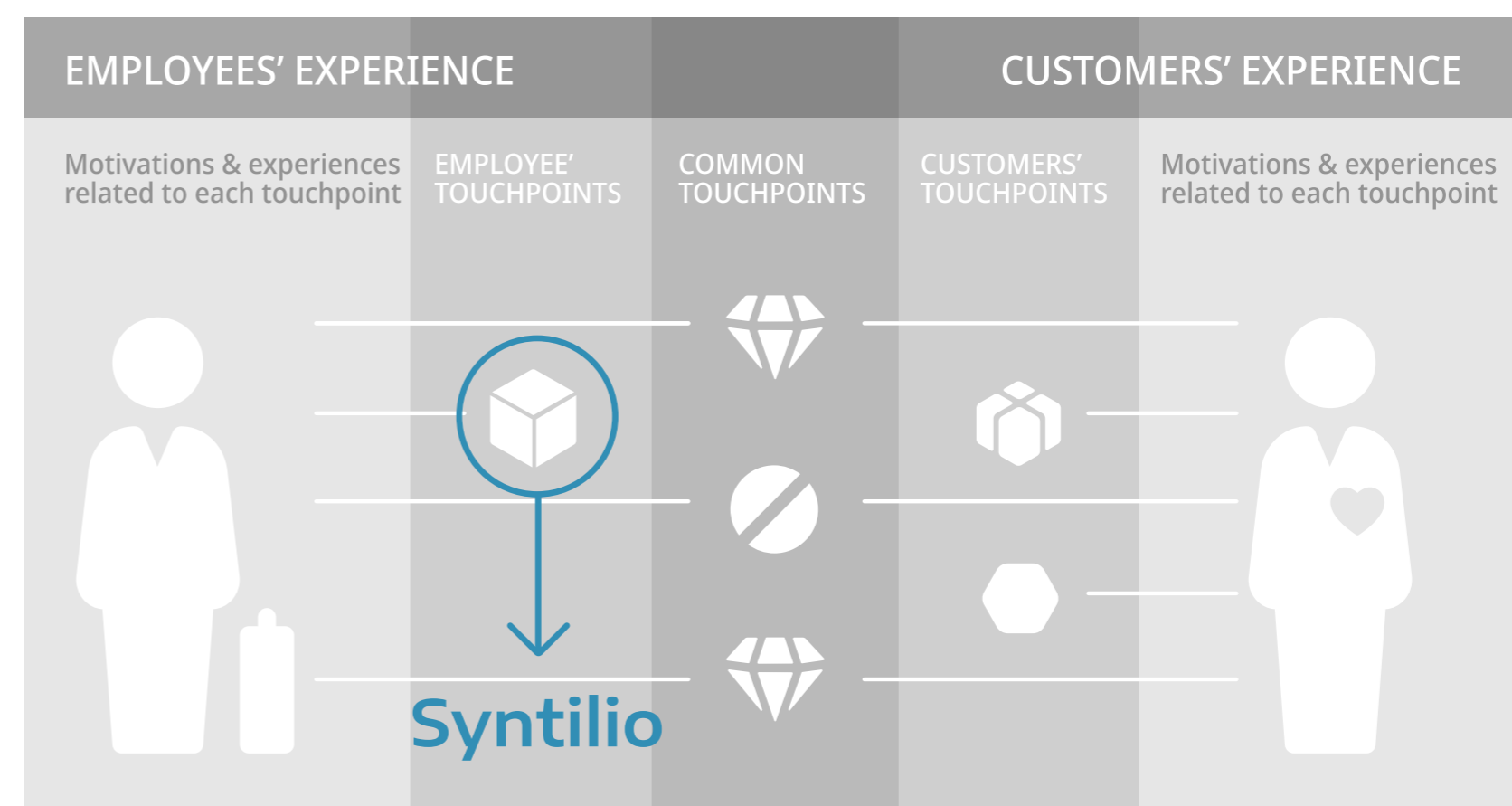


Figure 1.1 Syntilio as an Employee-Exclusive Touchpoint (Vaajakallio et al. ,2016)

# Designing EXP instead of intrinsic platform.

## Employee Experience Platform (EXP)

Syntilio is dedicated to developing a software solution for internal use by centralists of homecare organizations, conventionally it is classified as an intranet platform. However, unlike other commonly used platforms, such as ONS for managing medical reports and MiniMoves for tracking nursing schedules, Syntilio seeks to integrate all this dispersed information and services from various platforms into **a one-stop seamless experience**, positioning itself **as the sole mainstream workstation** in the future.

Shivakumar, S.K. (2020) proposed a new refined definition for intranet software used as mainstream platforms, termed as the Employee Experience Platform (EXP).

## Why employee experience is important to EXP

Unlike traditional intranet software that focuses on work tasks, the EXP serves as the primary medium for interaction between the organization and their employees. **As such, its design must place significant emphasis on employee expectations to engage them throughout the employee lifecycle.** Syntilio's development goals are in line with this definition.

## Employee experience in service design

The concept of the EXP introduces a new perspective on work platform design, **viewing the software also as a digital workspace of employees.** Much like a physical office, employees will spend a significant amount of time, explore and understand the organization's culture and atmosphere, complete day-to-day work tasks, interact with others, and create memories within this digital space provided by the platform. Therefore, beyond work performance, **the EXP plays a crucial role in the soft aspects of the employee's work experience, ultimately impacting their overall work-related well-being.**

# Employee-environment Fit.

## Personal flourish in work environment is based on 'Fit'

The Fit theory emerged as the final, pivotal framework that sharpened the focus of my research on the emotional aspects of employee experience. Central to organizational psychology, this person-environment fit theory posits that individuals can only flourish in environments that are well-suited to them. According to Kristof-Brown and Guay (2010) and Van Vianen (2018), 'Fit' is defined as the level of compatibility between an individual's traits and the attributes of their environment. The theory suggests that fit is a stronger predictor of individual outcomes than any single factor. When there is a high compatibility between a person's traits and their environment, their work results are generally more positive. Conversely, any misfit tends to weaken these positive outcomes.

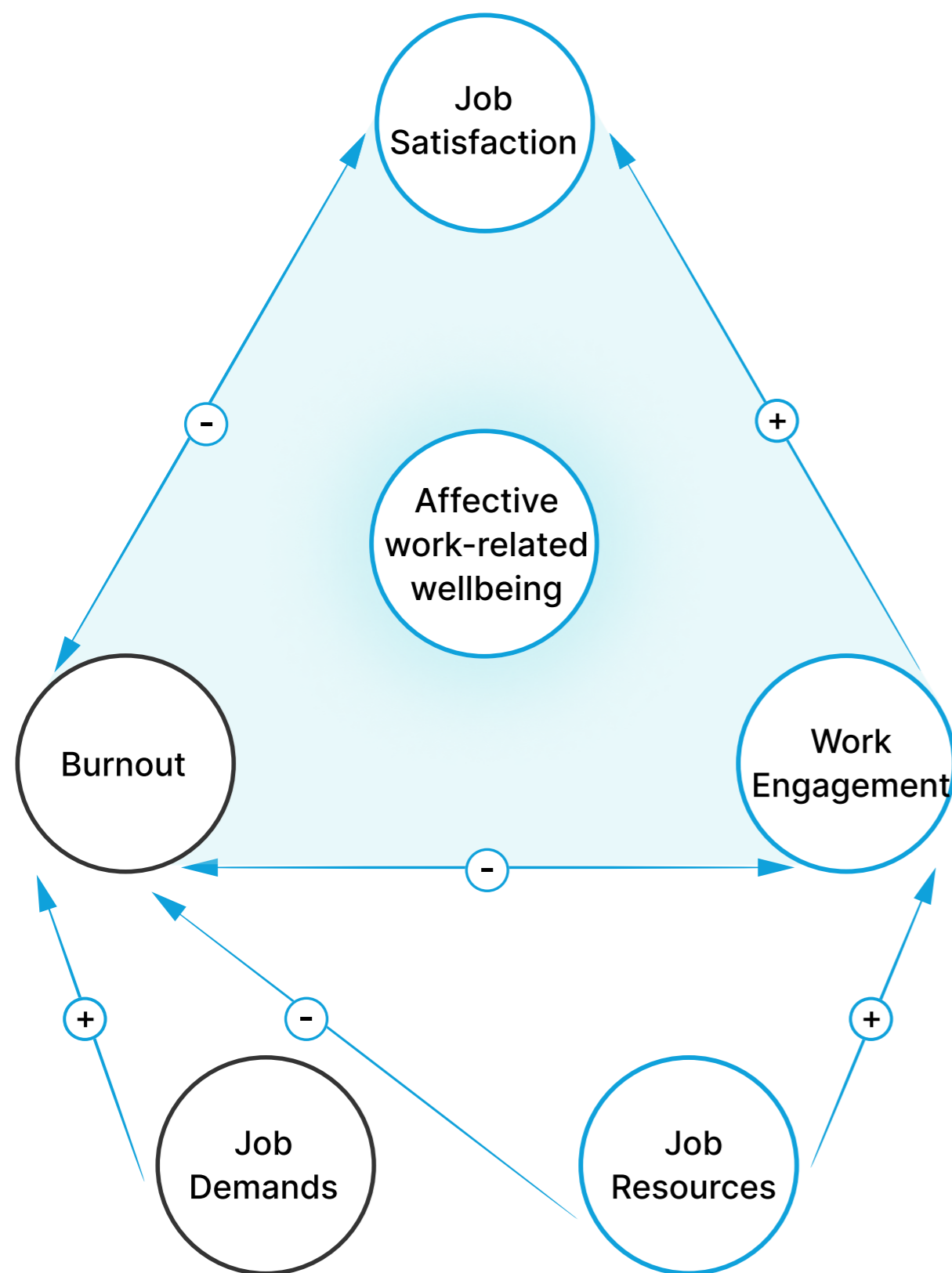
## Affective wellbeing as Attitudinal Outcomes

Beyond clarifying the interplay between individual characteristics and organizational environment, **Fit Theory also distinguishes between different types of work outcomes.** Commonly discussed work outcomes, such as job satisfaction, job performance, and burnout, are often conflated in many theories. However, Kristof and colleagues (2005) found that **organizational characteristics**—such as supervisor support—**exert a stronger influence on attitudinal outcomes** like job satisfaction, engagement, and job stress. In contrast, behavioral outcomes (e.g. performance, turnover, and job choice) are more directly related to the objective match between employee abilities and job demands, with individual traits playing a moderating role.

**These findings indicate that employees' subjective experiences at work directly reflect whether an organization has successfully fostered a supportive environment.** These experiences are also tightly linked to employee engagement. By assessing employees' emotional well-being, a thorough understanding of the actual working conditions can be developed. Additionally, this analysis provides an opportunity to explore how Syntilio can play a role in shaping a positive environment as a future digital workplace.

## Fostering Flourishing at Work

# The Theoretical Framework Behind Affective Well-being.



The first half of this chapter, serving as an initial theoretical exploration, highlights an important insight for this project: grounding the project in employees' subjective work experiences offers the greatest potential for guiding Syntilio's future development.

### Research Aim and Method.

As a first deep-dive into the subject, I conducted a literature review to examine key theories and empirical findings from academic sources. This review aimed to develop a thorough understanding of how employees' subjective occupational well-being are shaped and influenced. Also, this theoretical foundation is anticipated to provide a solid basis for structuring future primary research activities and shaping relevant research questions.

A comprehensive search of online databases was performed, using the following keywords:

**#Subjective Wellbeing #Healthcare Staff Wellbeing  
#Work-related Wellbeing  
#Job Satisfaction #Occupational Stress  
#Remote Working #Telework**

Figure 1.2 Theoretical framework of affective wellbeing of employees

# The equilibrium of employees' Affective wellbeing.

Since the early twentieth century, assessing the social psychological factors of work to ensure employee happiness has become a pressing practical need.

This shift arises not only from the development of the happy-productive worker theory, which has sparked the imagination of management professionals, but also due to the increasing attention given to issues arising from employee burnout, including high turnover rates, absenteeism, anxiety, and depression in various industries.

This section explores the evolution of theories related to employee well-being and proposes a new integrated model that considers the interplay between job satisfaction, work engagement, and burnout.

The **call center industry** exemplifies the critical need for addressing employee well-being. Due to the high emotional labor, repetitive tasks, and stressful nature of the work (Taylor & Bain, 1999), the average employee turnover rate in call centers is notably high, ranging from 35% to 45% (Lovell, 2022). Such dilemmas have spurred academic research focused on employee well-being. To build consensus on how environmental and organizational factors predict employee happiness, numerous empirical studies have been conducted across various industry sectors.

Early theoretical research primarily stemmed from work stress models, including the Job Demand-Control Model (JDC; Karasek, 1979), the Effort-Reward Imbalance Model (ERI; Siegrist, 1996), and the Job Demands-Resources Model (JDR; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). These job design theories share a common premise: occupational stress arises from an imbalance between the worker and their work environment.

Since the JDC model focuses on environmental constraints and decision-making latitude, while the ERI model emphasizes occupational rewards, both models lack the flexibility needed for broad applicability across various job types. Consequently, the JDR model, which integrates elements from both JDC and ERI, has evolved into a more comprehensive framework and is now the predominant model for understanding factors that influence occupational stress.

In a different vein, some scholars have opted to approach the topic from a positive angle, focusing on well-being within the work context and seeking to break down and analyze it to find effective strategies for enhancing employee happiness. Daniels (2000) was among the first to propose that work-related well-being encompasses more than just job satisfaction, suggesting that a broader measure of affective well-being would offer a more comprehensive understanding. Affective well-being is multidimensional, capturing various nuances in work experiences, including satisfaction, burnout, and work engagement.

A prominent line of research, led by Warr (2002), recommended developing a multidimensional model of affect to describe and examine overall work-related well-being. **This model incorporates three emotional dimensions: pleasure-displeasure, enthusiasm-depression, and vigor-fatigue.** Job satisfaction, work engagement, and burnout each correspond to one of these dimensions, representing distinct facets of the model.

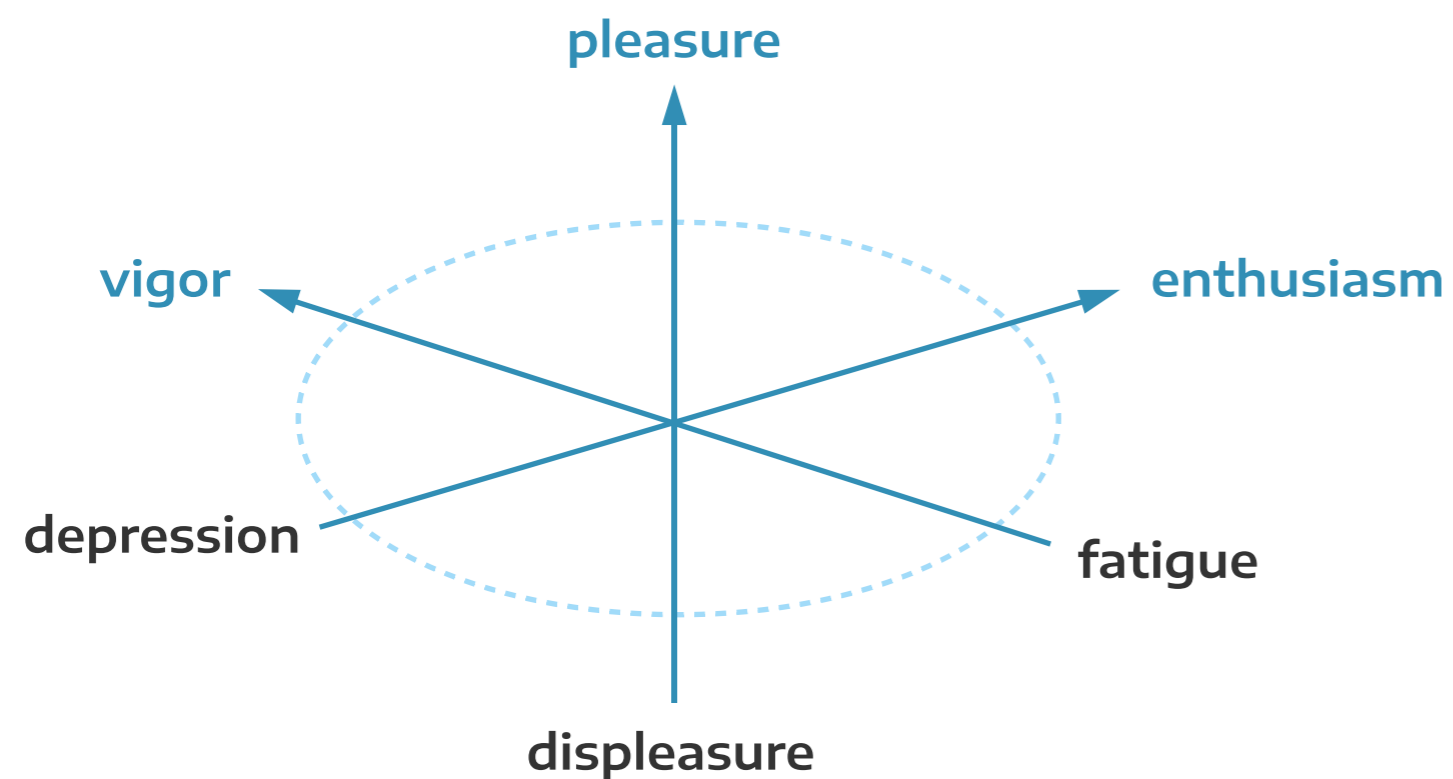


Figure 1.3 three dimensional affective wellbeing framework.

Here, the two academic streams converge: in empirical research, both the JDR and Affective Well-being models measure work-related psychological states—specifically, **job satisfaction, work engagement, and burnout**—and use quantitative analysis to evaluate how well these frameworks fit real-world data. **In other words, these three constructs are recognized by both theoretical perspectives as essential dimensions for describing work-related well-being.**

Based on this foundation, a practical model (Figure 1.4) was developed for this project, proposing that work-related affective well-being represents a stable state in which job satisfaction, work engagement, and burnout dynamically influence and regulate one another.

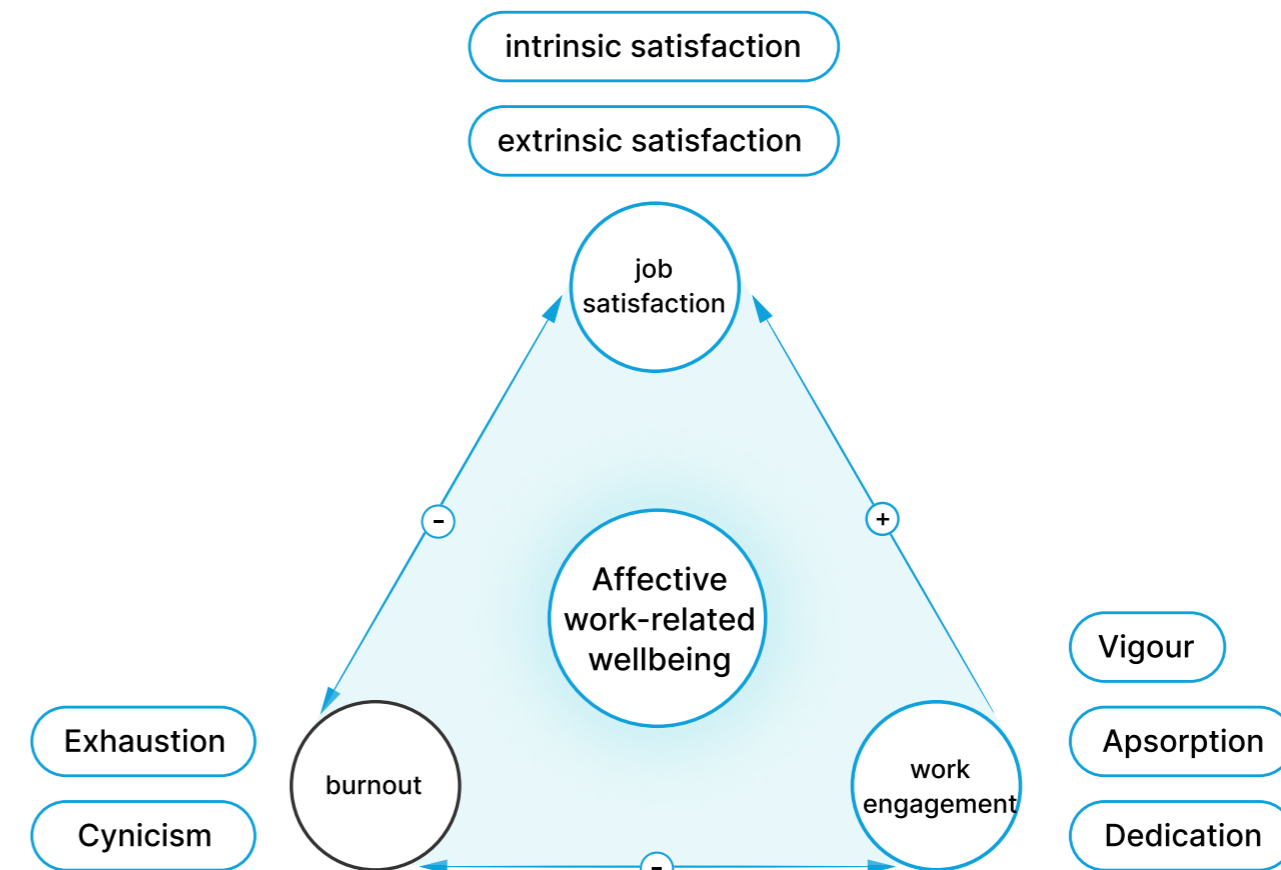


Figure 1.4 three dimensional affective wellbeing framework.

### Job Satisfaction

Job satisfaction, as the term implies, refers to an employee's overall sense of satisfaction with their work, which can range from positive to negative. Judge et al. (1994) describe job satisfaction as a response to one's job, shaped by comparing what the employee expects with what they actually experience. Spector (1997) further breaks down job satisfaction into two components: intrinsic and extrinsic satisfaction.

**Intrinsic satisfaction** relates to how individuals feel about the nature of their job tasks, encompassing the internal rewards derived from performing their work, such as a sense of achievement, responsibility, and enjoyment of the work itself. In contrast, **extrinsic satisfaction** relates to how employees perceive the conditions surrounding their work, including salary, work environment, and supervisory practices. Unlike intrinsic factors, these external elements are typically shaped by the organization rather than the job itself.

Burnout is a prolonged response to chronic occupational stress. Common among “normal” individuals, burnout is primarily characterized by emotional exhaustion, accompanied by predominant feelings of helpless, hopeless, and powerless. Chronic fatigue is a core element of burnout, leading affected individuals to experience reduced energy levels and limiting the effort they can invest in their work.

**In the healthcare sector**, burnout can have serious consequences. Patel et al. (2018) found in a systematic review that burnout among healthcare professionals is associated with an increase in medical errors, including failures in perceived patient safety and medication errors. These issues ultimately reduce the quality of care and lower patient satisfaction.

Academically, the definition of burnout has been largely shaped by Demerouti and Nachreiner (1998), who describe it as a syndrome that manifests across two dimensions: exhaustion and cynicism.

### **Exhaustion**

Exhaustion refers to a depletion of an employee’s emotional resources, which results in an **incapability to perform** tasks effectively.

### **Cynicism**

Cynicism is characterized by a negative, detached, and insensitive attitude toward work, reflecting an **unwillingness to perform** in tasks. According to Rothmann (2008), cynicism—or psychological withdrawal from work—can serve as an adaptive mechanism to cope with excessive occupational stress and the accompanying feelings of exhaustion.

### **Engagement**

Contemporary research on work engagement has largely been stimulated by studies on burnout. Maslach and Leiter (2008) describe work engagement as the direct opposite of burnout. It refers to an employee’s ability to fully inhabit their professional role, demonstrating physical, cognitive, emotional, and spiritual involvement and expression (W. A. Kahn, 1990b).

Engaged employees feel energized by their work and are better equipped to handle difficult tasks, driven by their enthusiasm, which enables them to take initiative and persevere. Numerous studies have found a direct association between work engagement and improved performance (Kim et al., 2013). Additionally, Wee and Lai (2021), in a systematic review, found that engagement among **frontline healthcare professionals (e.g., nurses, physicians)** positively correlates with perceived quality of care and patient satisfaction.

### **Vigor**

Vigor refers to high levels of energy and mental resilience, indicating an ability to exert effort and persist through challenging times.

### **Dedication**

Dedication embodies a sense of significance in one's work, highlighting enthusiasm and pride while viewing tasks as meaningful challenges.

### **Absorption**

Absorption signifies a state of deep concentration, characterized by focused attention, a sense of control, loss of self-awareness, a distortion of time, and intrinsic enjoyment.

## > **The relationship between job satisfaction, burnout and work engagement**

These components of work-related affective well-being—job satisfaction, burnout, and work engagement—are often considered as **independent yet interrelated dimensions**. Although supportive empirical evidence can be found for each of these relationships, a comprehensive framework that fully accounts for their interactions remains to be established. This section provides an overview of key perspectives on these relationships, drawing from influential studies and prevailing theories.

Among these components, work engagement and burnout are frequently viewed as opposing states and are thoroughly examined within occupational stress theories, such as the Job Demands-Resources (JDR) model, which will be explored further in the upcoming sections. However, the relationship between job satisfaction and the other two dimensions remains less clearly defined.

Research has consistently found a **positive correlation between job satisfaction and work engagement**, with studies by Shahpouri et al. (2015) and Alarcon and Lyons (2011) showing that higher engagement levels are associated with greater job satisfaction across various professions. Supporting this, Orgambídez-Ramos & de Almeida (2017) identified work engagement as a motivational state that enhances job satisfaction, suggesting that **engaged employees experience greater fulfillment** in their roles.

The systematic review by Toh et al. (2012) found a strong, **bidirectional relationship between employees' job dissatisfaction and burnout**. However, the causality within this relationship remains speculative. Fairbrother and Warn (2003) confirmed a negative relationship between occupational stress and job satisfaction, on the contrary Ogresta et al. (2008) identified low job satisfaction as one of the strongest predictors to a burnout syndrome.

Notably, several studies highlight **the protective role of job satisfaction in preventing employees from slipping from a state of engagement into burnout**. This effect was initially observed in a study of Dutch medical specialists (Visser et al., 2003), where, despite under high occupational stress, specialists with high job satisfaction reported burnout scores that were even below the average for Dutch healthcare professionals. Subsequent research (Wu et al., 2020; Ali & Ali, 2014) has supported this protective role of job satisfaction, finding that it becomes particularly pronounced in high-stress environments. Conversely, when both stress and dissatisfaction are high, employees are much more likely to experience exhaustion.

# How could wellbeing be regulated?

## How changes in job predict wellbeing of employees?

The Job Demands-Resources (JD-R) model not only contributes to defining affective well-being but also offers valuable insights into **how job characteristics influence employee well-being**, making it especially relevant to this part of the project. This section incorporates the JDR model as a theoretical framework for two main reasons:

First, the JD-R model integrates various perspectives on work stress and motivation—including the JDC, ERI and Job Characteristics Theory (Hackman & Oldham, 1976)—providing a more complete and **comprehensive understanding** of employee well-being and performance (Van Veldhoven et al., 2019).

Second, the JD-R model offers significant flexibility and inclusivity. Unlike traditional job design theories limit their focus to a specific set of job characteristics, the JD-R model includes a wide variety of job features, making it **adaptable and practical across diverse work contexts**.

According to Lazarus and Folkman (1984), when external factors disrupt an employee's affective equilibrium, occupational stress starts to occur. This idea aligns with the core concept of the JD-R model, which suggests that **all job characteristics, whether common or unique, can be categorized into two distinct groups: job demands and job resources** (Demerouti et al., 2001). These job demands and resources interact to directly influence burnout and work engagement, thereby impacting employees' affective well-being and, indirectly, their health, behavior, and work performance.

### >Job Demands as Employee Energy Takers

Job demands refer to aspects of a job that require sustained physical, cognitive, and emotional effort and are therefore associated with certain physiological and psychological costs (Demerouti et al., 2001). Generally speaking, these are the “negative elements” of work that drain your energy (Rothmann, 2008). Common job demands include work overload, interpersonal conflicts, and emotional demands.

### >Job Resources as Employee Energy Contributors

In contrast, job resources are defined as aspects of a job with motivational potential. These resources (a) help employees achieve work goals, (b) buffer the impact of job demands, and (c) promote learning and personal growth (Bakker & Demerouti, 2017). In simple terms, they are the good things of work that boost energy. Common examples of job resources include team support (from coworkers and supervisors), job control, and performance feedback.

Both high job demands and a lack of job resources contribute to burnout. **Therefore, increasing resources—such as social support, job control, and feedback—achieves two goals: it helps prevent burnout and fosters engagement.**

At its core, the JD-R model integrates two distinct psychological processes driven by job demands and resources.

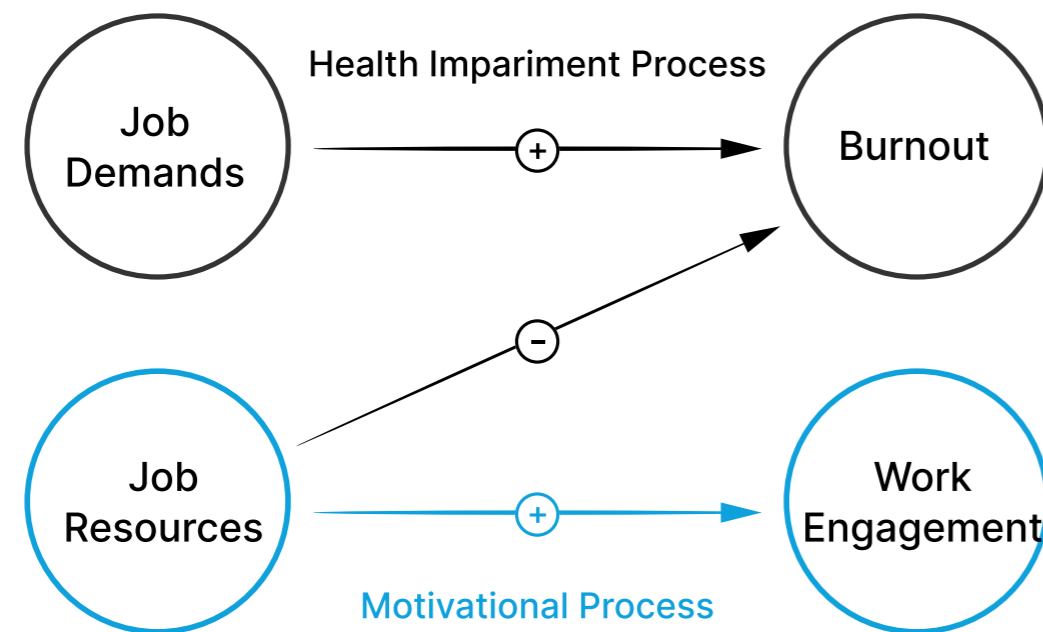


Figure 1.7 two psychological process

### Health Impairment Process

When job demands become excessive, and job resources are insufficient to compensate, employees experience the stress process, leading to gradual exhaustion. This increased effort depletes employees' physical, emotional, and cognitive resources, potentially resulting in job strain, exhaustion, and health issues (Demerouti et al., 2001; Li et al., 2022).

A meta-analysis of longitudinal JD-R studies by Lesener et al. (2020) found that **job demands are uniquely linked to the health impairment process** over time. Therefore, **reducing job demands**—such as interpersonal conflicts and job insecurity—is one of the **most effective ways to alleviate occupational stress**.

Additionally, job resources were found to be negatively related to stress, suggesting that organizations can prevent burnout by providing more job resources.

One proposition of the JD-R theory is that **job resources can buffer the impact of job demands on strain**. This hypothesis was confirmed in a study of Dutch home care (Xanthopoulou, Bakker, Dollard, et al., 2007), where it was found that care workers who had sufficient resources did not experience high levels of exhaustion or cynicism, even when facing demanding client needs.

### Motivational Process

Job resources have inherent motivational qualities. When job resources are abundant, the basic psychological needs are satisfied and employee engagement is then fostered—a process known as the "motivational process." This can lead to better work outcomes, such as increased creativity, improved performance, and stronger organizational commitment.

It is important to note that **fostering engagement primarily relies on increasing resources**, such as social support, job control, and feedback. Simply reducing demands, such as lowering workload, may not necessarily boost work engagement (Schaufeli, 2017c). In fact, certain job demands can make work more challenging, enhancing the dedication aspect of engagement.

**From an intervention perspective, creating a supportive environment by providing abundant resources is a highly effective strategy with dual benefits, as it both prevents burnout and promotes engagement.**

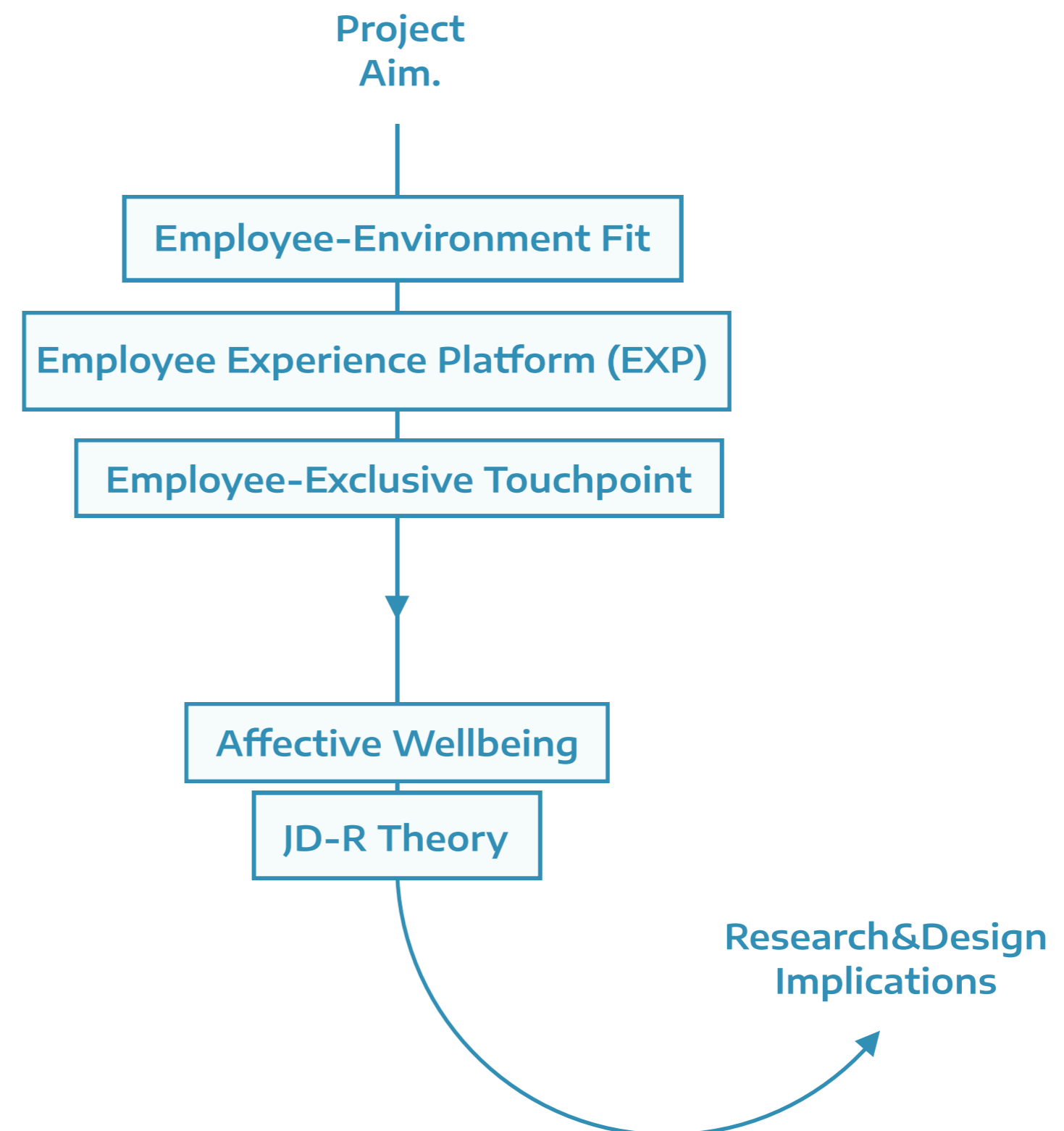
# Key Take-aways.

The theoretical exploration within this study has yielded two significant outcomes:

**Firstly, we adopted 'affective wellbeing of employees' as the main framework of inquiry to guide subsequent research activities.** Initially, I was unsure of its applicability, but it has proven capable of providing a comprehensive perspective on the working conditions within care centers.

Moreover, our analysis synthesized a theoretical model that categorizes the regulatory factors affecting employee affective wellbeing into two main types: energy takers (job demands) and energy givers (job resources). **While affective wellbeing is inherently a complex and multi-dimensional construct, and the influencing factors can be diverse, simplifying them into these two categories significantly facilitates the practical application of the model.**

**Second, our analysis refined our understanding of the project's aims.** As posited in the preceding chapter, 'letting the work platform optimize Centralists' working experience' translates into **'molding software like Syntilio into an ideal future digital workplace, thereby fostering a more supportive environment for Centralists'**. Prioritizing Centralists' experiences should be the cornerstone of strategy and a fundamental strength in differentiating Syntilio from other platforms and establishing them as the sole mainstream workstation(EXP).





**2**

**Emphasis**

Primary Research

To explore the potential of digital platforms in supporting the management of unplanned care requests, this chapter delves into a contextual analysis of Centralists' work experiences and the current operational conditions at care centers.

By mapping the involvement of various parties—particularly Centralists—throughout the entire journey of an event, from the emergence of a need to its resolution, this chapter uncovers a diverse array of existing supportive resources as well as unmet needs.

## Research Purpose.

### From Abstract to specific

Previous theoretical research has laid the groundwork for this study, emphasizing a central idea: employees' affective well-being in the workplace is shaped by the dynamic interplay between job demands and job resources.

However, these broad categories are still too general to capture the complexities of specific work environments. For instance, the Energy Compass—an assessment tool developed from the JD-R model—identifies over 130 factors that can impact workplace experiences (Schaufeli, 2017). These factors vary in importance across different organizations and job roles.

**Each specific work context has its own unique key factors, thus forming diverse models of influence mechanisms in different situations.** For example, Wang et al. (2020) found that remote work provides agents with greater job autonomy than onsite work, but the disconnect from the physical work environment also leads to lower engagement and increased feelings of isolation.

In this study, I aim to explore **which specific job demands and job resources** within the context of remote homecare centers in the Netherlands contribute to the affective well-being of Centralists.

More importantly, we seek to understand **why these factors matter and how they shape the Centralists' experience of their work.** This focus requires moving beyond the common quantitative approaches used in occupational well-being studies. Instead, we need to gather detailed, real-world stories from the Centralists to uncover insightful strategies that can improve their work experience.

### Reserach Questions

Thus, My Research Questions are:

**How do centralists in remote Care Centers experience their existing workflow and work environment?**

**What are the unmet needs and potential gains of Centralists related to their affective well-being?**

# Preliminary study.

Before officially beginning this graduation project phase, I joined Syntilio as an intern, which allowed me to gain preliminary learnings into Centralists' job functions, the field of remote homecare services in the Netherlands.

This exploration primarily involved conducting interviews with various team members across different roles, attending meetings, and reviewing documentation such as historical research notes and records on Notion.

These initial insights were then consolidated into a user journey map—that provides a structured overview of the project context, serving as essential references as we progressed into the formal project phase.

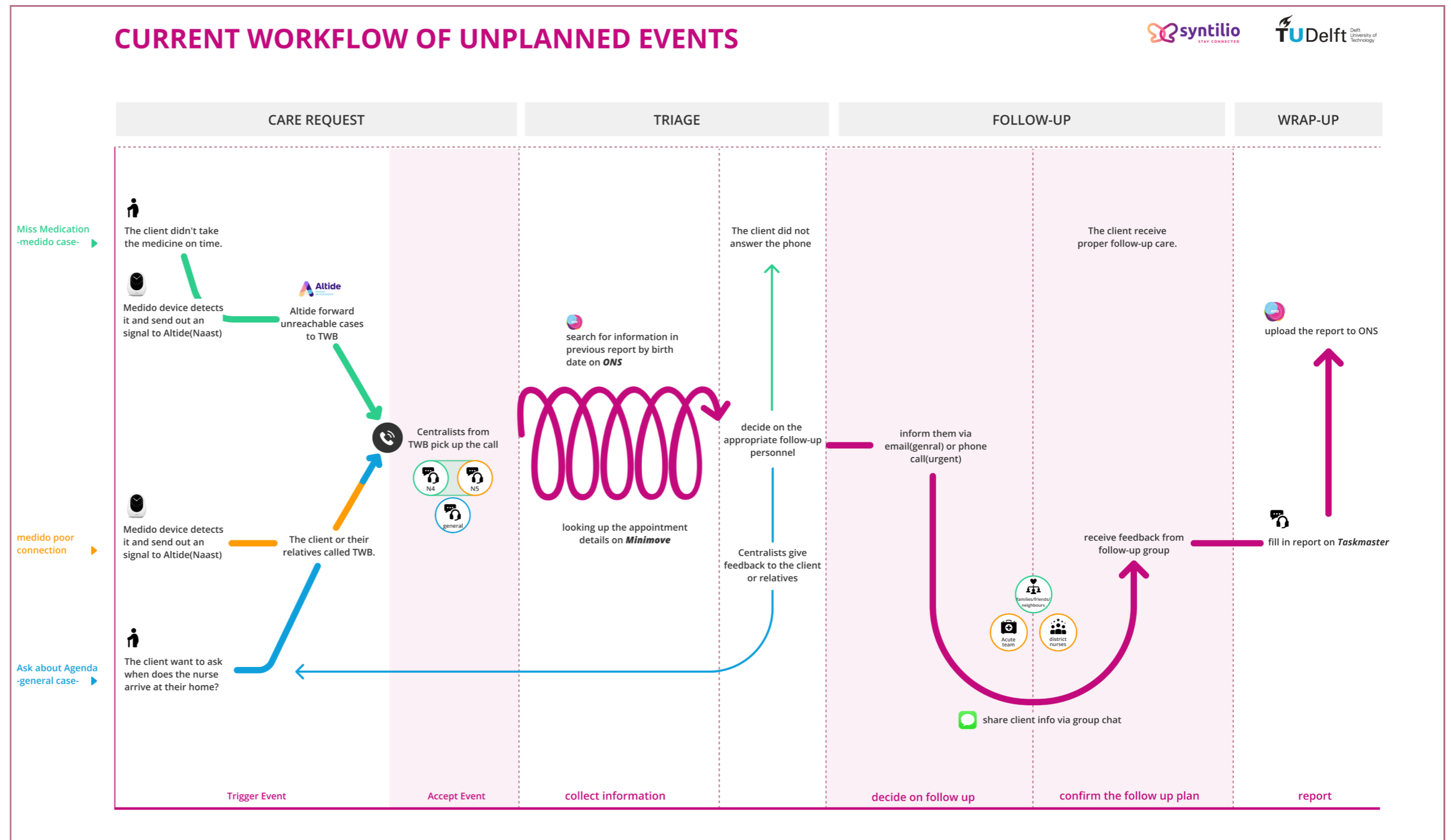


Figure 2.1 Vacancies in the healthcare sector

This journey map (Figure 2.1) provides an overview of the stages involved in managing unplanned care requests, highlighting three distinct types of events with example scenarios that reflect varying levels of medical need and urgency.

The first event type, **Ask About Agenda**, is a routine, non-urgent client inquiry that goes through a general line. These inquiries typically require a basic level of support and are handled efficiently without the need for specialized medical expertise.

The second event, **Miss Medication**, represents a medical situation that requires the attention of Centralists with a medical background. While this case type involves healthcare expertise, it is not time-sensitive, allowing for a measured response rather than immediate action.

The third and most critical event type, **Medido Not Reachable**, demands urgent intervention. In this scenario, an immediate response is essential to ensure the continuity of the patient's care, especially if monitoring devices like Medido are involved. As the urgency and complexity of medical needs increase, so does the requirement for the Centralists' specialized knowledge and expertise.

As the medical complexity of each event type increases, so does the need for higher levels of Centralist expertise, knowledge, and experience. This ensures that each case receives an appropriate response tailored to its specific level of medical need.

The overall workflow for Centralists handling these care requests is organized into four main stages: Care Request, Triage, Follow-Up, and Wrap-Up.

#### Care Request

This initial stage details how events are triggered and received by the Care Center. Whether initiated by clients or generated by electronic devices, each event enters the Centralists' case list as the starting point for intervention. Unlike traditional phone-based communication, managing signals from electronic devices requires specialized software. As a result, some homecare organizations, such as Care Centre A, outsource these cases to third-party agencies. When the outsourcing partner is unable to resolve an issue, the case is escalated back to the Care Center for further handling.

#### Triage

The triage phase involves gathering detailed information and making informed follow-up decisions. In the journey map, this information-gathering process is depicted as a coiled line, symbolizing the iterative and sometimes cumbersome nature of this task. Centralists must navigate multiple platforms to compile all necessary information. For events triggered by medical devices, they may need to proactively contact clients or provide feedback over the phone. Based on the information gathered, Centralists develop a preliminary follow-up plan and communicate it to the client.

#### Follow-Up

In this phase, Centralists communicate care tasks and relevant client information to the assigned care providers, such as field teams or acute teams, while also confirming their availability to ensure follow-up actions proceed smoothly. It is a communication-intensive stage, as Centralists engage with various care personnel through multiple channels and communication methods to facilitate smooth coordination.

#### Wrap-Up

The final stage involves the Centralist documenting the case details in a report, which is then uploaded to a dedicated platform for record-keeping and case management, thereby closing the case.

# Participants recruitment & Selection Criteria.

## Recruitment Process

The participants for this project were recruited with the help and support of the client company, Syntilio. A recruitment flyer was created to promote the research to various remote care centers connected to Syntilo, resulting in two organizations expressing a clear interest in participating. To maintain anonymity and clarity, these organizations will be referred to as 'Care Center A' and 'Care Center B' throughout the remainder of this paper.

## Participant Selection Criteria

The research activities were designed for centralists working in remote care centers, with participant selection based on two main criteria:

- First, preference was given to remote care centers operated autonomously by home care institutions.
- Second, participants with knowledge and experience related to device events were prioritized.

Also, convenience sampling (Patton, 2002) was applied in each research activity due to the busy schedules of the healthcare centers, where patient care takes priority over other activities.

This research centers on the affective well-being of centralists in their work environments, with particular attention to **events triggered by digital devices**. These device-initiated cases are particularly significant as they not only exhibit the traits of typical medical cases but also amplify the remote nature of the work. Centralists are possible to handle these cases without any direct client interaction, and as the use of digital devices continues to rise (Mostert et al., 2023), this shift may have a growing impact on their emotional well-being, especially if any characteristics of these cases are found to significantly affect their affective states.

The preference for **autonomously operated care centers** is based on their greater capacity to shape remote care services. Unlike third-party care centers, which often function in isolation with limited access to client data and follow-up resources, internally managed care centers maintain a comprehensive view of each client's care journey and possess the authority to implement changes. Moreover, the shared goal of this project with Syntilio is to empower homecare organizations to more effectively manage remote care requests and improve the quality of their services. This suggests a potential competitive relationship between Syntilio and third-party care centers.

**Affectief welzijn & zorg op afstand**  
Onderzoek Syntilio en TU Delft

Digitale zorg op afstand wordt voor steeds meer zorgorganisaties een volwaardig onderdeel van de zorgverlening. Slimme zorgtechnologie en ondersteunende processen houden voor de cliënt de zorg gewoontematen 'dichtbij'. Maar voelt de zorgverlener op afstand dit ook zo? Werkt de verpleegkundige centralist met dezelfde voldoening als de collega's aan het bed of in de wijk? En welke rol kan goed design hierin spelen? Syntilio onderzoekt het in samenwerking met TU Delft.

**Waarom onderzoekt Syntilio 'affectief welzijn'?**

Syntilio staat voor de best passende zorg. We combineren de laatste technische ontwikkelingen met kennis van mens en organisatie, gezondheid en duurzaamheid. Het inzicht in wat zorgverleners op afstand nodig hebben, ontwerpen we als best passende ondersteunende software.

Samen met TU Delft (Faculteit Industriële Ontwerp) onderzoekt Syntilio de factoren in de werkomgeving van centrale zorgverleners, die van invloed zijn op affectieve ervaringen, zoals motivatie, autonomie of gevoel een belofte. Op basis van dit onderzoek ontwikkelen we een model dat ons helpt dit subjectieve welzijn van centrale zorgverleners beter te begrijpen. Dit passen we vervolgens toe in de ontwikkeling van onze software. Zodat die niet alleen bijdraagt aan betere effectiviteit of doelmatigheid, maar ook aan het affectieve welzijn van de medewerkers.

**Onderzoek: jij deelt jouw ervaringen**

Wij willen je graag vragen bijdragen aan het onderzoek! Dit helpt ons vooral twee ervaringen te begrijpen: 1. Hoe ervaart de centralist de bijdragen van betere zorgtechnologie. 2. Hoe ervaart de centralist de samenwerking met de collega's aan het bed of in de wijk.

**Resultaat: wij delen onze inzichten**

Samen willen we de zorg verbeteren, met de best passende technologie. De resultaten van het onderzoek delen we niet alleen, in het eindrapport van het onderzoek laten we u ook met concrete energie geeft en wat eropgevoel kost tijdens de zorgverlening op afstand en hoe dit beter te ondersteunen.

**Deelnemers: 3-5 zorgverleners, 2 activiteiten**

Activiteit 1 - Dagboek  
1 week lang, jul 2023

Activiteit 2 - Interview  
donderdag, jul 2023

X: Che-1@tudelft.student.nl  
3@delft@syntilio.com

**TU Delft** **syntilio**

Maak Dit **Frederiek Galita**

**Doe je mee?** Werk jij als centralist, triagist of verpleegkundige op afstand in de VT, thuiszorg, GGZ of een regionale zorgcentrale? We nodigen je graag uit om deel te nemen aan het onderzoek.

**Delfts Design voor Nederlandse zorgtechnologie**  
**Affectief welzijn & technologie**

Digitale zorg op afstand wordt voor steeds meer zorgorganisaties een volwaardig onderdeel van de zorgverlening. Slimme zorgtechnologie en ondersteunende processen zorgen voor de cliënt dat de zorg gewoontematen 'dichtbij' blijft. Maar voelt de zorgverlener op afstand dit ook zo? Werkt de verpleegkundige centralist met dezelfde voldoening als de collega's aan het bed of in de wijk? En welke rol kan goed design hierin spelen?

TU Delft (Faculteit Industriële Ontwerp) onderzoekt de factoren in de werkomgeving van centrale zorgverleners, die van invloed zijn op affectieve ervaringen, zoals motivatie, autonomie of gevoel een belofte. Op basis van dit onderzoek ontwikkelen we een model dat ons helpt dit subjectieve welzijn van centrale zorgverleners beter te begrijpen. Dit model kan vervolgens worden toegepast voor de ontwikkeling van ondersteunende technologie, die niet alleen bijdraagt aan betere effectiviteit of doelmatigheid, maar ook het affectieve welzijn van de medewerkers.

**Waarom onderzoekt TU Delft 'affectief welzijn'?**

Syntilio staat voor de best passende zorg. We combineren de laatste technische ontwikkelingen met kennis van mens en organisatie, gezondheid en duurzaamheid. Het inzicht in wat zorgverleners op afstand nodig hebben, ontwerpen we als best passende ondersteunende software.

Samen met Syntilio (Faculteit Industriële Ontwerp) onderzoekt TU Delft de factoren in de werkomgeving van centrale zorgverleners, die van invloed zijn op affectieve ervaringen, zoals motivatie, autonomie of gevoel een belofte. Op basis van dit onderzoek ontwikkelen we een model dat ons helpt dit subjectieve welzijn van centrale zorgverleners beter te begrijpen. Dit passen we vervolgens toe in de ontwikkeling van onze software. Zodat die niet alleen bijdraagt aan betere effectiviteit of doelmatigheid, maar ook aan het affectieve welzijn van de medewerkers.

**Onderzoek: deel jouw ervaringen**

Wij zijn zelf of met je team bijdragen aan het onderzoek! Dit helpt je onze kennis te geven expertise en perspectief - inzichten de ontwikkelingen die bijdragen aan betere zorgtechnologie voor jou en je collega's. Per organisatie vragen we 3-5 zorgverleners, die we een dag volgen aan de hand van een dagboek. Aanvullend doen we een verdiepend interview.

**Resultaat: wij delen onze inzichten**

Samen willen we de zorg verbeteren, met de best passende technologie. De resultaten van het onderzoek delen we niet alleen, in het eindrapport van het onderzoek laten we u ook met concrete energie geeft en wat eropgevoel kost tijdens de zorgverlening op afstand en hoe dit beter te ondersteunen.

X: Che-1@tudelft.student.nl  
Tel: whatsapp: 0629021027

**TU Delft**

Figure 2.2 Recruitment Flyers

# Research Design.

## QL instead of QNT

As previously argued, using quantitative methods to assess and evaluate the affective well-being of Centralists in remote care centers would not provide us with sufficiently insightful information for developing effective intervention strategies.

While **Quantitative methods are widely accepted in academic studies** on occupational wellbeing, they often only provide surface-level causal relationships without delving into deeper motivations. Typically, researchers use standardized psychological questionnaires to evaluate work conditions, such as job resources (e.g. co-worker support), job demands (e.g. work overload), and outcomes like job satisfaction and wellbeing. Numerical analysis is then used to describe the performance of these indicators and how job resources and demands impact employees' overall sense of wellbeing.

Although this **quantitative approach** offers a high degree of accuracy, it **fails to capture the rich contextual information** needed to understand the underlying motivations behind employees' assessment of wellbeing. In contrast, qualitative research is more appropriate for my aims of exploring the affective wellbeing of Centralists, as it focuses on subjective experiences, thoughts and feelings, and the broader work context. By capturing personal stories and individual perspectives, **qualitative methods offer the nuanced insights necessary to understand how various factors interact within their work environment.**

## Barriers in Research Design

During the design of research activities, I encountered two major challenges:

**The first was the language barrier.** The majority of my target users, the Centralists, feel uncomfortable using English, which makes it difficult to conduct research activities that require real-time or face-to-face communication, such as interviews, focus groups, or workshops. Forcing them to use English in research could introduce bias, as they may struggle to articulate their thoughts effectively in a non-native language.

**The second challenge was capacity constraints.** The Remote Care Centers face persistent professional shortages, and the home care industry is known for its heavy workload and time-sensitive demands. This severely limits the time and flexibility these users can commit to research activities. Therefore, it was essential to design activities that required minimal time and effort to avoid adding to their existing professional burden.

# Research Activities



Figure 2.3 Research Timeline

From May to September, three qualitative research activities were conducted in sequence: **contextual observation, semi-structured interviews, and mood journal box research**. The specific implementation timelines for each activity are illustrated in the accompanying Figure 2.3.

The sequence of these activities was intentional. The observational phase took place first to **immerse researcher in the context** of the care center and to **inspire the formulation of interview questions**. For instance, observations revealed varying levels of enthusiasm among participants regarding different types of events, leading to design interview questions related to work motivation and future career planning.

Additionally, the rich, detailed information gathered through interviews provided a deeper understanding of the workflow, laying the **groundwork for interpreting responses** in the subsequent diary research.

As the diary research required the longest period, the most complex preparation, and posed the greatest challenge in participant engagement, it was scheduled as the last activity.

Below is a detailed description of how each activity was designed and how data was collected.

# ① Contextual Observations .

One-hour observations were conducted at both participating care centers.

## > Why Observations?

Given a lack of prior experience in the Dutch home care industry, it was challenging to envision the workflow dynamics or the physical layout of the care centers. Therefore, contextual observations were chosen as an appropriate first step of research, allowing for a comprehensive grasp of the setting where the design will be applied. As the centralists' workflows for processing care requests are a core focus of the research, field observations have also proved invaluable for capturing specific actions and procedural steps—details that may not emerge through interviews or other methods (Fortier, 2023).

## > Objective of Observations

The observations primarily focused on **documenting the precise steps centralists take during various stages** of the care request workflow. Furthermore, attention was given to the overall care center environment, as well as centralists' behavior during periods of calmer time or between cases.

Both activities involved direct observation (Ciesielska et al., 2017), where I sat behind or beside the centralists while care events unfolded in real time. To ensure the confidentiality of patient information, no video recordings were made during the observations. However, with participant consent, a few key photographs were taken. Other data were collected through note-taking and subsequently organized using the **AEIOU canvas** (Figure 2.5).



Figure 2.4 Observations at field

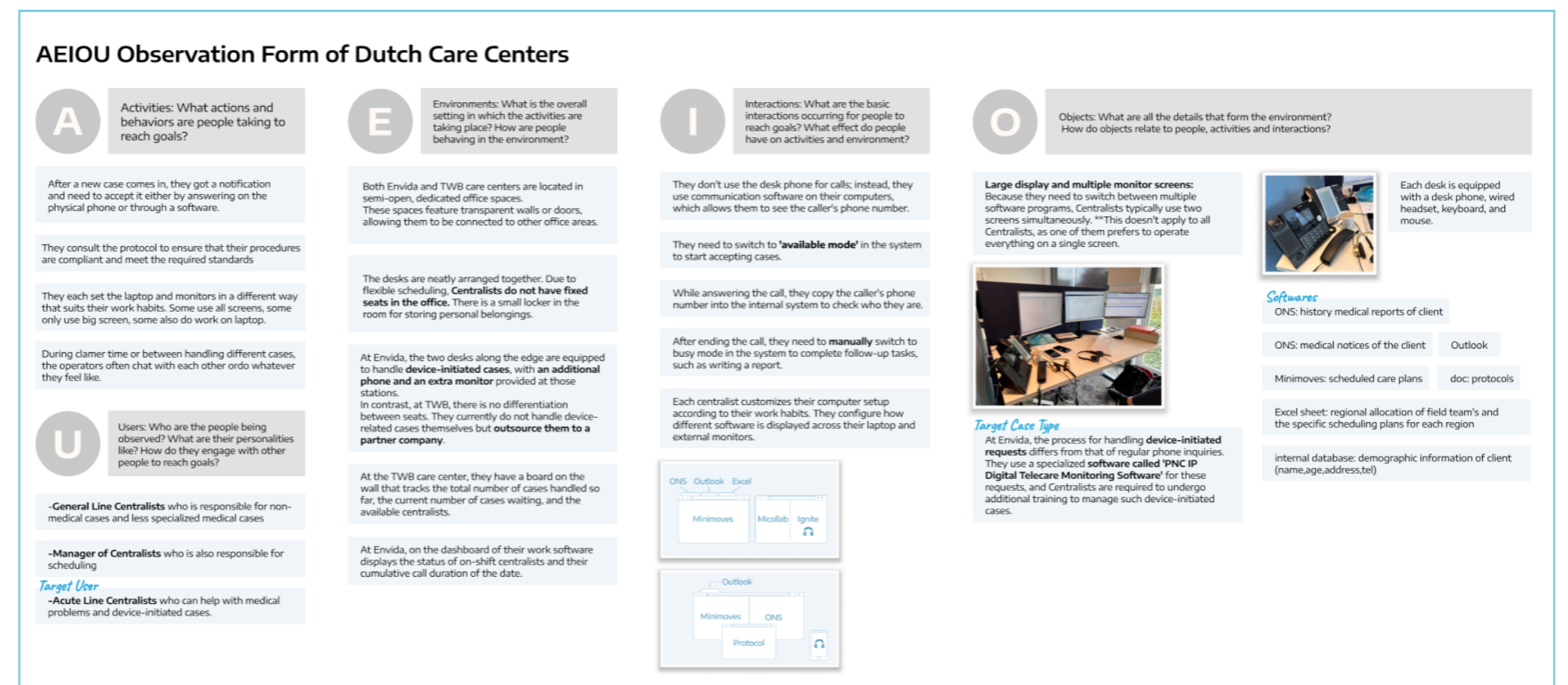


Figure 2.5 AEIOU Observation Form

## ② Semi-structured Interviews with Visual affective Triggers.

To explore the subjective experiences of Centralists in their current work environment, semi-structured interviews were conducted. This approach provided space for open, in-depth conversations that gave the researcher valuable insights into how individuals perceive specific situations or phenomena, especially by revealing their deeper thoughts, motivations, and feelings (Islam et al., 2021).

Due to language barriers, researchers from Syntilio who were proficient in Dutch conducted the interviews on the researcher's behalf. Each interview lasted approximately 20 minutes. They followed the short **semi-structured interview guide**. Without using audio recordings or transcriptions, the data were instead gathered through detailed notes taken by the interviewers, which were later translated into English by the researcher for analysis.

Eleven participants were purposefully selected from Care Center A based on their extensive experience. Of these, **4 were from the general line, and 7 were from the medical and acute care line**, with a medical background(see table 2.1).

Experience in healthcare	Experience in care center	Current work mode
20-25 years	1-2 years	Care Center only
over 40 years	1-2 years	Care Center only
10-15 years	1-2 years	Care Center&in the field
30-35 years	1 year	Care Center only
<b>General Line</b>		
<b>Medical Line</b>		
10-15 years	1-2 years	Care Center only
25-30 years	2-2.5 years	Care Center&in the field
25-30 years	2-2.5 years	Care Center&in the field
5-10 years	over 3 years	Care Center&in the field
10-15 years	1 year	Care Center&in the field
20-25 years	2 year	Care Center&in the field

Table 2.1 Interview Participants

In addition to the interview guide, a set of eight carefully selected images (Figure 2.6) was used as a symbolic elicitation tool to facilitate the discussion of feelings and emotions. These images, deliberately unrelated to the participants' work context, depicted evocative objects such as traffic lights, dominoes, and building blocks, designed to elicit emotional responses. By allowing participants to select images that resonated with their subjective experiences, this approach provided an abstract, non-verbal medium for expressing complex emotions (Harper, 2002; Holmes et al., 2008). It was intended to help bridge linguistic and cultural gaps while reducing the potential for misinterpretation of feelings, offering a more nuanced insight into their emotional states.

### General Questions

- Could you tell me a bit more about yourself? (Background, education, years of experience & future career plan, hobbies, etc.)
- Why did you decide to work at Care Center A?
- What is your key responsibility?
- For how long have you been working at Care Center A?
- What is your future plan for career?

### Experience at work

I want you think about your overall experience and feelings in this role, including the negatives (e.g. stress/frustrations) and positives (eg. surprises/satisfaction).

- Which of the following images best represents your overall feelings in this position? Why? You can also choose specific parts of the images if that helps.
- What are your expectations for the future work of this role? Do any of these images represent what you hope for? Can you explain in more detail?



Figure 2.6 Interview Materials

### ③ Moody Journal Research Box (Diary Study).

A diary study was also conducted at two participating Care Centers to explore Centralists' experiences with their daily workflows. In this context, “workflow” refers to the necessary steps and stages Centralists undergo when handling each care request. The goal is to **understand the ups and downs they experience** in these workflows, such as pain points, challenges, and moments of achievement or fulfillment.

#### > Why Diary Studies?

Diary studies are particularly suited to exploring **repetitive activities** like those of Centralists, often producing journey maps as outputs (Ohly et al., 2010). Participants are asked to record their thoughts, feelings, and general experiences over a specified period, providing valuable insights into how their experiences change over time.

#### > Adaptations in this project

Diary Study typically spans several weeks or even longer. However, in this project, **the recording period was shortened to one single workday**. This change was driven by two main reasons.

First, given the Centralists' limited time and energy for this research, the design minimized unnecessary workload to keep their participation focused and efficient.

Second, the research interest lies in understanding their workflows, specifically the steps they take when handling each Care Request. Throughout the workday, Centralists cycle through this workflow, allowing them to complete it dozens of times. Thus, a single day provides sufficient opportunities to capture these repetitive activities and create a meaningful Journey Map. Given these reasons, reducing the Diary Study to one day is both appropriate and well-suited to the goals of this project.

#### > Research Box Contents

I provided a toolkit designed to help Centralists record their mood and emotional states during their shifts. This toolkit includes four components (Figure 2.7):

- ① a step-by-step guide.
- ② two example cards that have been pre-filled as reference.
- ③ 20 cards of classified emotional states.
- ④ 10 blank mood event cards.



Figure 2.7 Diary study research Box

start of shift (front side)

end of shift (back side)

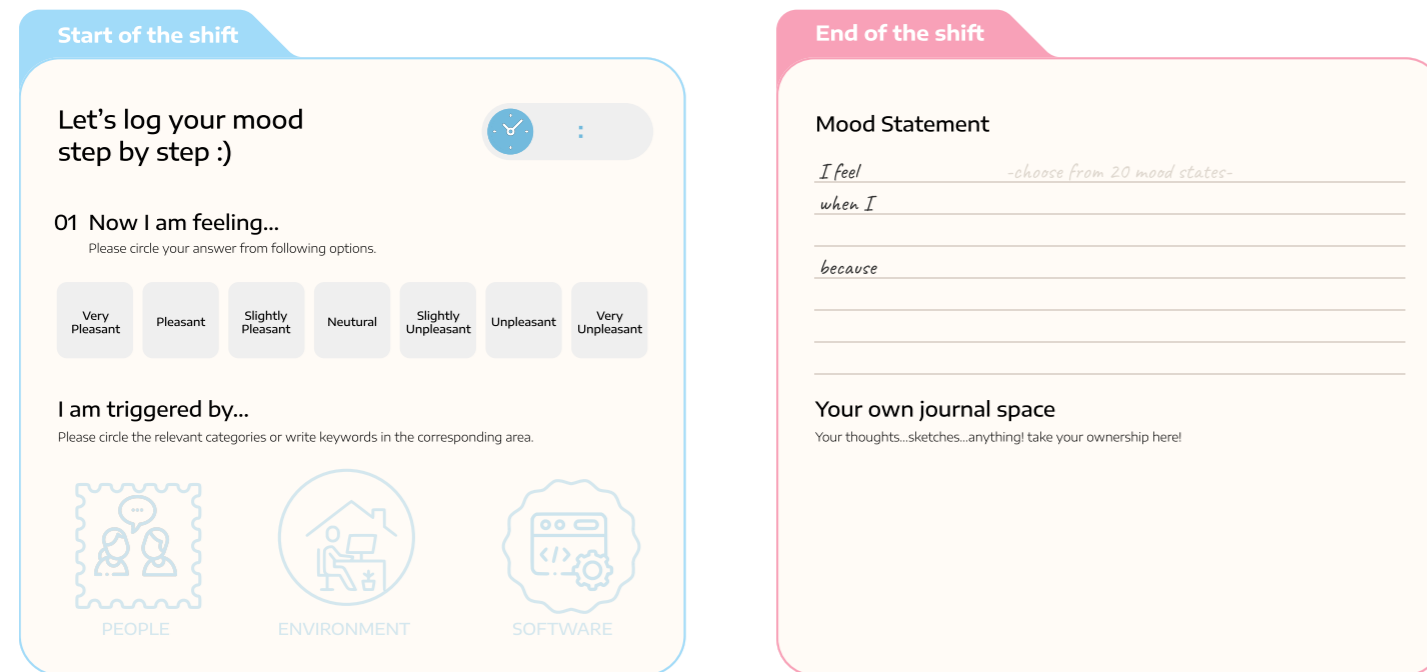
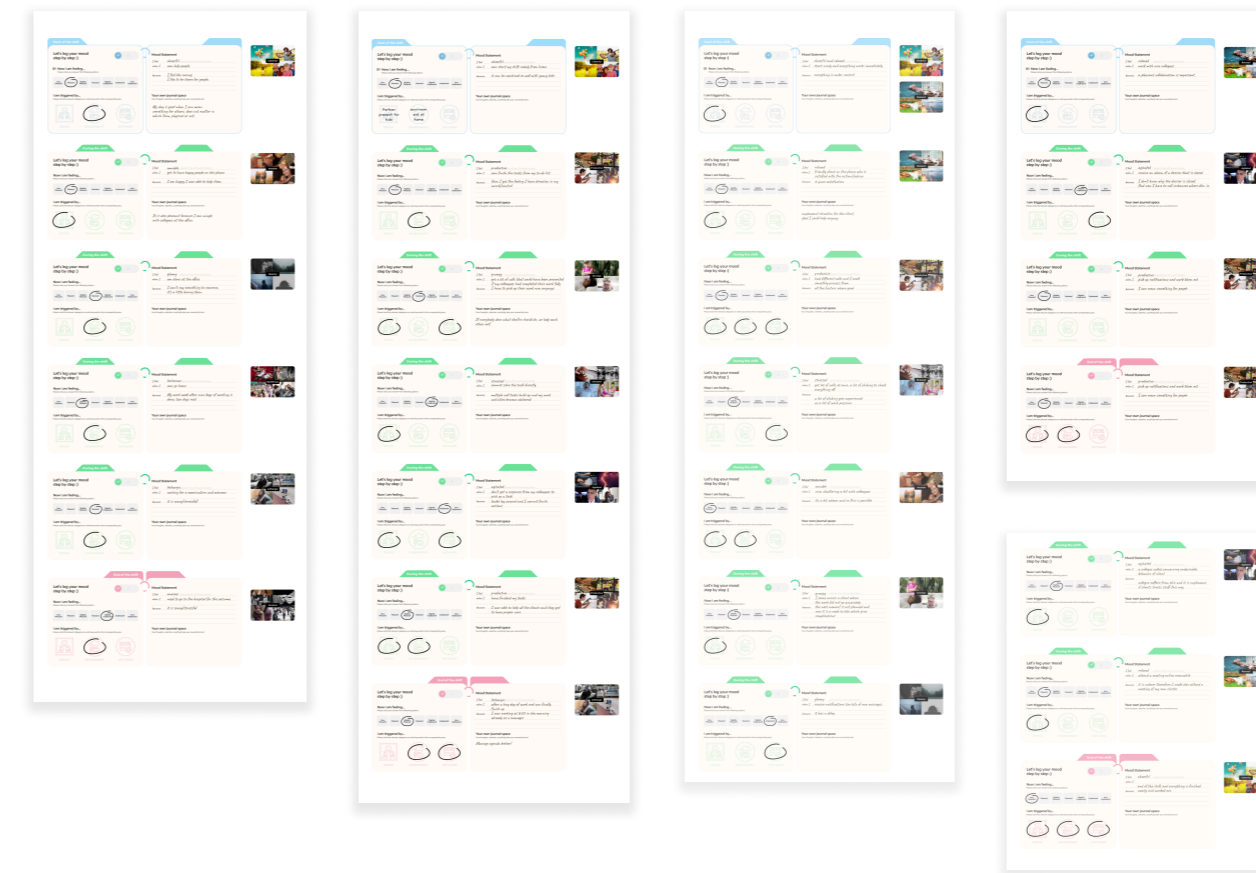


Figure 2.8 Details of Mood Cards



Participants are instructed to use an event-based approach to fill out these cards. This means they will complete the cards when specific emotional events occur. Among the ten cards, the first and last must be filled out, representing the **start** and **end** times of their shift. The other cards are for documenting emotional changes as they experience them, referred to as mood events.

The card design includes both front and back sides (Figure 2.8). The front allows Centralists to quickly capture their current emotional state, including a rating and a brief note on what triggered the mood change. The back side is for more detailed and standardized emotional data, requiring a narrative description of their emotional experience.

The Mood Journey activity included **4 participants from Care Center A** and **10 participants from Care Center B**. The completed cards will be translated into English and serve as raw data for analysis.

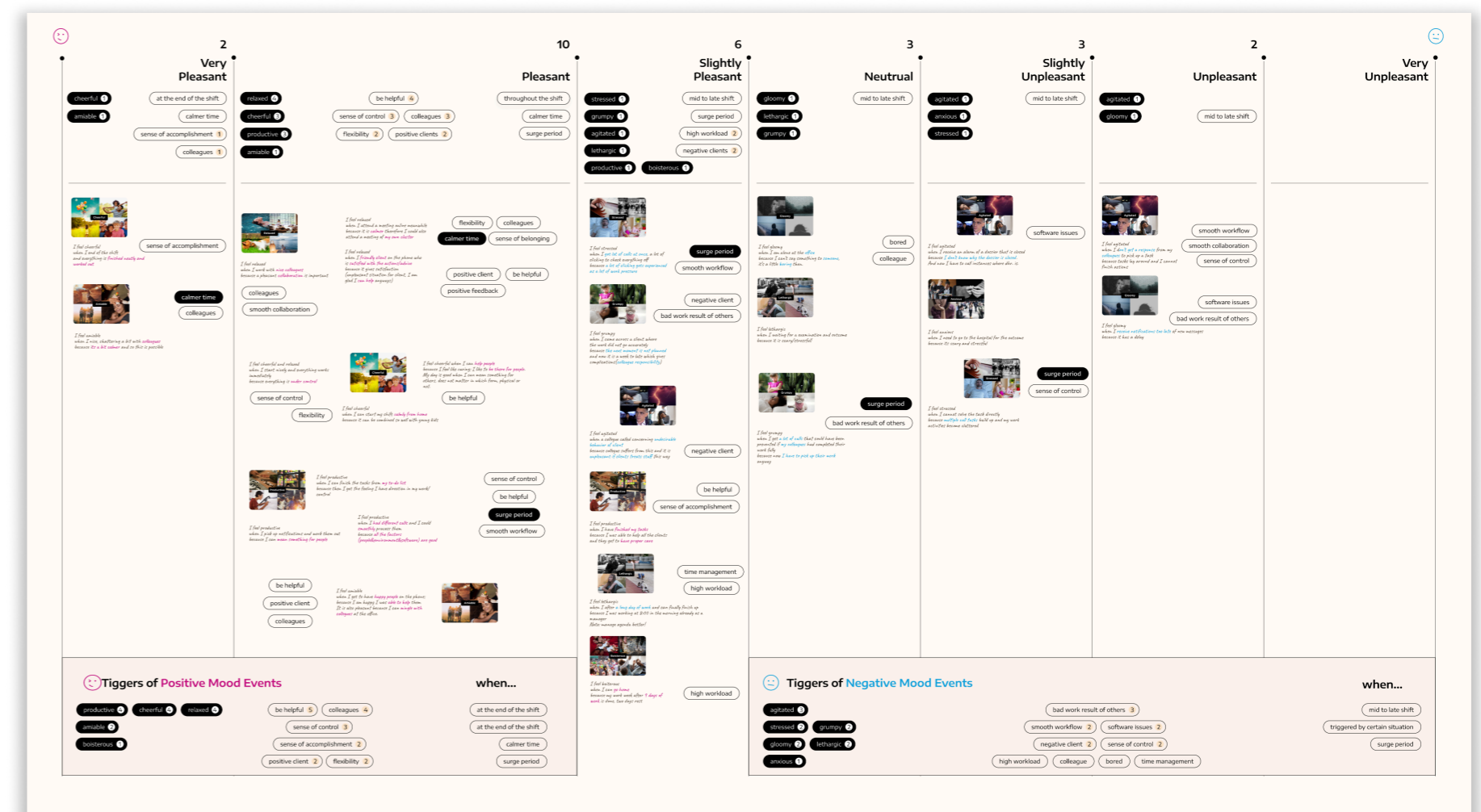


Figure 2.9 Responses of Mood Journal Research Box

# Data Analysis.

## Triangulative Analysis

Rather than performing isolated, in-depth analyses of the results from each of the three research activities—Observation, Interview, and Diary Study—a **triangulation strategy was employed** to analyze the data (Figure 2.10).

According to Bekhet and Zauszniewski (2012), triangulation emphasizes integrating findings from multiple data sources. By cross-referencing, complementing, and verifying insights across different research activities, this approach helps reduce the bias that may arise from adopting one single perspective. Ultimately, it enables a more comprehensive, credible, and valid understanding of Centralists' workflows and their affective well-being. The data analysis process for this project can be broadly characterized as an iterative thematic synthesis (Barnett-Page & Thomas, 2009), with the following steps.

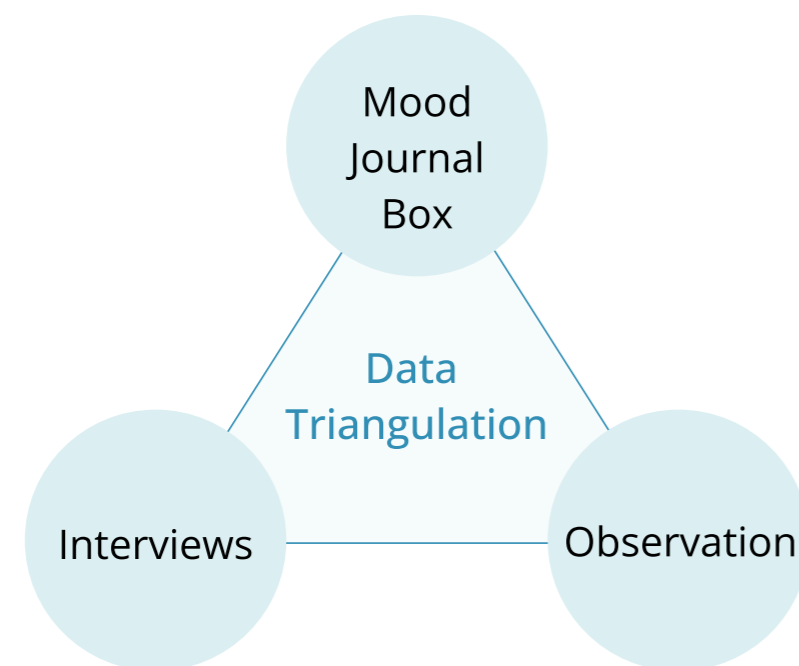


Figure 2.10 Triangulative Strategy

## 1 Data Familiarization

As the first step, all the raw data was merged into one document. Here, interview notes and responses from the diary study were translated into English and combined with the observation notes.

The entire dataset was reviewed multiple times to understand its breadth and depth during the data-compiling process. Interesting or notable data points were highlighted, and notes or ideas for coding were recorded for further exploration in later phases.

## 2 Initial Coding

With an understanding of the data's content and its noteworthy aspects, the preliminary segmentation of the raw data was initiated. In accordance with the principles of thematic analysis (Braun & Clarke, 2006), initial codes were generated for each data extraction. These codes captured key characteristics of the data or highlighted their relevance to the theme of centralists' current work experience (see example below). The coding process was conducted in Figma software.

*-describe their overall feelings work as a centralist :  
It's like a traffic light, either everything is going smoothly, or it's too much, with three calls coming in at once.*



**# Strong Comparison between Calm time and Peak time**

**# multiple cases at a time**

**# overwhelmed by workload**

**# smooth workflow**

### 3 Initial Thematic Clustering

At this stage, the analysis transitioned from a descriptive approach to a more interpretive perspective.

Codes were clustered to generate potential themes, and relevant data excerpts were collated within each identified theme (Figure 2.11).

This process was crucial as it represented the first instance of **integrating findings from multiple research methods**—observation, interviews, and diary studies—thereby offering a more comprehensive understanding of the data.



#### # Time spend monitored

*At Envida, on their homepage of their work software has a dashboard, displays the status of on-shift centralists and the time they spend on current phone call.*



#### # Multiple cases at a time

*-describe their overall feelings work as a centralist  
It's like a traffic light-either everything is going smoothly, or it's too much, with three calls coming in at once.*



#### # delayed messages

*I feel gloomy  
when I receive notifications too late of new messages because it has a delay.*

#### > Knowledge Cards

A total of 34 themes, referred to in this project as knowledge cards, were identified, which were categorized into three distinct groups.

- Work-Related Details: Specific information about the Centralists' workflow, including their value propositions, detailed work steps, and the conditions they face during their duties.
- Positive Emotional Experiences
- Negative Emotional Experiences

The themes, as new insights, were incorporated into the existing journey map, enriching it with specific Centralist experiences (Figure 2.11). This update offered a clearer reflection of their pain points and gains, adding more detailed context to the workflow.

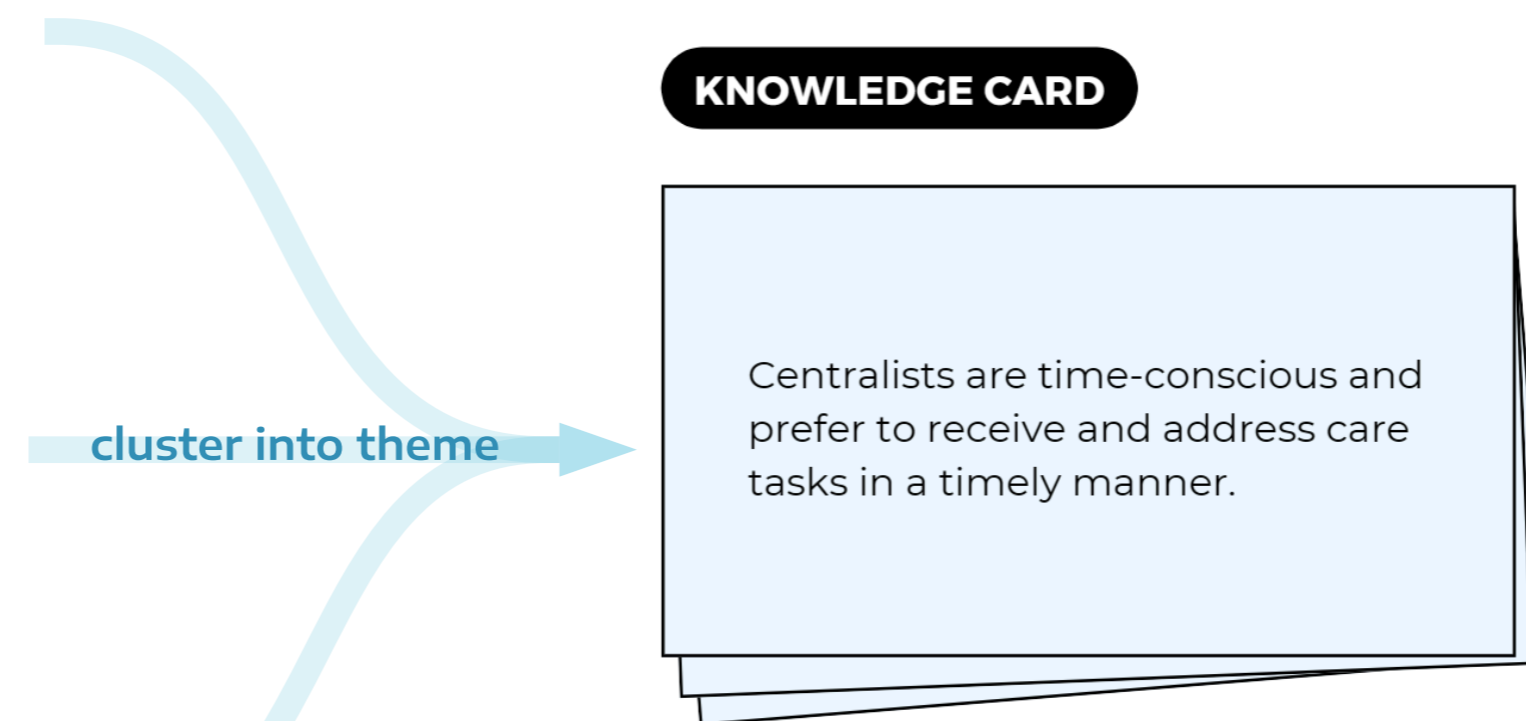


Figure 2.11 Integrating findings from different activities

# Enriched Journey Map of Centralists.

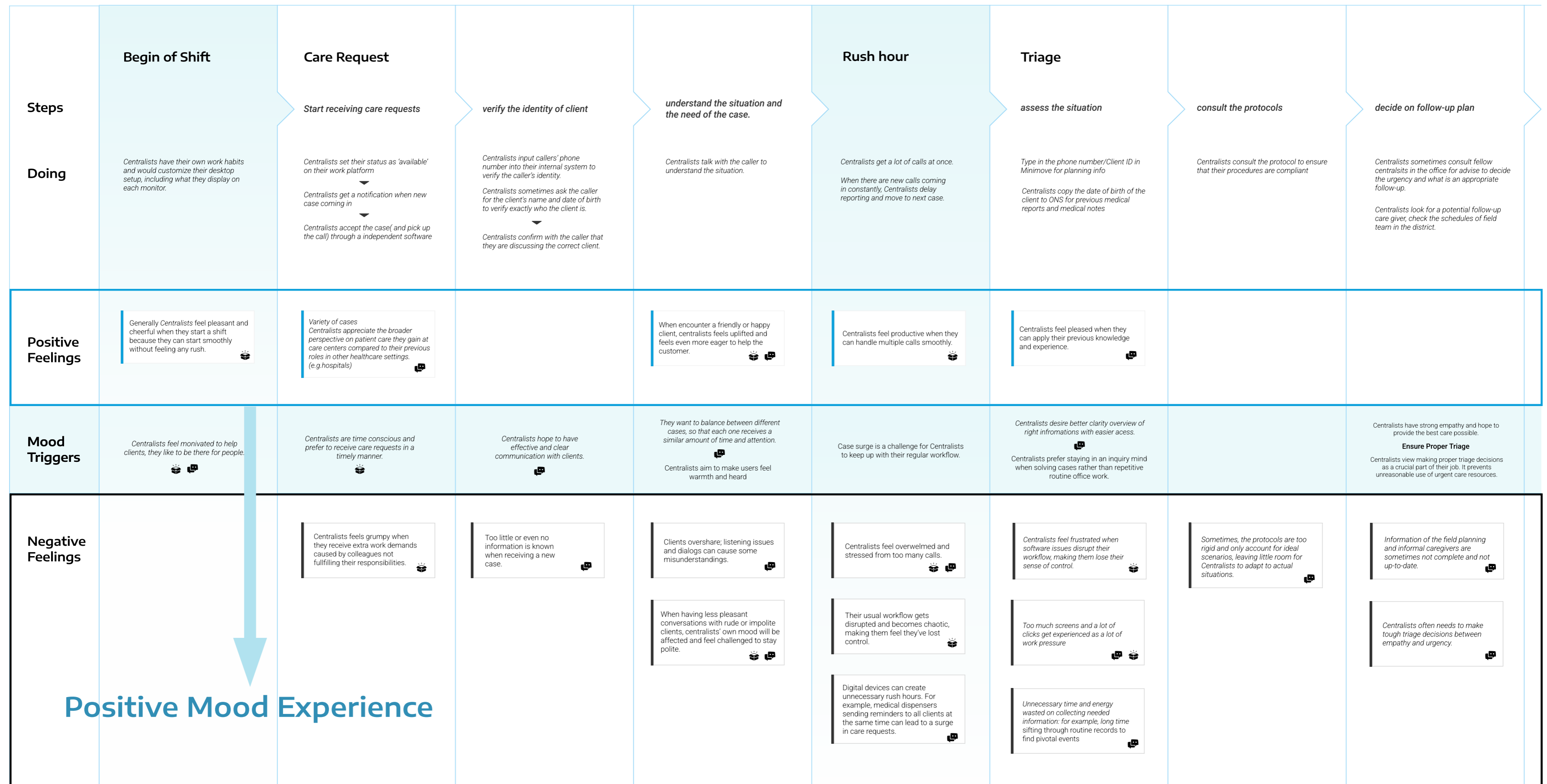


Figure 2.12 Enriched Journey Map of Centralists

	Follow-up		Wrap-up	Clamer Time	End of Shift
<b>Steps</b>	<b>Respond to the caller</b>		<b>Send follow-up task</b>		
<b>Doing</b>	<p>Centralists reply clients with their suggested follow-up plan.</p> <p>Centralists ends the call.</p>		<p>Centralists copy the client id from Minimize to ONS for important medical notes</p> <p>Centralists send new tasks and case info to the follow-up colleague via email/phone call/chatting app</p>		
<b>Positive Feelings</b>	<p>Some clients express gratitude and give positive feedback before ending the call. This can give centralists sense of satisfaction.</p>		<p>When the collaboration goes smooth, Centralists feel supported and be in a good team</p>	<p>Centralists feel productive and a sense of accomplishment when they finish the case and delivered proper care.</p>	<p>Centralists feel relaxed and pleasant during clamer time. They enjoy themselves by choosing activities they like, such as chatting with other colleagues.</p>
<b>Mood Triggers</b>	<p>Centralists hope to make users feel warmth and heard</p> <p>Centralists aim to be helpful and care for people</p>		<p>Centralists hope to hand over the task clearly, they desire a easier way to keep everyone informed.</p> <p>Centralists and follow-up caregivers work in a downstream collaboration on the same case. Similar to domino effect, centralists strive to be responsible partners, avoid causing any trouble from their side.</p>	<p>Take a break and take care of themselves too.</p>	
<b>Negative Feelings</b>	<p>Centralists cannot get rich feedback from clients over the phone. They prefer more direct and personal interactions, e.g. bedside care.</p>	<p>Unsmooth communication experience with other caregivers.</p> <p>Centralists need to use various channels to contact different caregivers. They might send emails for routine cases, call the Acute Team for urgent matters, and share client information via a chatting app.</p> <p>Sometime it can a long to receive reply from follow-up caregivers.</p> <p>Communication Tools are clumsy and hard to use.</p>	<p>Centralists feel burdened by the increasing bureaucratic demands and documentation work. They want to prioritize patient care.</p> <p>When time is tight, Centralists may delay reporting, leading to incomplete or inaccurate data.</p>	<p>Centralists feel gloomy and boring when they are alone in office.</p>	<p>Sometimes centralists feel exhausted from too much workload of the shift.</p>
<b>Negative Mood Experience</b>					

## 4 Secondary Thematic Clustering

Buiding upon the knowledge cards from the previous step, existing themes(knowledge cards) serve as a foundation for deeper analysis, with a focus on identifying major patterns and larger themes. These major themes must effectively integrate existing data while capturing essential aspects of the original dataset. Each theme should be clear and distinct, ensuring identifiable boundaries between them(Braun & Clarke, 2006).

The ultimate goal is to assemble these themes into a coherent narrative that accurately reflects the original dataset and effectively addresses the research questions.

## 5 Output: 5 Design Themes

Began by exploring the core of their heart and motivation, gradually expanding outward layer by layer. Through this process, five related design themes were identified, each positioned within its corresponding layer.

# Findings: The Story of Centralists' Affective Wellbeing at Work.

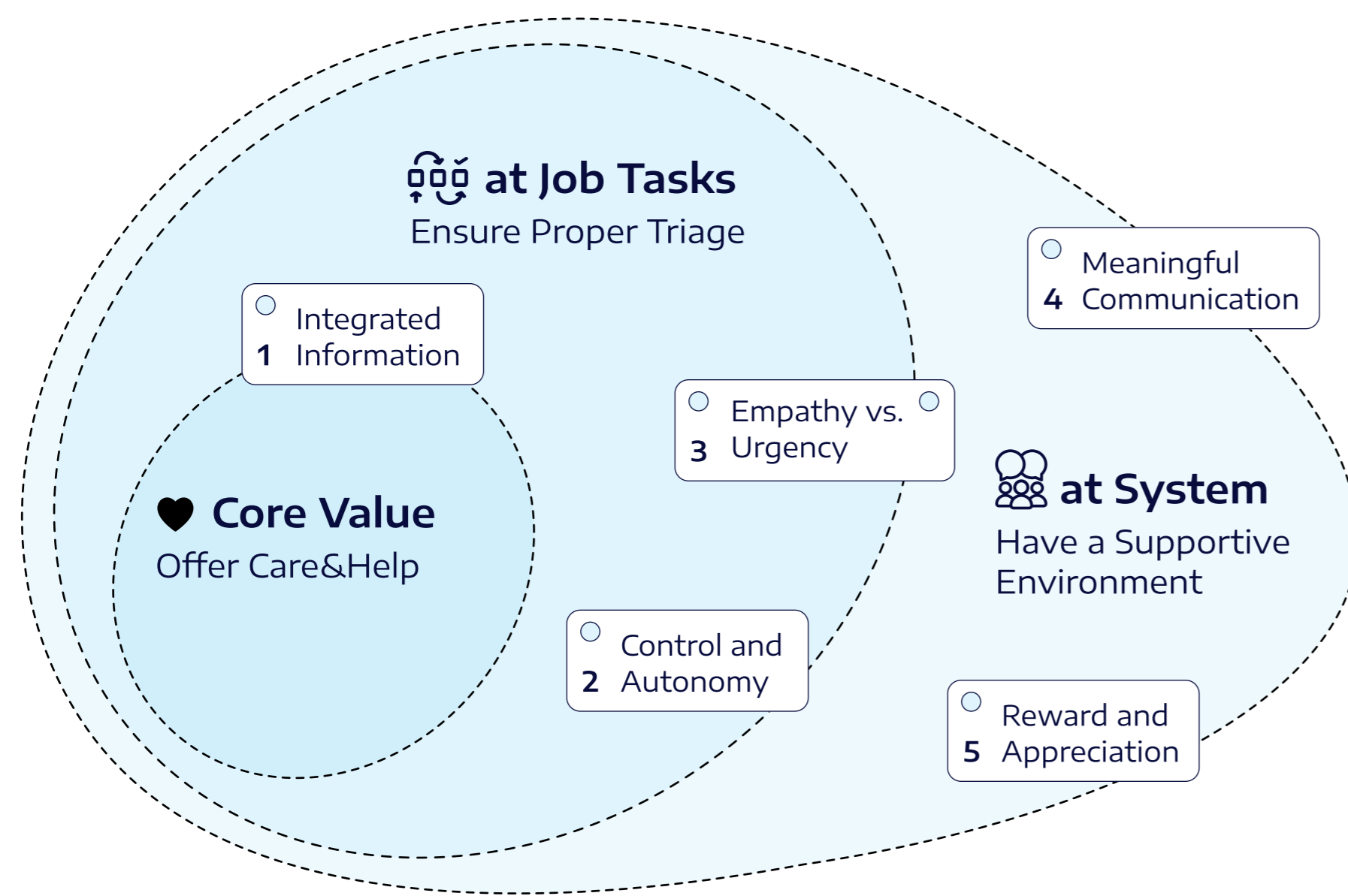


Figure 2.13 Enriched Journey Map of Centralists

## Core Values and Motivation as a Centralists



As a central role in remote home care services, Centralists' work involves intensive communication demands, with inherently healthcare-related responsibilities. There are two core motivations that drive Centralists to pursue this profession.

First, Centralists often **have an inherent nature of caring for others**, a trait that consistently emerges across participants and forms the foundation of their work. As one Centralist shared, “I had a friendly client on the phone who was in an unpleasant situation, I was just glad I could help anyways.”(D2)

This feeling is mirrored by another participant, who explained,

“A successful day is when all cases are solved by the end of the day, and everyone is helped.”(I4)

Additionally, another interviewee simply expressed, “I want to be there for people.”(I1)

Second, by helping others, Centralists seek to **attain a deeper sense of personal fulfillment**, striving to make a meaningful impact on the lives they assist.

One participant remarked, “I feel productive when I can pick up notifications and work them out, because I can mean something for people.”(D4)

Another participant echoed this sentiment, stating,

“My day is good when I can mean something to others, doesn't matter in which form, physical or not.”(D2)

These expressions illustrate how, through helping others, Centralists also find personal validation, allowing them to feel that their work has significance.

Given the Centralists' intrinsic motivation to **care for others**, their affective work experience is shaped by five key obstacles: ①integrating information,

②balance control with autonomy

③empathy versus urgency,

④ meaningful communication,

and ⑤recognition and appreciation.

### > Their key responsibility in completing tasks: Ensure Proper Triage

Centralists spend the majority of their workday handling Care Requests from clients, all of which follow a similar workflow. The primary responsibility of Centralists is to make appropriate triage decisions.

In interviews, participants consistently emphasized that **making proper triage is a critical responsibility**. For example, Participant 6 mentioned, “It's crucial to assess the situation properly” Similarly, Participant 1 described it as, “Avoiding a domino effect, and ensuring things do not go wrong”.

According to insights from Syntilio, a Centralist's triage decision determines the type of care resources mobilized. The allocation of any professional care resources often leads to changes in the broader field care plans, indirectly affecting the timing and availability of caregivers for other clients. The more urgent or scarce the resource, the higher its cost and impact. Therefore, making proper triage decisions is seen as a key responsibility, though **the definition of 'proper' can be quite ambiguous** and difficult to pin down.

Care requests can come in a wide range of scenarios, from simple administrative changes like reschedule appointments to urgent situations like responding to a fall at home requiring emergency assistance. Nevertheless, all requests follow a similar four-stage workflow as described in the journey map.

A fundamental challenge Centralists encounter in their work is effectively gathering and synthesizing the necessary information required to complete their tasks.

# Design Theme 1 - Integrating Information.

Getting the right information at the right time is crucial for Centralists to perform their tasks effectively. However, this process is often obstructed by several issues. These challenges can be grouped into three areas (Figure 2.14): fragmented information across different platforms, the redundant manual work needed to gather and process data, and the lack of accurate or complete information.

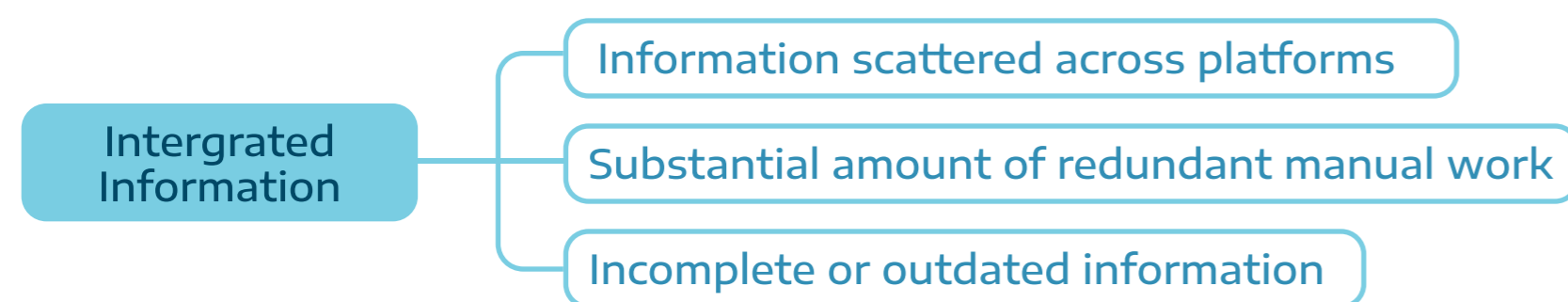


Figure 2.14 Theme of Integrated Information

## > Information scattered across platforms.

A key challenge Centralists face is accessing Information scattered across multiple platforms. During our observations, we found that when assessing a case, they need a wide range of information, including [patient demographics](#), [medical records](#), [history reports](#), [medical notes](#), and [care schedules](#). In addition, they may need to check the [availability of care teams](#), such as acute care providers or field nurses for home visits, when follow-up care resources are required.

However, this information is fragmented across different systems. For instance, medical reports are stored on ONS, while client schedules are kept on MiniMoves, and some local planning details are only available in Excel spreadsheets.

This fragmentation forces Centralists to switch between platforms, which not only consumes valuable time but also complicates their decision-making process.

As one Centralist put it, ["I desire better clarity and an overview of all important information at once, allowing for quick decision-making"](#) (18), highlighting the frustration caused by these inefficiencies.

## > Substantial amount of redundant manual work.

The second challenge is the substantial amount of redundant manual work involved in gathering and processing information.

When Centralists receive a care request, they often only have the caller's phone number, leaving them with little to no context about the case.

All necessary details must be manually retrieved through different systems. Interviewees highlighted the need for getting a clear overview for all needed information, with one stating, ["There is a need for more clarity when receiving the case."](#) (17).

Observations revealed that gathering this information involves many rigid and tedious steps. For example, accessing patient schedules in MiniMoves requires entering a client ID, while obtaining medical reports from ONS requires the patient's date of birth. Centralists feel it's a waste of time to repeatedly log data already known to them, citing ["too many screens"](#) and ["a lot of clicks"](#) as major stressors. ["I hope for a system that requires less clicking to access the right information"](#) (17).

["Fewer screens would be great if this becomes the future. Not too many clicks"](#) (12).

## Design Theme 2 - Balance Control with Autonomy

These frustrations are especially pronounced during peak times with high case volumes,

"I feel stressed when I get a lot of calls at once, a lot of clicking to check everything off, because a lot of clicking gets experienced as a lot of work pressure" (D2).

Additionally, Centralists often have to process large amounts of raw data, spending long periods sifting through routine records to identify pivotal events. As an Interviewee mentioned, Centralists sometimes need to "read back through months of medical reports to determine why treatment was started or what caused a condition."(I11) The system also lacks the ability to flag specific event histories for the caller, further complicating their work.

### > Incomplete or outdated information.

Lastly, Centralists often face challenges due to incomplete or outdated information, which makes it difficult to effectively integrate data and coordinate care. Home care agencies may store regional care schedules in local Excel spreadsheets, but these are rarely updated throughout the day as conditions change. As a result, Centralists may only have access to outdated information, complicating efforts to reach the right field nurse for unplanned care.

Additionally, critical details—such as information about informal caregivers or key decisions made by GPs and pharmacists—are often missing or incomplete. This lack of reliable, up-to-date information leaves Centralists uncertain about the accuracy and usefulness of the data, hindering their decision-making and the quality of care they provide.

While integrating information is essential for ensuring workflows run smoothly—allowing Centralists to complete care requests effectively—the balance between control and autonomy shapes how these workflows are carried out. A balanced approach provides Centralists with a sense of autonomy and comfort in managing their cases, enhancing service quality.

Yet, there remains a gap between Centralists' expectations for control and autonomy and the limitations imposed by their work conditions, creating challenges in achieving this ideal balance(Figure2.15).

### >Aspire to uphold high service quality.

Centralists' expectations for control and autonomy can be categorized into two main aspects. **First, Centralists aspire to uphold high service quality for clients.**

In their interactions with clients, they aim to deliver equitable and compassionate remote care. Beyond providing medical solutions (cure), they are often motivated by a strong desire to offer emotional support (care), even though this is not explicitly required or encouraged by their homecare institutions.

For instance, one Centralist described their ideal for future remote care as embodying “warmth & hugs,” adding that “making sure people feel satisfied and heard” is the most important factor in achieving a successful day. Another participant shared that they sometimes extend calls to provide companionship, explaining, “occasionally I provide more care than necessary... and take a bit more time with people, whereas the youth tend to be quick, quick, quick.”(12)

On the other hand, Centralists work to balance the time and attention dedicated to each client, especially when certain clients overshare or call frequently. This balancing act is essential for maintaining consistent service quality across cases, ensuring that all clients receive fair attention. As one participant explained, “It's also about holding a mirror up to clients when they ask too much, reminding them that other clients need help as well.”(1)

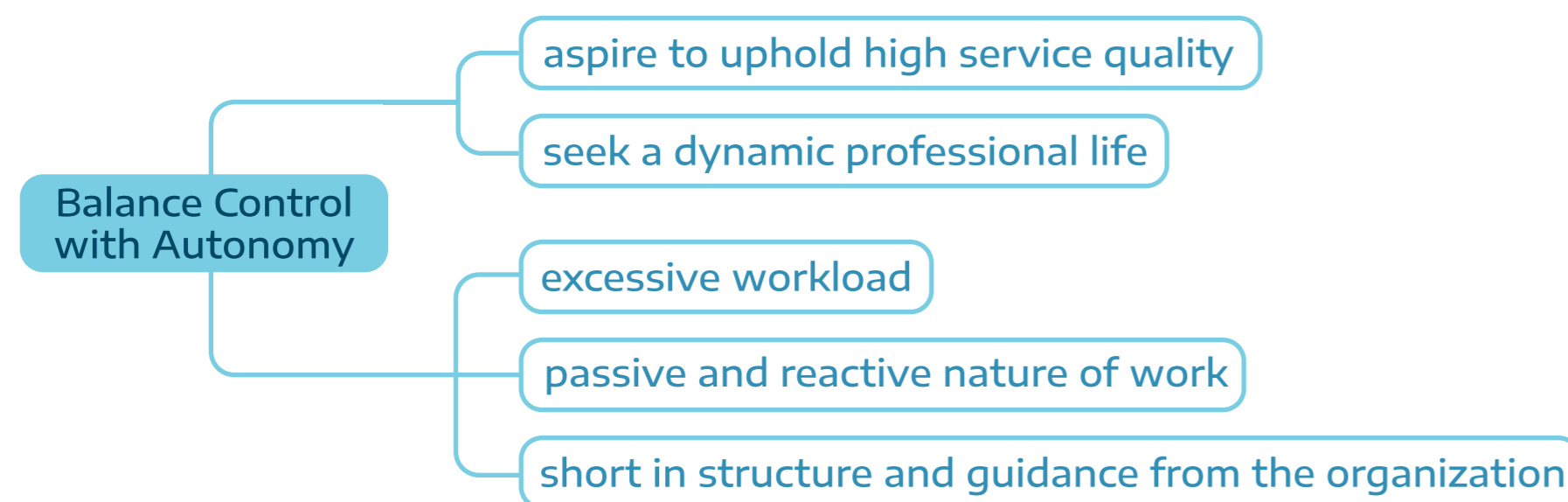


Figure 2.15 Theme of Control&Autonomy

### >Centralists seek a dynamic professional life.

Second, Centralists seek a dynamic professional life. Interviews regarding occupational motivation revealed that **a mix of varied cases and tasks** keeps the work appealing for Centralists. Centralists highlighted that cases involving a broad spectrum of health issues and care needs (arising from diverse client conditions and support requirements) expand their understanding and involvement in patient care. As one participant explained, “In hospitals, you only have a very limited view of patient care” (17), while another noted, “I enjoy working at the Care Center due to the ideal mix of tasks” (10). Notably, Care Center A allows Centralists to work both within the Care Center and as field nurses in the neighborhood on different days of the week. This dual role, which involves both “computer work” and “being on the move,” adds a unique energy to their work routine. As 17 expressed, “I chose Care Center A because it offers a broader view of patient care...and more personal contact with patients.” Similarly, another participant stated, “The combination of acute care (field tasks) and Zorgcentrale (Care Center) is enjoyable” (16).

Centralists enjoy **engaging their intellect in their work**, finding fulfillment in tasks that stimulate thought and challenge. Centralists appreciate engaging their skills and knowledge rather than performing routine tasks. One Centralist from Care Center B, observed during a work session, expressed a preference for handling cases triggered by digital devices over routine administrative cases (Ob)—tasks that typically involve information inquiries or care plan updates. They find device-triggered cases to be more ‘complicated and challenging.’ Similarly, an interview participant noted, “It feels more like an office job, but luckily, experience and knowledge are still very useful” (13). This feedback suggests that Centralists enjoy staying in a state of inquiry and actively solving problems, rather than becoming disengaged by repetitive work.

**Centralists enjoys the flexibility in their work**, allowing them to adapt their routines and approaches according to their personal preferences. Even though there are established protocols, we observed that they develop personal execution styles. For example, [they each customize their desktop layout based on personal preferences, deciding what to display on each monitor.\(Ob\)](#) They also adjust their work pace proactively, such as [changing their system status to extend wrap-up time or take longer breaks\(Ob\)](#) when needed.

## Continue > Design Theme 2 Balance Control with Autonomy

Opposite to these expectations, the tasks at Care Centers are often constrained by various real-world limitations, depriving Centralists of their sense of control or leading them to feel lost in a diminished autonomy—one that appears granted but remains largely inaccessible. These issues are primarily reflected in the following three areas:

### > Passive and Reactive nature of work.

These unplanned care requests managed by Centralists cannot be initiated without a trigger from clients' needs, and their progress and resolution rely heavily on collaboration with other caregivers. In other words, Centralists lack the control to independently decide the course of their tasks; effective outcomes depend on coordinated efforts across multiple roles. Analysis has identified three factors that significantly shape this aspect of their experience: clients, colleagues, and software.

#### Clients

Centralists rely on client cooperation to effectively communicate and gather case-specific information. While some clients are cooperative, challenging interactions are more common, placing Centralists in a passive position.

Some clients display negative emotions or even rudeness, which can impact Centralists' emotional state; as one diary entry notes, [“I feel agitated when a colleague called concerning undesirable behavior of a client because the colleague suffers from this, and it is unpleasant if clients treat staff this way” \(D2\).](#)

Additionally, communication is frequently hindered by clients with expression, hearing, or cognitive impairments, which lead to misunderstandings(Ob).

Finally, some clients refuse intervention altogether, leaving Centralists unable to proceed. One Centralist expressed concern: "When a patient suddenly stops picking up the phone, I get worried; they might be refusing care, and the delay could be holding up the treatment" (I11). These situations illustrate how Centralists are often placed in a reactive role, relying on clients' willingness and ability to engage for successful outcomes.

### Colleagues

Similar to their reliance on clients, Centralists depend on effective responses from other caregivers to advance cases and ensure clients' needs are properly addressed.

This upstream-downstream relationship positions Centralists in a collaborative, yet often passive, role, as their progress is contingent on the actions and responsiveness of their colleagues. Analysis reveals two main ways in which this dependency leads to a passive work state for Centralists.

**First, inadequate task completion by other caregivers can create additional care demands**, increasing Centralists' workload. One Centralist expressed frustration about this, stating, "I feel grumpy when I get a lot of calls that could have been prevented if my colleagues had completed their work fully because now I have to pick up their work anyway" (D3).

Second, delays or lack of response from caregivers disrupt the workflow, as Centralists cannot advance tasks without timely feedback. This situation impacts their work rhythm, as described by the same Centralist: "I feel agitated when I don't get a response from my colleagues to pick up a task because tasks lay around and I cannot finish actions" (D3).

### Software

Finally, although only one instance was recorded in this study, Centralists can also encounter software mistakes that disrupt their workflow and add unnecessary complications. As one Centralist noted, "I feel agitated when I receive an alarm for a dossier that is closed because I don't know why the dossier is closed" (D4).

### > Excessive workload.

**Second, an overwhelming workload** limits Centralists' ability to maintain a sense of control and autonomy in their roles. Data shared by Care Center A reveals that five Centralists manage approximately 100 care requests each day, with each shift typically including at least one peak period. Diary research identified these high-demand periods as a major factor contributing to a decline in mood states among Centralists. The high workload leads to significant mental strain, as one participant described: "I feel lethargic when, after a long day of work, I can finally finish up because I was working at 8:00 in the morning already" (D3). Another noted, "Sometimes too busy on Mondays and Fridays, need to stop" (I2).

Peak periods present a major source of stress for Centralists. One interviewee explained, "A good day is when you don't get all the calls at once... It's either smooth sailing or overwhelming, with up to three calls at once" (I9).

During these busy periods, it is often difficult for Centralists to maintain their regular workflow, requiring them to make compromises or adjustments, such as postponing reports to keep up with the call volume. This constant adaptation to high-stress demands can create a sense of losing control. One Centralist expressed this feeling of strain, stating, "I feel stressed when I cannot solve the task directly because multiple call tasks build up and my work activities become cluttered" (D3).

These insights highlight how the relentless workload erodes Centralists' control, forcing them into a reactive mode that impacts their affective well-being.

#### > Short in structure and guidance from the organization.

Lastly, **Centralists lack the structure and guidance from the organization** needed to effectively exercise their autonomy. They do not receive a clear definition of what constitutes "good" remote care, as even the manager of Care Center A admitted, "We are still working on defining what *Zorgcentrale* (Care Center) currently does." Additionally, the protocols that Centralists follow are inconsistent, which leaves them feeling confused and uncertain. For example, observations revealed that *different levels of protocols (N5 and N4) for the same type of event are not aligned, causing uncertainty when making decisions*(Ob).

In this context, Centralists are given considerable freedom in making decisions on matters such as *tone, conversation length, and what response*(Ob) to give to care requests. However, they cannot effectively use this autonomy because they lack clear direction and reference points. Without a defined standard, they struggle to evaluate the outcomes of their decisions.

Moreover, unreasonable demands and setups of organizations impose additional structural pressures on Centralists, primarily through an increased administrative burden and man-made peak periods.

The administrative burden stems from the growing bureaucratic requirements that prevent Centralists from focusing on direct patient care. Centralists feel overwhelmed by the escalating demands for documentation, often feeling that their primary role of delivering care is compromised. One Centralist remarked, "*Over the years, the work has become more formal and bureaucratic, with a lot of documentation, leaving less time for patient care. I want to be there for the people.*"(I1) Another emphasized the need for streamlined processes: "*We need less administrative burden and an easier way to keep everyone informed.*"(I10)

The man-made peak periods reflect an additional structural challenge within the Care Center. Not all high-demand periods are driven by natural client needs; some are a direct result of flawed scheduling practices. For example, in cases involving medical dispensers, clients' medication times are uniformly set, resulting in a *flood of "missed medication" events at the same time*.(Ob) This unnecessary surge creates avoidable challenges for Centralists, who must respond to these simultaneous events under heightened pressure.

# Design Theme 3

## Empathy vs. Urgency

The theme of empathy versus urgency is strongly tied to the triaging process of making care decisions and allocating follow-up resources. As Centralists work through each case, they often experience emotional strain due to the **tension between rational judgment and emotional inclinations**.

During interviews, Centralists selected a visual metaphor of a 'tug-of-war between the heart and the brain' to describe this feeling. One participant noted, "We use both intellect and empathy when assessing a situation" (I6). In prioritizing cases, empathy and rationality often represent conflicting values, creating a sense of dilemma for Centralists as they navigate the competing demands of care and efficiency.

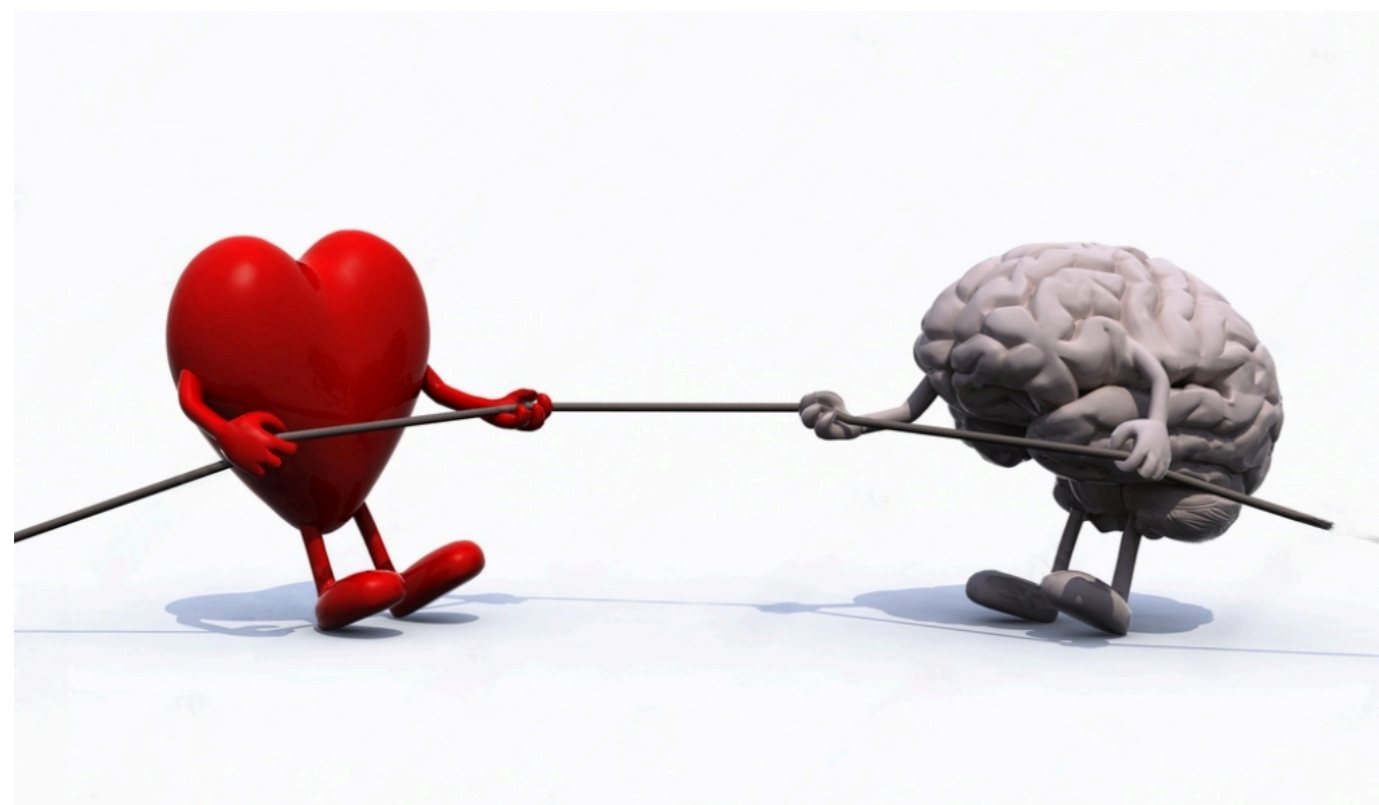


Figure 2.16 Tug-of-War between the Heart and Brain

### > Empathy towards clients in need.

**On one hand, Centralists demonstrate strong empathy**, which they consider an essential skill when understanding and assessing client situations.

This capacity enables them to interpret subtle cues, as one Centralist noted, they can often "read between the lines with clients" (I2). Another added, "Getting to know the clients better helps in responding more effectively to their needs" (I7).

This empathy drives Centralists to provide the best possible care, especially for clients in distress, and they are motivated to offer support even when resources are limited. As one Centralist explained, "Sometimes you are talking with someone, and you feel that you want to send the acute team to this person, but you know that there are more relevant cases that have priority" (I6).

### > Urgency with limited acute resources.

**On the other hand, Centralists feel a strong sense of responsibility as gatekeepers for limited remote care resources, especially acute resources.** According to knowledge from Syntilio, a shortage of resources forces Centralists to carefully assess and scale up the level of acute care they wish to mobilize. Moreover, Centralists' own time and energy are limited resources, and during peak periods, they experience these constraints firsthand, often needing to make rapid decisions. As one Centralist shared, "I feel stressed when I cannot solve the task directly because multiple call tasks build up" (D3).

As a result, they often find themselves needing to **compromise on at least one aspect** when making decisions, which can lead to emotional strain.

One Centralist explained, “Sometimes there are pleasant conversations and problem-solving. Other times, there are less pleasant conversations where you have to say “no” ...because procedures are in place... With dissatisfied clients, you wish someone could go there in person” (I10).

### > Expectation for the Homecare system Have a Supporting Environment

Expanding our perspective from individual workflows to the entire system, we can see that Centralists play a core connecting role within a network of relationships. They link **clients, various care professionals**(mainly colleagues from other departments) , and **homecare organizations**(primarily care managers) altogether.

Support from this collaborative network is essential to their work experience, as the role of Centralists relies heavily on coordinated interactions with multiple stakeholders. Centralists aspire to work in an environment of mutual support and shared goals, as one Centralist put it, “Working together, getting better together.” (D3).

## Design Theme 4 Meaningful Communication.

The role of Centralists is heavily communication-based, with numerous Interpersonal interactions woven into their daily tasks.

However, the remote nature of their work and the fragmented structure of tasks often make communication feel disconnected and impersonal. **Rather than experiencing meaningful, cohesive exchanges, Centralists encounter interactions that are isolated, functional, and lack depth.** This diminishes the overall quality of their communication experience, highlighting the need for more meaningful connections in their work.

### > Meaningful connections as emotional support.

**Centralists need meaningful connections as a source of emotional resilience.** With communication-intensive roles, Centralists’ social interactions are inherently intertwined with their daily work, as clients and colleagues naturally make up the primary components of their social lives. Centralists not only seek smooth cooperation with these individuals in their daily tasks but also value building genuine personal connections with them.

#### Colleagues

For instance, in their relationships with colleagues, Centralists see them as their primary source of companionship.

They appreciate casual time spent together in the office, as one Centralist described, "I feel relaxed when I attend a meeting online meanwhile because it is calmer, so I could also attend a meeting of my own cluster" (D2), while another said, "I feel amiable because I can mingle with colleagues at the office" (D1). The absence of such interactions leaves Centralists feeling lonely and disconnected: "I feel gloomy when I am alone at the office because I can't say something to someone; it's a little boring then" (D1).

Furthermore, successful collaboration with colleagues brings a sense of contentment, as expressed by another Centralist: "I feel relaxed when I work with nice colleagues because a pleasant collaboration is important" (D4).

### **Clients**

In terms of their relationships with clients, Centralists express a strong preference for more personal contact, often valuing in-person interactions over remote care.

One Centralist explained that a key reason for choosing this role was the opportunity for closer, more personal engagement with clients: "I chose Care Center A because it offers a broader view of patient care...and more personal contact with patients" (I7).

While working remotely limits these interactions, Centralists continue to seek meaningful exchanges with clients. One Centralist reflected, "One day at the Care Center is enjoyable, but no more than that. I prefer visiting clients rather than being behind a screen at the Care Center" (I9).

Some Centralists also advocate for video calls as an alternative to phone conversations, believing video interactions allow them to "get to know the clients better" (I7).

### **> Fragmented and results-oriented communication.**

**However, the remote nature of Centralists' roles** introduces barriers that limit their communication experience, which is thus often fragmented and task-oriented.

Working remotely, Centralists rely on technical channels to replace face-to-face interactions, such as phone calls and digital devices like alarm buttons with clients, and emails and chat apps with colleagues. These methods are less effective as they filter out the rich, immediate feedback that makes interactions feel genuine.

Phone calls and digital devices with clients lack the visual cues, while communication with colleagues is often one-way, further reducing the sense of authentic connection. Even the chat tools Centralists use are not well-suited for handing over tasks and information. As one Centralist explained, "I cannot tag a specific person but can only share it in a big group chat" (I11), making it difficult to direct information to the right team members and hindering effective follow-up—not to mention the overall communication experience.

Furthermore, communication opportunities are largely triggered by case needs, making interactions often random. Clients are typically routed to the next available Centralist, so each request is likely handled by a different person, disrupting the continuity of any relationship built over previous cases. Similarly, interactions with colleagues revolve around task-oriented topics, rarely involving emotional support, shared personal experiences, or genuine connection.

# Design Theme 5

## Reward and Appreciation.

Centralists invest significant effort in their work, serving as central connectors within the remote care network, shouldering key responsibilities that often involve complex tasks and critical decision-making. Yet, despite these demands, **they receive limited positive or direct recognition** from the external environment.

While direct evidence is sparse (Centralists rarely explicitly express the need for more acknowledgment), our findings suggest that positive feedback holds substantial emotional value for them. **Centralists particularly value feedback from clients.** In interviews, some indicated a preference for fieldwork over remote care due to the direct, immediate feedback they receive in person. As one Centralist noted, "Bedside care is more direct and more fulfilling. On the phone, you don't see them and don't get immediate feedback" (I3).

When they do receive positive responses, Centralists report a sense of satisfaction: "I feel relaxed when I have a friendly client on the phone who is satisfied with the actions/advice because it gives satisfaction" (D2).

Additionally, our diary study identified **three key "moments of acknowledgment"** where Centralists report a sense of accomplishment.

These include **successfully resolving cases**—"I feel productive when I pick up notifications and work them out because I can mean something for people" (D4)—**navigating peak periods**—"I feel productive when I had different calls, and I could smoothly process them" (D2)—and **completing their shifts**—"I feel cheerful at the end of the shift when everything is finished neatly and worked out." (D2)

However, Centralists rarely receive explicit positive feedback. Beyond occasional thanks from clients or colleagues, **there is little evidence of a regular approach that consistently acknowledges their contributions.** Additionally, within the workflow, Centralists typically handle the initial stages of care requests, while many face-to-face interactions are handled by other caregivers. This structure can also make it easy to overlook or marginalize the contributions Centralists make in the overall care process.

# Theme Tree of Centralists' Affective Wellbeing.

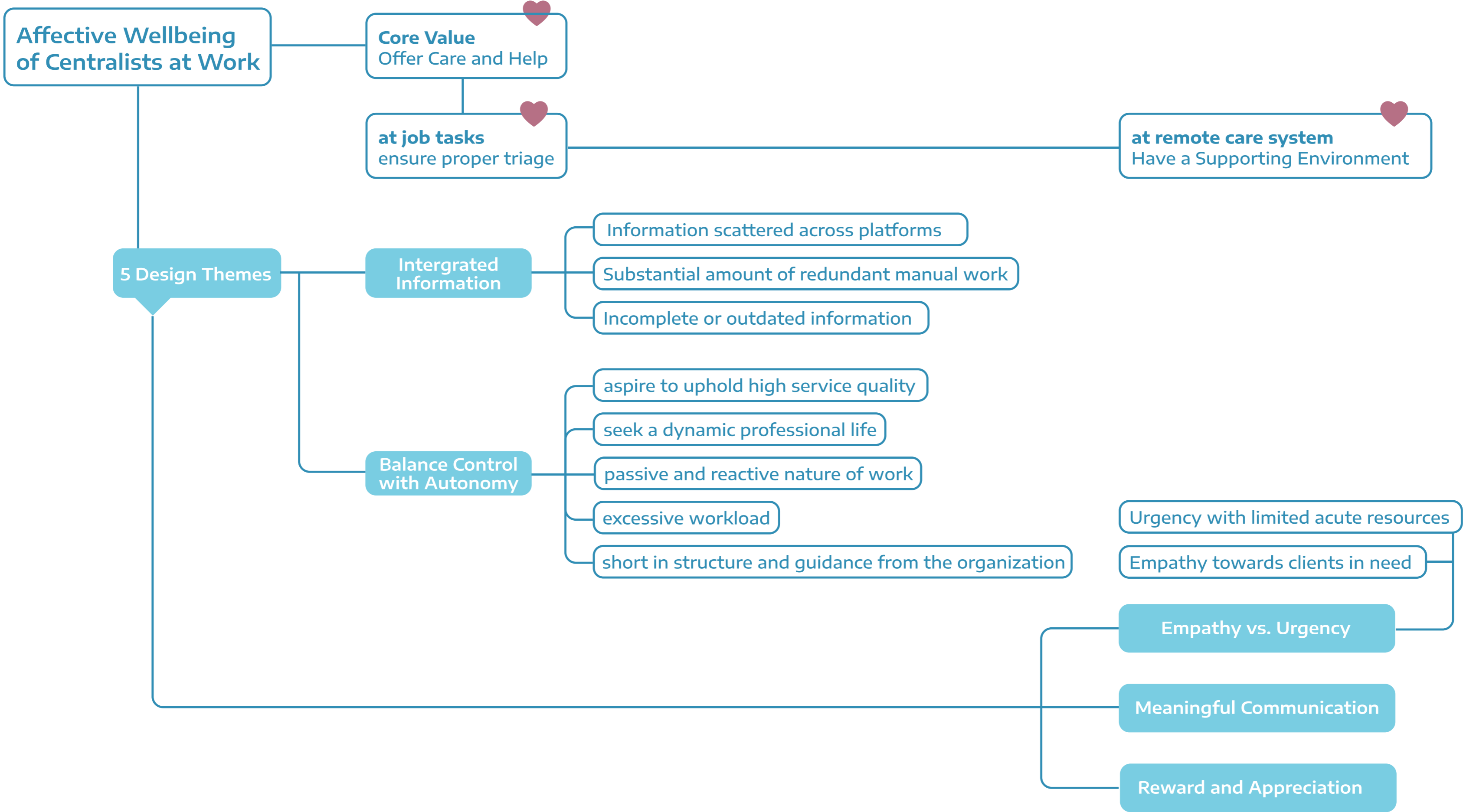


Figure 2.17 Theme Tree of Current Affective Well-being States of Centralists

## Limitations of the research.

There are two primary limitations associated with this phase of the research.

**First, the limited sample size constrained the saturation of certain sub-themes.** Some identified aspects remained intriguing but preliminary, leaving their generalizability speculative. For example, within Control and Autonomy, the sub-theme “seeking a dynamic work life” emerged from participants who preferred more exploratory engagement with complex cases. It remains unclear whether this reflects a common aspiration among Centralists or an isolated stance. Further research is needed to clarify whether most Centralists genuinely seek greater complexity in their work or are simply fatigued by repetitive tasks.

**Second, the influence of digital device usage failed to get thoroughly examined.** Since participating care centers outsourced most device-related responsibilities to external providers. As a result, this study was unable to compare experiences involving digitized cases with those solely reliant on human interactions. Without this comparative insight, it remains uncertain whether and how the introduction of digital devices might alter the Centralists’ work experiences.

## Main Take-aways.

Primary research identified five principal design themes that impede Centralists from achieving a better affective state in their work. While these themes differ in scope and complexity, the available data does not establish a clear hierarchy among them, thus they are presented as parallel categories rather than in any order of priority.

As the analysis deepened, the understanding of the care center work environment became more nuanced. The initial journey map—originally a purely functional outline of sequential tasks—has now evolved into a more layered representation incorporating affective dimensions. These include the emotional expectations, challenges, and gains experienced by Centralists. The key job resources and demands influencing Centralists’ affective wellbeing are reflected across the following design themes.

## Balancing Control with Autonomy

Centralists remain largely reactive, responding to requests rather than initiating actions. Without a comprehensive view of the situation, their influence on care outcomes is limited. They often lack sufficient authority or resources to address needs effectively. Though some autonomy exists, it remains unguided by clear frameworks or supportive structures, diminishing its potential impact.

### Energy taker

Work overload  
(especially rush period)

### Lack of energy giver

Job control;  
Availability of tools & info;  
Supervisor support  
(structured work guidance)

## Empathy vs. Urgency

Centralists frequently contend with the challenge of balancing compassionate, empathetic care with the practical need to allocate limited resources efficiently. This tension can necessitate difficult compromises, forcing them to determine which needs take precedence and potentially leaving other concerns insufficiently addressed.

### Energy taker

High emotional demands & emotional dissonance

### Lack of energy giver

Fulfillment of expectations

## Meaningful Communication

Operating remotely often separates Centralists from the very individuals they support—clients and other caregivers—making it difficult to establish a sense of human connection. Rather than engaging in personal, empathetic exchanges, most interactions revolve solely around addressing needs and providing solutions. As a result, their work becomes emotionally demanding, with little reciprocal understanding or emotional energy flowing back to them.

### Energy giver

Co-worker support

### Lack of energy giver

Communication

## Reward and Appreciation

Centralists seldom receive positive feedback from clients or colleagues, leaving much of their effort unnoticed and unacknowledged. This lack of recognition can diminish their sense of value and motivation over time.

### Lack of energy giver

Performance feedback  
Recognition





3

**Define**

Solution Finding

Once the five key design themes were distilled and synthesized from the research datasets, the problem domain became clearly defined, marking the transition into the **Define phase** of the project.

In this stage, I engaged a new user group, distinct from those in the research phase, to participate in a series of activities. The goals were two-folded: to validate and refine the identified design themes; and collaboratively explore creative ideas with diverse perspectives, all aimed at enhancing the Centralists' emotional and effective work experience in remote care delivery.

In line with these aims, I propose the following sub-research questions for this stage:

**To what extent do the scheme of design themes of affective experience of Centralists align with the mental models of remote-care experts? (e.g. other Centralists, developers, product owners and designers of work platform product...)**

**Which underlying factors, as revealed through the identified design themes, constitute the primary, root-level barriers to Centralists' well-being?**

**How can these interconnected design themes be translated into actionable interventions to enhance the affective work experiences of Centralists?**

The first two questions aim to expand understanding of the current design themes of affective dilemmas in remote care processes that service interventions should support to uphold collective values. This question serves as a premise for an iterative process to refine the problem domain through collaboration with homecare experts, using qualitative methods such as collective discussions.

The last question focuses on engaging with remote homecare experts to explore how Centralists' experience data can drive meaningful changes in practice. Throughout the iterative process of further defining the problem scope, ideation activities are conducted to gather concrete ideas, aiming to identify the core needs and values of different stakeholders and thus establish multi-perspective guidelines for design interventions.

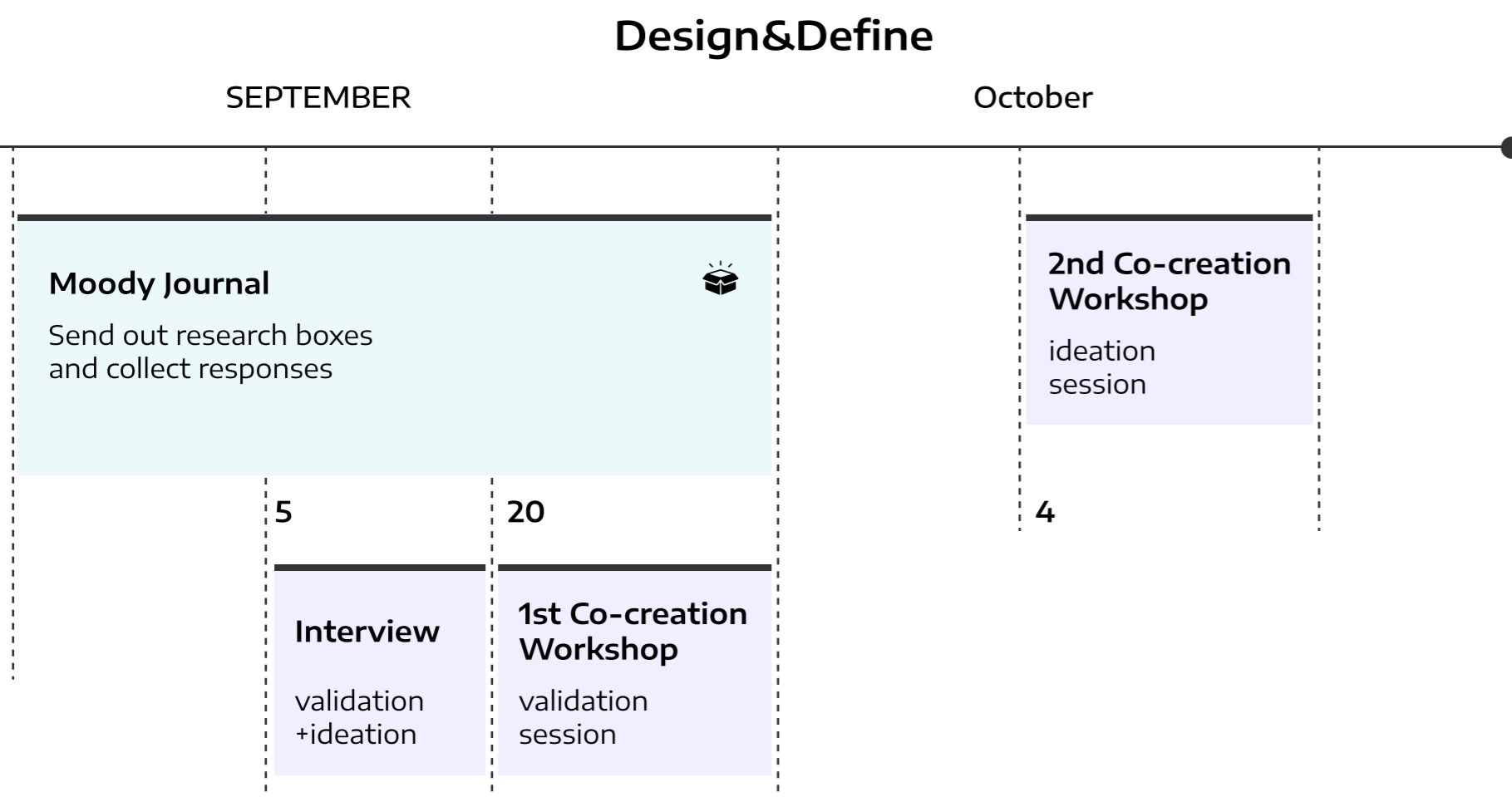


Figure 3.1 Research Timeline

# Methodology.

To address the research questions in this stage, **an iterative process was designed to progressively refine the design scope through semi-structured discussions and a collective exploration of the opportunity space from multiple perspectives** (Figure 3.2). This approach was guided by the Integrated Creative Problem Solving (iCPS) methodology (Buijs and van der Meer, 2013), which aims to refine the entire spectrum of both the problem and solution spaces by revealing new insights and perspectives.

The iCPS approach distinguishes participants into two roles: problem owner and resource group. The problem owner refers to individuals who experience the problem and seek professional assistance to resolve it, while the resource group comprises people with relevant knowledge, skills, and experience who are willing to invest these capacities in solving the problem. The process begins with a problem-finding stage aimed at exploring and reframing the problem space to establish a refined, shared domain recognized by all participants. This foundational step enables the generation of original yet promising ideas in the subsequent solution-finding stage, grounded in a widely recognised problem formulation.

In line with this approach, semi-structured interviews and two internal co-creation sessions with the Syntilio team were conducted sequentially. Each activity was individually designed, building upon the outcomes of its predecessor. However, **all activities adhered to the two distinct diamond-shaped phases of iCPS: problem finding and solution finding.**

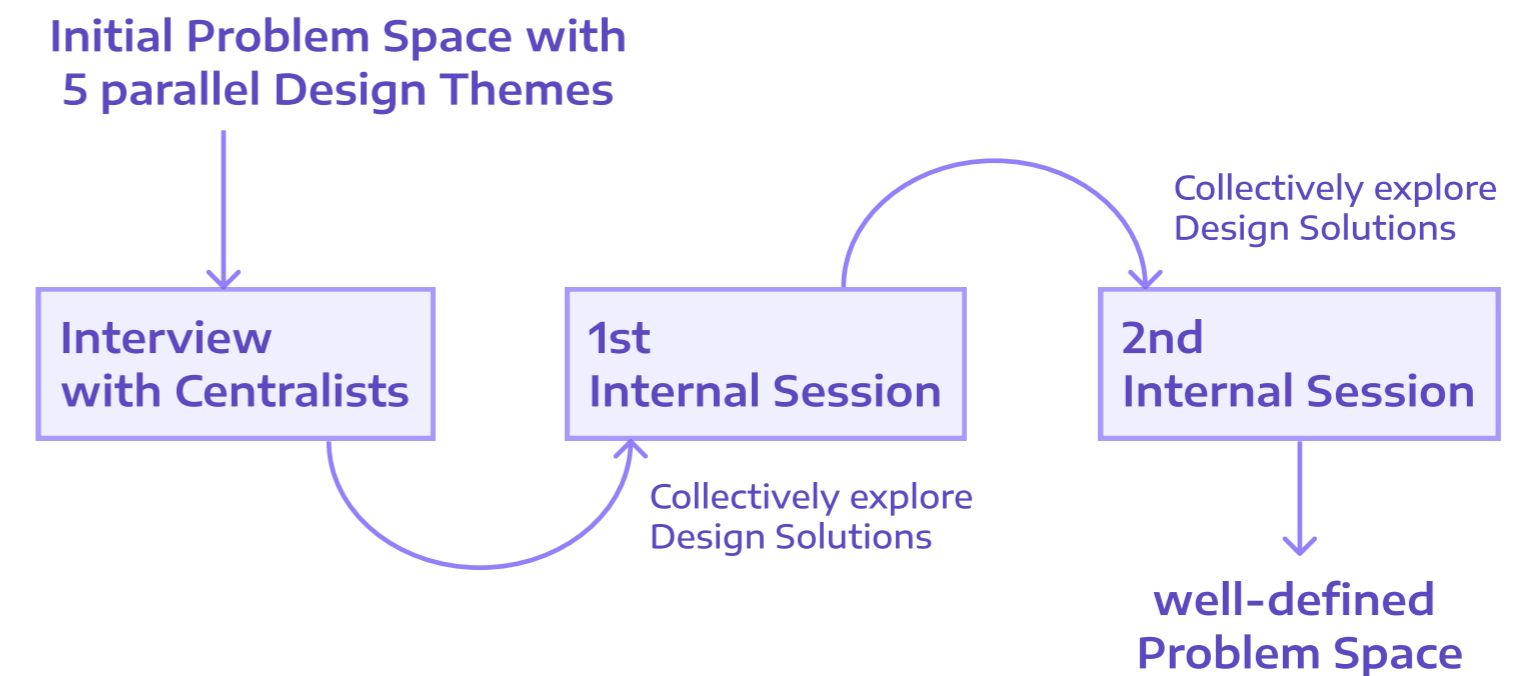


Figure 3.2 Iterative Process of Problem Domain

## Semi-structured interviews with Problem Owners.

Conducting interviews as a first activity for solution discovery was a carefully considered step within the project, serving multiple important purposes. First, with five distinct design themes identified, each has the potential to be expanded and developed into comprehensive strategies. **As such, in the initial stages, it is crucial to narrow the scope of the problem, this responsibility that primarily falls on the problem owner to determine which specific areas are most pertinent to addressing their current challenges.**

Semi-structured interviews are well-suited for this purpose, as they allow for flexible exploration of various facets of a complex open problem and facilitate deep, elaborate discussions to gain a comprehensive understanding of the essence of their needs.

Secondly, during the empathy phase of the research (as outlined in Chapter 2), interviews were only conducted with centralists from Care Center A. This introduced a potential bias, as the findings might not be fully applicable to other care centers. Therefore, these interviews presented a valuable opportunity to verify and address any potential gaps.

From a practical standpoint, due to the busy schedules of domain experts, it was necessary to conduct research activities with one or two experts at a time, rather than ideally involving them in larger co-creation sessions. This approach allowed for more focused and flexible interactions while respecting the constraints of their availability.

## Interview Guide Structure

The interview guide was structured into three key segments to comprehensively explore relevant themes, a detailed version of the guide can be found in [Appendix B1](#).

The first part aimed to understand the **organizational structure of Care Center B and gather contextual information about the participants**, such as their career motivations and professional backgrounds.

The second part, forming the interview's core, introduced 'energy takers' (job demands) and 'energy givers' (job resources), then **invited participants to reflect on their affective work experiences and the five identified design themes**, providing critical insights into work dynamics. By withholding detailed previous findings, the interview avoided nudging participants toward researcher expectations. This approach enabled a more objective **validation of each theme and clarified their relative importance** without imposing preconceived assumptions.

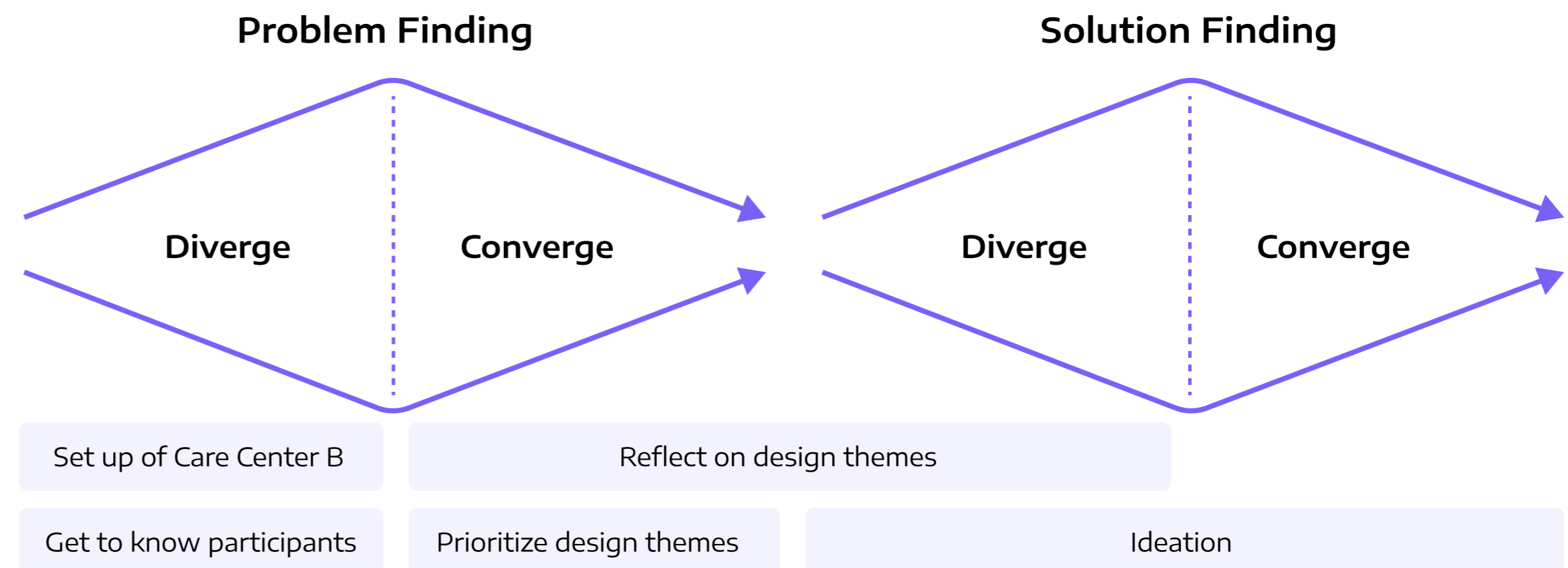


Figure 3.3 Interview Set-up

The last part invited centralists to prioritize the design themes and generate creative ideas for each. This approach facilitated a targeted exploration of potential solutions aligned with their needs and work context.

## Take-aways of interview.

The primary contribution of the interviews was to establish a clear prioritization direction, focusing on the themes of **Control and Autonomy**. Additionally, the discussions provided deeper insights into the **essence and emphasis of each design theme**. Numerous practical cases and challenges were shared by participants, significantly enriching the context of the problem and revealing key design opportunities and boundaries.

### Prioritization of ‘Imbalance of Control and Autonomy’.

Two interview participants demonstrated identical ranking the four design themes in terms of their impact on Centralists' affective states. Their prioritized order was as follows: 1) Balancing Control and Autonomy, 2) Meaningful Communication, 3) Empathy versus Urgency, with 4) Reward and Appreciation ranked as the least influential.

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### Difference in Care Center Set-Up and Structure Ambiguous Responsibilities of Care Centers and Centralists.

After gaining an understanding of Care Center B's structure, it became evident that different home care organizations adopt unique approaches to organizing unplanned care services, **reflecting variations in their service strategies and underlying philosophies**.

The primary distinction between the two participating organizations lies in their Centralist Grading Systems (Figure 3.4).

In Care Center A, centralists are assigned to three levels of medical care lines—ranging from acute critical cases to routine care—based on their professional experience. **Only qualified centralists are authorized to make decisions in critical scenarios**. In contrast, Care Center B does not employ a graded system; instead, centralists from both medical and non-medical backgrounds can engage with any type of case. Senior nurses serve as consultants, offering support when junior or non-medical centralists face situations beyond their expertise.

**Care Center A's** approach demonstrates a more responsibility-driven philosophy **by restricting critical decision-making to highly**

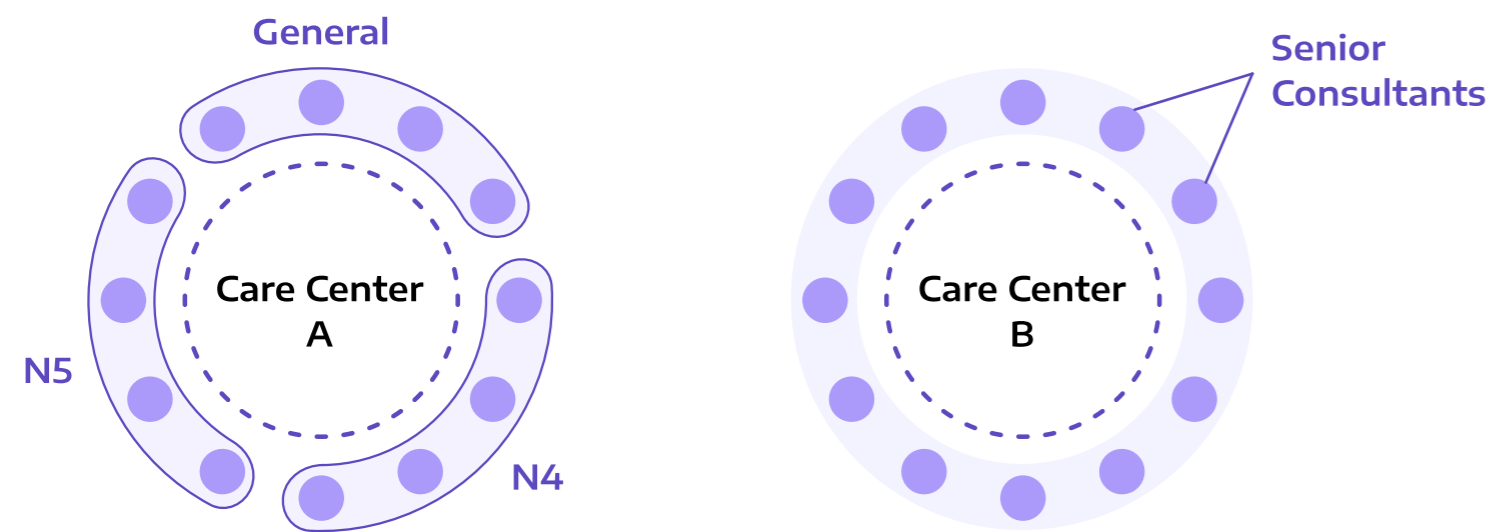


Figure 3.4 Different grading Systems

**qualified personnel.** On the other hand, **Care Center B's** egalitarian stance allows for **greater flexibility**, enabling them to respond more adaptively to service demands.

This strategic difference also influences **the composition and recruitment strategies of centralists.** While both centers predominantly employ experienced healthcare practitioners, Care Center B exhibits a higher proportion of younger centralists without medical backgrounds. The two interview participants both fit this category; while they have some healthcare-related experience, such as familiarity with medical terminology and technical tools, they lack professional qualifications for medical procedures. **Their strengths lie in adapting to technological changes and easily understanding software and devices.**

## Digital competence Challenge of digitalised Care Aging workforce serving elderly clients.

According to the interviewees, the emphasis on recruiting younger centralists at Care Center B arises from concerns over the **growing trend of digitalization within the homecare sector.** As the adoption of smart devices (e.g. Medido and Alarm Button) and the iterative updates of work softwares of healthcare services continue to grow, both participants agreed with the organization that **the biggest challenge lies in the low digital competence among elderly involvers.**

**The homecare sector often comprises an older workforce caring for elderly clients, and both groups frequently exhibit limited digital proficiency.** One interviewee highlighted this reality, noting that *“most of our colleagues are like 60 years old... centralists, people in the field as well.”*(I1) This demographic composition makes adapting to new work software particularly challenging. Elaborating on this, they explained, *“When we updated the software and started using a browser version, there were certain people, like a year or two years before their retirement, who were threatening to quit because they didn't understand or want to learn the new system. It's too difficult for an elderly person to learn how to do this.”*(I1) Another interviewee echoed this perspective, adding, *“They are one of those people who were in their 40s when Windows 95 came out.”*(I2)

**The challenge becomes even more pronounced when considering the use of digitalized services with elderly clients.** One common scenario, described by Interviewee 2, involves clients calling to inquire about their upcoming care schedules, despite this

information being readily accessible on a mobile app (Carenzorgt). For many clients, navigating digital tools remains a significant hurdle. According to Interviewee 2, it is nearly impossible to trust clients to effectively use smart devices, even when the task is as seemingly simple as accessing an app on a smartphone or tablet.

**The challenges in adapting to digital transformation emphasize the importance of minimizing the learning curve for any new updates to work tools.** To be effective, systems must be intuitive and user-friendly, ensuring smooth transitions and broad accessibility within the homecare sector.

## Integrated Information as a fundamental and primary need.

The interviews confirmed and expanded upon several sub-themes under the “Integrated Information” category, including “information scattered across multiple screens and software,” “redundant manual tasks,” and “incomplete information.” No new categories emerged during the discussions, indicating that this is a well-defined and comprehensive theme relevant to the work experiences of Centralists.

A significant finding from this discussion was the recognition of **“Integrated Information” as a critical foundational element within the broader set of identified themes.**

Although it does not directly constitute an emotional dilemma, **it represents a fundamental operational burden that significantly hinders Centralists from achieving a positive work experience.** Addressing this issue is also a necessary prerequisite for resolving

A significant finding from this discussion was the recognition of **“Integrated Information” as a critical foundational element within the broader set of identified themes.**

Although it does not directly constitute an emotional dilemma, **it represents a fundamental operational burden that significantly hinders Centralists from achieving a positive work experience.**

Addressing this issue is also a necessary prerequisite for resolving the four other identified affective dilemmas—without integrated information, any solutions to these challenges would be incomplete or ineffective. Detailed argumentation supporting these points is provided in [Appendix B2](#).

One interviewee further emphasized the burden of fragmented information through a military logistics analogy: *“ounces add up to pounds, and pounds add up to pain.”* Even seemingly minor tasks, such as frequent clicks and software transitions, can accumulate over time, resulting in a substantial burden for employees. Addressing the integration of information, therefore, becomes essential for effectively resolving all other identified emotional challenges.

### Ideation for Integrated Information

*Easily copy client information on client page*

*Reduce clicks by integrating multiple software applications and screens into a single, cohesive interface.*

## Meaningful Communication.

"Meaningful communication" emerged as the second-highest priority theme in the interviews. Notably, the discussions confirmed the **substantial impact of fostering meaningful relationships among colleagues and coworkers**, whereas the **need for meaningful communication with clients appeared inconsistent**.

### Define Meaningful Communication

"Meaningful communication" refers to a **genuine human connection**, as described by Interviewee 2, who characterized meaningful bonding as *"we're both humans to each other, not just the need and solution."* Interviewee 1 echoed this sentiment, noting that their most significant experience of having connection at work came from *building friendships during face-to-face leisure time with night-shift nurses*.

### Colleagues // Disconnection is a Systemic Issue

Connections with colleagues emerged as more influential and significant than anticipated. Both interviewees highlighted that **colleagues play a vital role as energy givers, contributing not only to task support but also to companionship and social interaction**. Interviewee 1 highlighted that *"having experienced colleagues or supervisors available for consultation when facing challenges out of their depth"* is one of the most helpful and reassuring aspects of their job. Interviewee 2 similarly emphasized

that *"having fun with your coworkers can get energy back."*

However, the current interaction between Centralists and other caregivers is marked by a **sense of isolation between departments**. Interviewee 1 described this disconnect, saying, *"There are certain people I have to speak to every day, and I have no idea what they look like, how old they are, or what they do."*

**This lack of connection is highlighted as a systemic issue within the organization**, where limited understanding of each department's responsibilities, burdens, and challenges has fueled frequent misunderstandings and frustrations, ultimately intensifying interdepartmental tensions. To mitigate this issue, the organization introduced a follow-up program that allows employees to temporarily observe or participate in the daily operations of other departments.

### Ideation for Bonding with Colleagues

*Provide data about which colleagues centralists interact with the most or have the longest conversations with, and create ways for them to connect and build stronger relationships.*

## Control as a root Cause Clients // Loss of Control due to Client Overshare

### Centralists acknowledged that meaningful interactions with clients are a valuable energy giver.

Interviewee 2 shared practices aimed at enhancing these experiences, such as addressing clients by name or offering personalized care, like wishing them a speedy recovery or a pleasant journey. These efforts not only made clients feel valued but also gave Centralists a sense of fulfillment. As Interviewee 2 noted, such gestures "make people feel more warm and welcomed... that beats me some energy back."

However, fostering stronger connections with clients was met with skepticism. Centralists often feel overwhelmed when clients overshare personal details, believing it might secure faster assistance. These disclosures, which frequently involve health issues or family struggles, often exceed Centralists' scope of responsibility and relevance to the case. This behavior is particularly common among clients who are isolated or cognitively impaired. For example, Interviewee 1 shared: "I have to listen to the whole life story for the fifth time because they have Alzheimer's and they forgot they've already told me." Interviewee 2 highlighted that the negative experience primarily arises from being placed in a reactive position, rather than from engaging meaningfully with clients. They emphasized the value of proactively guiding conversations to gain essential insights, stating, "You can be preemptive. Like, 'How are you doing?'"

These nuanced and seemingly contradictory perspectives reveal that **Centralists' resistance to deeper interactions with clients fundamentally stems from a loss of control.**

Based on the earlier definition of meaningful communication, a client sharing their life story constitutes meaningful interaction. **However, Centralists perceive it as overwhelming** because, when clients overshare and they lack effective ways to manage such situations, they lose some part of control over the interaction. This puts them in a reactive and passive position within their workflow, undermining their ability to handle cases efficiently and confidently.

## Ideation for getting Control back from Clients

*Companionship  
as a potential  
offering service.*

*Implement an  
Interactive Voice Response (IVR)  
system to collect clients' care  
needs before connecting them  
with Centralists.*

## Constrained Autonomy Empathy versus Urgency.

Ranked as the third priority, the theme of "Empathy versus Urgency" is **closely tied to client interactions.**

**While maintaining a warm demeanor during conversations is both valued and encouraged at care centers,** the primary challenge lies in the absence of clear guidance on how to perform in

handling cases. As Interviewee 1 noted, “Even though you're not working as fast, people appreciate it more sensually. It's wrong when you take it cold.” However, when both empathy and urgency are expected, meeting these demands becomes a complex challenge.

**The root issue is a lack of clear, detailed guidance.** Centralists often rely on their own judgment, attempting to emulate coworkers’ conversational styles to ensure they are meeting expectations. This approach, however, is not ideal. As Interviewee 2 described, “I guess it works that we have to use our common sense. But I think it's quite vague...” Additionally, Centralists hesitate to extend conversations, fearing it could lead to an unfair imbalance in workload distribution among colleagues. Spending excessive time empathizing with clients often prolongs calls, leaving others to handle a larger volume of cases in the same timeframe. This imbalance fosters “resentment” and a sense of unfairness among colleagues.

Interviewees expressed a strong need for explicit organizational guidance on achieving a balance between empathy and efficiency. They advocated for detailed feedback, including recommendations on tone, phrasing, average call durations, and practical strategies for managing client interactions effectively without compromising either empathy or urgency.

### Autonomy as a root Cause

This demand for clear, structured guidance highlights an underlying obstacle to the effective exercise of autonomy. Although Centralists are granted the freedom to prioritize between speed and warmth, the absence of defined boundaries or constraints prevents them from fully embracing or effectively utilizing this autonomy.

### Ideation for Regaining Control

*have precise metrics instead of relying on observation and guesswork, such as the average call duration for each person or the average call duration for certain types of events compared to their own.*

### Reward and Appreciation.

"Reward & Appreciation" was identified as the least impactful theme. While Centralists acknowledged a lack of appreciation, the need for increased positive feedback did not resonate strongly with participants. Interviewee 1 shared, “I think one out of two hundred, three hundred calls may be appreciative. We rarely get a thank you,” a sentiment echoed by Interviewee 2, who stated, “99% of the people just don’t say thank you anyway.”

However, **neither participant viewed this theme as particularly significant, nor did they believe that improving it would yield meaningful change.** As Interviewee 2 explained, “I think appreciation... I just don’t have a lot of influence over that. People will say 'Oh, thank you so much for helping me' all they want... I don’t value that too much.” Similarly, when asked if they still expect to receive gratitude, Interviewee 1 responded, “No, not anymore. Maybe at the beginning.”

# In-Depth Exploration of Control and Autonomy.

The interviews highlighted that achieving a balance between control and autonomy is regarded as the highest-priority design theme (research question 1).

These discussions shed light on the core principles of control and autonomy at care center work and revealed four critical issues that require attention to achieve a balanced relationship between them. (research question 2).

## Essence of Control and Autonomy in Care Center work

The discussion surrounding control and autonomy unfolded as participants shared scenarios in which they most enjoyed exercising control and autonomy, as well as those where they felt the greatest disempowerment. These reflections revealed key defining factors for control and autonomy:

In the context of care center operations, **“Control” can be understood as the Centralists’ capacity to direct a case toward a desired outcome.** In both optimal situations, this is achieved when Centralists have access to clear information, appropriate tools, and a well-defined workflow to address the demands of the situation effectively.

### Optimal conditions

#### Night shifts with fewer cases

During these periods, they could clearly see and manage the available resources: *“So you kind of know...the only two people who are available and can be sent to someplace. So if something comes in, you get to justify who they go to first depending on who's more in need, or who's closer.” (I1)*

#### Straightforward and easy cases

In these situations, such as changing appointments, Centralists reported feeling in control due to the availability of clear tools and processes. As one participant explained, *“That's a case where we have tools and control and you can just quickly help them,”* tasks with defined goals and the authority to make adjustments to care plans allowed for a smooth and efficient workflow.

### Disaster conditions

#### Peak periods

High volume cases accumulate without pause, Centralists find themselves merely *“going through it,”* lacking meaningful control over the progression of events.

#### Cross-departmental care requests

When clients insist on interacting with specific planners or caregivers, Centralists often find themselves powerless, *“usually not that person that can solve their problem,”* nor able to access relevant departmental schedules. Without reliable information flows and feedback loops, they remain uncertain and unable to provide concrete solutions. As one interviewee noted, *“It's not that you're supposed to be lying or anything... you don't feel like you really helped them yet.”*

**"Autonomy", on the other hand, involves exercising individual judgment to shape an improved course of action.**

Centralists primarily experience autonomy during periods of lower case volumes, as this enables them to justify decisions based on client needs or urgency. In these moments, they feel engaged, a sense of fairness, and the confidence to adjust actions efficiently.

**Both concepts rely on a fundamental prerequisite: the ability to form a clear and sufficiently comprehensive understanding of any given situation.** This entails neither an excess nor a deficit of information, enabling Centralists to effectively leverage their control and autonomy.

### **Barriers to Centralists' Control and Autonomy.**

The interviews uncovered 11 specific problem scenarios that were identified as being related to control and autonomy. Detailed descriptions of these scenarios can be found in [Appendix B2](#). Upon categorization, these scenarios reflect four core issues that impede the process of establishing better state of control and autonomy:

#### **Issue 1: Insufficient Access to Information Needed**

Centralists face critical challenges in attaining a clear and comprehensive understanding of the current situation when managing cases—as previously defined, it is a prerequisite for achieving effective control and autonomy.

First, Centralists often **lack access to essential information**

**required to address client inquiries effectively.** This is particularly evident in the absence of details regarding other departments, like the availability of other caregivers (Scenario 1), which hampers their ability to function effectively and provide meaningful assistance.

**Second, Centralists are not equipped with the developmental insights, which is also a key job resource, needed to enhance their judgement towards care situations.** For instance, they lack access to upstream and downstream case-related information from other departments, which limits their understanding of unplanned care to the narrow confines of the care center.

Furthermore, even **the information available to Centralists is frequently poorly sorted, organized, or presented** (Scenario 2), making it difficult to utilize effectively. This inefficiency further **obstructs their ability to apply existing knowledge in a way that supports optimal performance.**

Together, these issues undermine Centralists' ability to establish the foundational clarity necessary for exercising control and autonomy in their roles.

#### **Issue 2: Ambiguity in the Roles and Responsibilities of Care Centers**

In earlier sections, we highlighted how the two participating care centers structured their departments and operations based on customized strategies, which differed significantly from one another. **This divergence extends to internal organizational dynamics,** where caregivers from other departments often use care centers as intermediaries for cross-departmental coordination (Scenario 3). Such practices compromise the efficiency and quality of care delivery by distracting the focus of Centralists away from client needs.

This role ambiguity highlights a fundamental issue: the absence of a clear and consistent definition of care centers' roles and responsibilities **across multiple levels—industry, organization, and within the care center itself**. This ambiguity not only leads to the misuse of care centers but also prevents them from realizing their full potential as a critical component of the care delivery process.

### Issue 3: Lack of Effective Optimization in Internal Care Center Workflows

Substantial evidence suggests that the case **workflows within care centers are not operating in an optimized manner**, leading to inefficiencies and unnecessary burdens on Centralists.

For instance, information is neither organized nor presented in a manner that aligns with Centralists' work habits, **leaving them to rely heavily on their own effort to locate and use necessary data**. This lack of alignment not only adds avoidable workload but also increases the likelihood of errors (Scenario 2).

Second, **the need to support continuity of care for clients is inadequately addressed**. In response, care centers have resorted to manual, labor-intensive methods for recording and sharing short-term, client-specific care requirements (Scenarios 7 and 8), placing additional strain on resources and personnel.

Finally, **existing protocols and workflows lack the flexibility to accommodate less common care scenarios**, such as cases requiring multiple interactions (Scenario 9) or inappropriate client behavior (Scenario 6). Centralists are often forced to operate within rigid frameworks, leading to inefficiencies and emotional dissonance.

### Issue 4: Top-Down Structural Constraints

A significant barrier to the optimization of unplanned care service workflows lies in the rigidity of the top-down management structure. Rather than enabling bottom-up initiatives from frontline staff, **improvements are typically triggered by upper management in response to accumulated errors or inefficiencies** (Scenario 11). This hierarchical approach limits the ability of care centers to adapt proactively and creates a disconnect between managerial policies and the realities of frontline caregiving.

As a result, care protocols often fail to address practical needs, leading to unnecessary challenges such as staffing gaps during night shift transitions or the accumulation of unresolved Medido events (Scenarios 4 and 5).

Furthermore, meaningful changes are often delayed, forcing Centralists to operate in these unreasonable dilemmas for extended periods.

This role ambiguity highlights a fundamental issue: the absence of a clear and consistent definition of care centers' roles and responsibilities **across multiple levels—industry, organization, and within the care center itself**. This ambiguity not only leads to the misuse of care centers but also prevents them from realizing their full potential as a critical component of the care delivery process.

### Issue 3: Lack of Effective Optimization in Internal Care Center Workflows

Substantial evidence suggests that the case **workflows within care centers are not operating in an optimized manner**, leading to inefficiencies and unnecessary burdens on Centralists.

For instance, information is neither organized nor presented in a manner that aligns with Centralists' work habits, **leaving them to rely heavily on their own effort to locate and use necessary data**. This lack of alignment not only adds avoidable workload but also increases the likelihood of errors (Scenario 2).

Second, **the need to support continuity of care for clients is inadequately addressed**. In response, care centers have resorted to manual, labor-intensive methods for recording and sharing short-term, client-specific care requirements (Scenarios 7 and 8), placing additional strain on resources and personnel.

Finally, **existing protocols and workflows lack the flexibility to accommodate less common care scenarios**, such as cases requiring multiple interactions (Scenario 9) or inappropriate client behavior (Scenario 6). Centralists are often forced to operate within rigid frameworks, leading to inefficiencies and emotional dissonance.

### Issue 4: Top-Down Structural Constraints

A significant barrier to the optimization of unplanned care service workflows lies in the rigidity of the top-down management structure. Rather than enabling bottom-up initiatives from frontline staff, **improvements are typically triggered by upper management in response to accumulated errors or inefficiencies** (Scenario 11). This hierarchical approach limits the ability of care centers to adapt proactively and creates a disconnect between managerial policies and the realities of frontline caregiving.

As a result, care protocols often fail to address practical needs, leading to unnecessary challenges such as staffing gaps during night shift transitions or the accumulation of unresolved Medido events (Scenarios 4 and 5).

Furthermore, meaningful changes are often delayed, forcing Centralists to operate in these unreasonable dilemmas for extended periods.

# Internal Co-creation sessions with Syntilio.

During the solution exploration phase, co-creation sessions were conducted to **integrate specialized perspectives from the development team**, fostering collaborative innovation. **Previous interviews strategically guided us to focus on the core theme of "Balancing Control and Autonomy" and offered deep insights into the Centralists' positions and the rationale behind their prioritization decisions.** These rich user narratives provided a strong qualitative foundation for design and problem exploration.

The co-creation session with the Syntilio team marked a shift from a purely user-centric perspective to collaboration with the work software development team, allowing us to gather diverse insights from roles such as product managers, designers, and developers. This process facilitated a shared understanding of the problem domain and created a collaborative environment for generating novel perspectives and creative solutions that could not be achieved through individual interviews alone. By aggregating diverse professional viewpoints, the session minimized internal misalignment, ensured sustained validation of user needs, and aligned solutions with practical requirements.

The primary advantage of co-creation lies in its ability to unify perspectives across roles, resulting in tailored solutions and offering critical input for the development of future guidelines.

## Session Participants

Two internal co-creation sessions, each has five participants. The professional backgrounds or team roles of the participants are as follows:

<b>1st Internal Session</b>	<b>Role/Expertise of Participants</b> Product Owner; UX Designer; Developer ; Marketing Lead; Co-founder
<b>2nd Internal Session</b>	<b>Role/Expertise of Participants</b> Product Owner; Service Designer; IT Lead ; Marketing Lead; Co-founder

## Plan of the 1st Session

The primary objective of the first co-creation session was to gather diverse perspectives and **establish a shared understanding of the problem domain of imbalance control and autonomy**, resulting in a relatively extended problem-finding phase while keeping the solution exploration phase concise and focused.

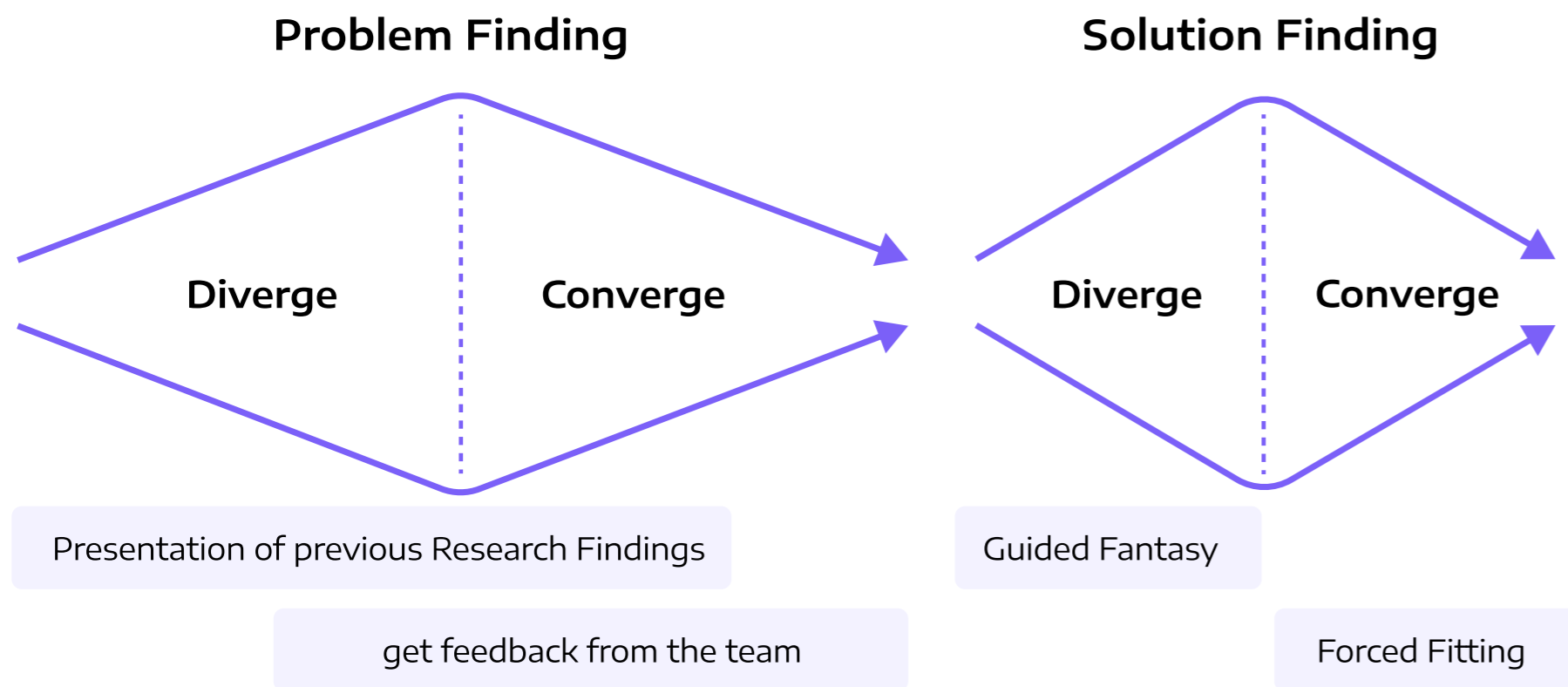


Figure 3.5 Internal Session Set-up

During the first part of the session, I presented the findings from primary research (Chapter 2) and initiated a discussion on the significance of the five design themes. A key question at this stage was: "Which theme has the most potential to build upon Syntilio's existing MVP solution?" I then shared the fact that Centralists had prioritized "Control and Autonomy" and solicited feedback and opinions from the participants.

Following the establishment of a collective commitment to improving "Control and Autonomy," we proceeded with the second part of the discussion. This phase centered around the problem statement: "How might we better equip Centralists to help them take a proactive role in remote care services?" The main activity involved a "**Guided Fantasy**" exercise, encouraging Centralists to envision an ideal future care center to inspire creativity and break conventional boundaries. Through this approach, we aimed to stimulate innovative thinking and provide more guidance and inspiration for solution development.

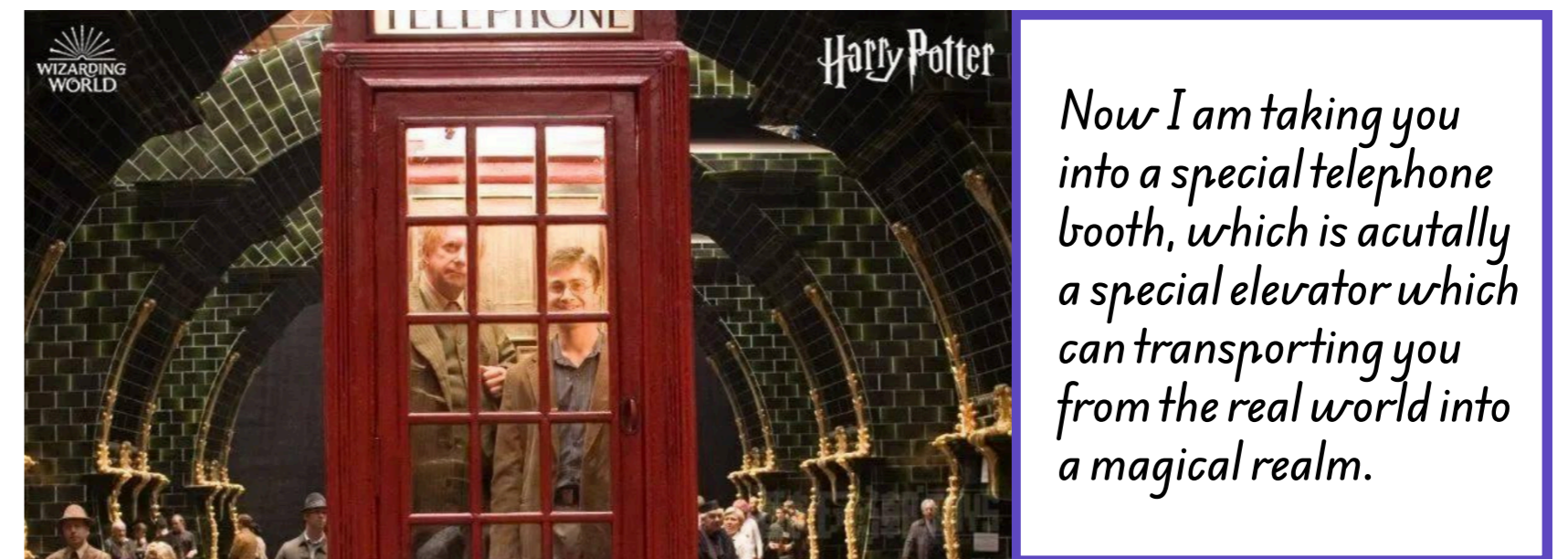


Figure 3.6 A Fantasy Travel to the best magic Care Center (Retrieved from [https://harrypotter.fandom.com/wiki/British\\_Ministry\\_of\\_Magic\\_lifts](https://harrypotter.fandom.com/wiki/British_Ministry_of_Magic_lifts))

## Outcomes of the 1st Co-Creation Session.

The discussions surrounding the remaining four themes, other than "Control & Autonomy," were both sharp and insightful, yielding several noteworthy insights.

**Integrated Information** was unanimously recognized by the team as a foundational necessity for improving both care quality and work experience. As the IT lead noted, "Without the right information in the right place, they don't know how to make the right decision." This theme not only resonated deeply with the group but also aligned with the core focus of Syntilio's current solution. As highlighted by the product manager, "With the case page we developed on the current MVP, we are tackling integrated information." This sentiment was further echoed by a developer, who stated, "It makes sense to see it pinpointed. And we are already trying to create a solution for it."

**Meaningful Communication** was deemed to closely tied to fragmented communication, which aligned with our previous research findings. The team acknowledged that enabling smoother and more seamless communication channels would be impactful, as expressed by the product manager: "We can only call today and we didn't fit WhatsApp or other communication means." However, no particularly strong interest or enthusiasm from the team was observed regarding this theme during the discussion.

**Reward & Appreciation** stood in stark contrast to the perceived indifference from clients and found its champion within the Syntilio team. This theme was acknowledged as both surprising and new, with the Product Manager noting, "Reward and

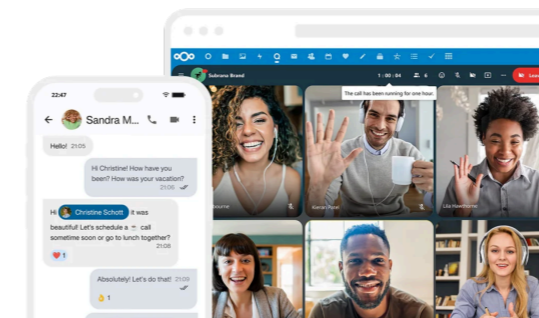
appreciation was kind of a new insight that came in." The team believes that focusing on this area could have a significant impact. As one developer remarked, "I believe it's important to make sure that the Centralists feel appreciated after doing a lot of work. Their job has a huge impact on clients, yet they no longer have direct client interaction."

## Outstanding Ideas Generated from the First Co-Creation Session



*floating  
"web of connections"*

*send a reminder to Centralists if there is a client who haven't been in touch for a while.  
create a feeling of 'I'm also on top of clients'*



*more human touch &  
real connections*

*have a speed date moment with clients. there's a speed dates rotational principle: either someone that you haven't talked with for a long time. or someone with maybe mental with a loneliness issues.*



*voice of Siri instead of chatbox*

*use from a Siri functionality to ask patterns and to get insight into pattern*

## Reflection on the first session

In the first co-creation session, the discussion around “Control and Autonomy” **primarily focused on proactive care**. This emphasis likely stemmed from the problem statement's reference to “taking a proactive role” and the “Guided Fantasy” activity, which steered the conversation toward future-oriented concepts.

Consequently, the goal of the second co-creation session was to shift the discussion back to present context challenges, fostering more practical and realistic conversations while emphasizing ideation.

## Plan of the 2nd Session

The session was also structured into two main parts: problem finding and idea finding. The problem-finding phase began with an exercise where team members were invited to share personal experiences related to “Control and Autonomy.” This facilitated the development of a collective understanding of the theme’s

relevance and nuances. Subsequently, participants engaged in a discussion to evaluate the level of control and autonomy currently held by Centralists, assessing whether it aligns with desired or optimal standards.

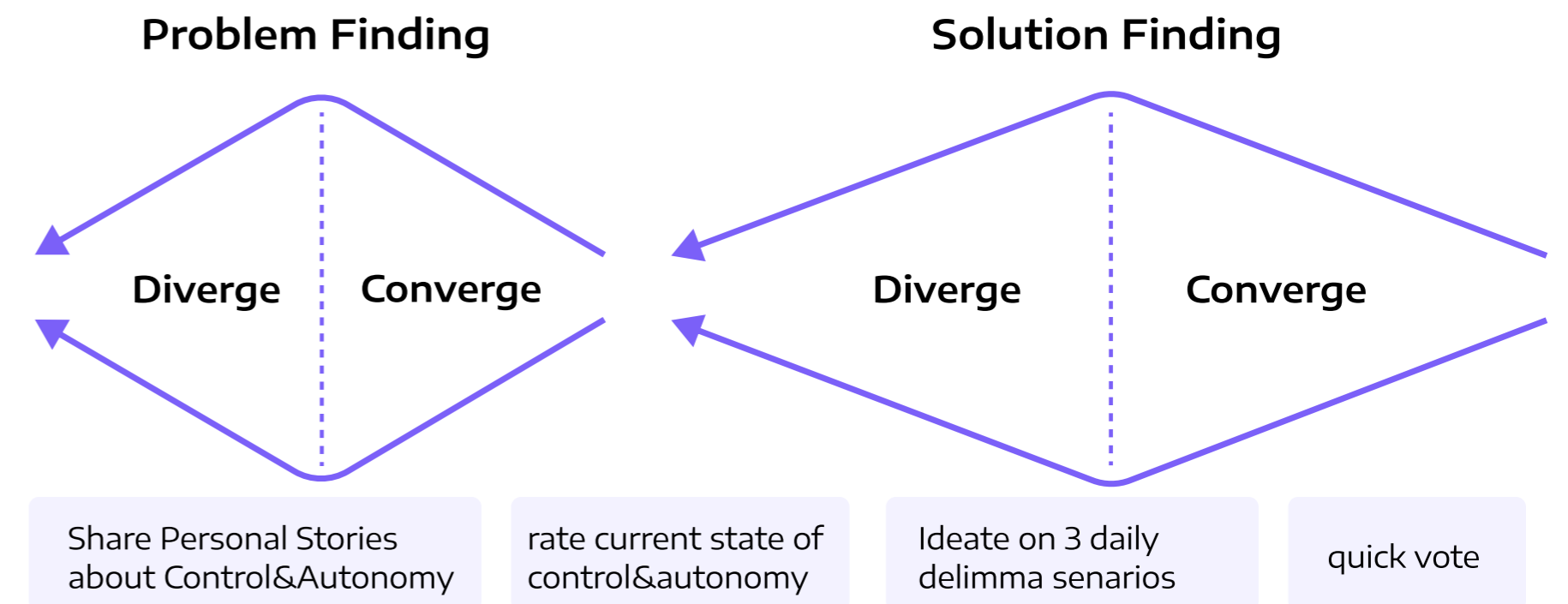


Figure 3.7 2nd Internal Session Set-up

In the solution-finding phase, rather than providing a singular problem statement, I introduced four concrete problem scenarios to stimulate ideation among the participants. These scenarios included:

- (1) a child expressing frustration over nurses failing to show up for scheduled appointments with their parents.
- (2) a lonely client frequently calling under the pretense of urgent needs.
- (3) multiple critical medical cases arising simultaneously during peak periods.

(4) receiving a complaint without clarity on the inappropriate action.

Additionally, I created a user experience pyramid as a reference framework for the participants during ideation. This pyramid categorized improved emotional states at work into three levels: confident, comfortable, and empowered. Following the collective ideation session, we employed the C-Box method to rapidly evaluate and categorize the generated ideas using three labels: “New,” “Wow,” and “How.”

**HOW:** Future-oriented ideas that involve aspirations and challenges; they are original but may not yet be feasible.

**WOW:** Breakthrough ideas that are innovative, exciting, and feasible for implementation.

**NOW:** Practical and easily implementable ideas with low risk and high acceptability, often supported by previous examples.

## Outcomes of the 2nd Co-Creation Session.

**Control was perceived as the ability to steer the direction of a situation toward a desired outcome.** One designer illustrated this through their experience of entering a customs inspection process abroad due to missing health record documentation. In a foreign environment where they did not understand the language, the designer found themselves following incomprehensible instructions. As they described, “I was not informed and someone else is controlling this situation. And I don’t have other options of freedom to choose.” This lack of understanding and inability to influence the course of action left them feeling passive and powerless.

**Conversely, autonomy emphasizes the freedom to make choices and act independently.** The product manager shared how self-planning a graduation trip provided a strong sense of autonomy: “I can choose where I want to go. I can choose do I go tomorrow yes or not? or another place...” Similarly, the IT lead contrasted their university experience with high school, highlighting that university life provided greater autonomy by allowing students to independently decide which majors, minors, and subjects could shape their time. Both examples underscore that autonomy stems from having freedom of choice and the capacity to direct one’s actions in alignment with personal goals and values.

**Both control and autonomy are enhanced when individuals have a clear understanding of their situation and the ability to act according to their intentions and values.** This was illustrated by the designer’s earlier experience of navigating customs in an unfamiliar country, where lack of information and direction led to a diminished sense of agency. The business lead offered a contrasting professional perspective, observing that when managers imposed rigid instructions without understanding employees’ roles, it often led to resistance. Conversely, managers who adopted a more empowering approach, building trust and providing suggestions rather than directives, saw their guidance well-received. This highlights the importance of fostering an environment where individuals feel respected and **capable of exercising their own judgment.**

## Outstanding Ideas Generated from the First Co-Creation Session

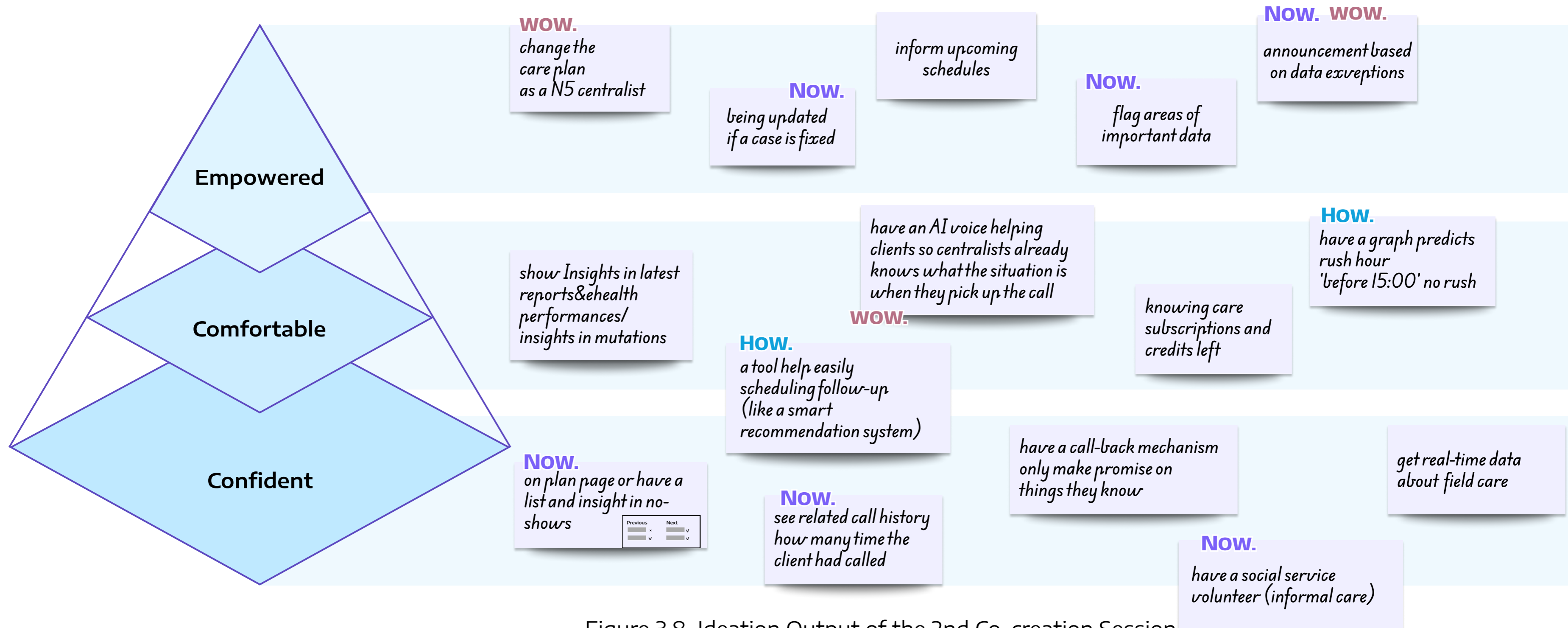


Figure 3.8 Ideation Output of the 2nd Co-creation Session.

**Empowered** - Not only serve to solve cases, but also serve to take care of clients, such as proposing adjustments to care plans.

**Comfortable** - Proactively initiate remote care such as check on clients' health conditions

**Confident** - Feel less uncertain and unpredictable towards their work.

Can manage their own work pace, and perhaps have a to-do list or their own goals for the day.

# Conclusions.

The primary contribution of this chapter lies in clarifying the essence of each of the five design themes and uncovering their intrinsic connections (Research Question 1). Throughout this process, the problem scope gradually became more focused and well-defined.

**Integrated information** serves as the foundational pillar for the effective operation of unplanned care services. It represents both a critical prerequisite for seamless workflows and the established groundwork upon which Syntilio has built its proposed solution.

Among the remaining four design themes, **Control and Autonomy** not only stand out as the most critical and urgent issue identified by Centralists but also, upon deeper analysis, reveal itself as the underlying root cause influencing the other themes.

For example, the difficulty in **Balancing Urgency and Empathy** can fundamentally be attributed to the ineffective use of autonomy. This issue arises internally from the absence of clear operational guidelines provided by care centers, which instead reflect conflicting preferences for both values without offering actionable standards.

Similarly, the challenges associated with **Meaningful Communication** partly stem from Centralists experiencing a loss of agency to clients or other caregivers.

Addressing the challenges of control and autonomy, therefore, has the potential to positive spillover effects, indirectly benefiting other design themes and contributing to a more holistic resolution.

## Define imbalanced Control and Autonomy

However, the **intricacies of Control and Autonomy are deeply intertwined with various systemic issues spanning multiple levels**. These issues encompass, but are not limited to, different roles and responsibilities among different level of Centralists, the coordination and collaboration between Centralists and other caregivers or departments, as well as the development and enforcement of protocols and workflows.

**The current state of control and autonomy imbalance in care centers can be attributed to a dynamic of limited control paired with excessive, yet inaccessible, autonomy.** While individuals are granted substantial freedom to determine their actions in managing work tasks, they are provided with highly restricted authority, information, and tools, rendering them unable to effectively establish genuine leadership in resolving cases.

Synthesizing findings from the three design activities in this chapter highlights that **the imbalance between control and autonomy originates from two fundamental issues (Research Question 2)**.

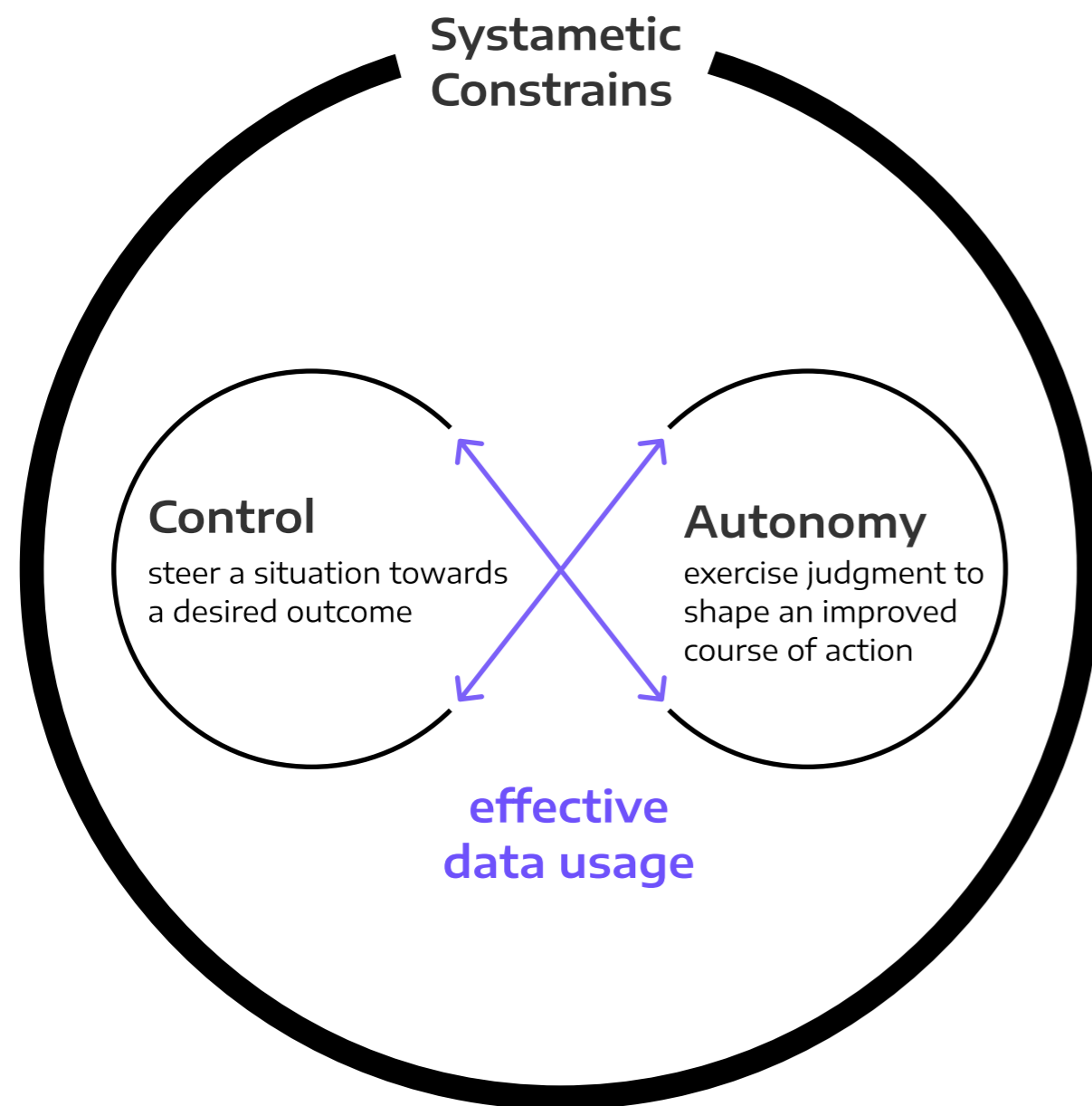
①The first issue lies in the lack of clearly structured internal guidance, which causes unnecessary emotional and cognitive burdens when managing daily cases. ②The second issue stems

from an unclear definition of the roles, missions, and responsibilities of care centers within the homecare system, spanning various levels such as their own groups, organizations, and broader systems.

This lack of clarity has relegated care centers to the role of mere troubleshooting units, limiting their ability to fully realize their potential in providing meaningful support for chronic disease care.

## Key take-away from Ideation.

Insights generated during the three ideation sessions point to a prominent strategic theme: leveraging Syntilio's data capabilities to provide Centralists with valuable data insights in diverse ways, enabling the realization of ideal care scenarios.



# 4 Deepen Design Iteration

# Design Challenge.

How might the intellectual data analysis capabilities of Syntilio be used to empower Centralists in remote care centers to take greater initiative in delivering care?

## Introduction.

With a clear problem description of the imbalance between control and autonomy, this chapter focuses on exploring and refining strategic proposals based on the core needs of Centralists and the motivations and constraints of Syntilio, as outlined in the previous chapter.

The aim is to develop optimized long-term strategies by addressing two key research questions:

### Desirability

What tasks or functionalities should Syntilio prioritize, leveraging its data capabilities, to deliver the most meaningful and transformative impact on the remote care system?

### Feasibility and Viability

Considering the structural and organizational constraints of the homecare system, along with the financial and technological costs faced by the software company, what would be a practical and sustainable solution that can be implemented?

Drawing from the real-world challenges observed during the primary research activities in this project—where Centralists still navigate multiple legacy software systems—achieving the ideal balance between control and autonomy requires addressing numerous existing shortcomings in the work environment and creating new tools to support task execution. **This complex context risks diverting or diluting focus during the strategy development process.** To counter this, Research Question 1 aims to ensure that all strategic proposals remain closely aligned with the core objectives of the project.

Research Question 2 seeks to **explore the practical limitations that could influence the development of service strategies**, including the roles and authority of other caregiving positions within the unplanned care system and the technical demands and challenges of implementation. Since the research conducted thus far has focused primarily on the operations of care centers, this question aims to bridge the knowledge gap by broadening the scope to include these critical factors.

To address the two research questions outlined above, this chapter primarily relied on desk research and interviews with Syntilio experts who possess extensive knowledge of the homecare industry to rapidly gather new insights. The final product strategy underwent two rounds of iteration before being finalized. The key feedback and insights collected during this process are summarized as follows:

# Initial Strategic Design Proposal

By enabling Centralists to actively manage and control data, empowering them to play a more influential role in defining their responsibilities and shaping the future of remote care services.

## Horizon 1 \_ Centralists as Data Curator

To liberate Centralists from the burden of low-quality data management while preparing them for truly proactive caregiving. This horizon focuses on fostering trust between Centralists, technology, and data by giving them the tools and permissions to provide feedback on low-quality data and to customize the information hierarchy on their work dashboards.

### Key Features

#### a.Embedded Feedback System with Syntilio

Syntilio, as an intelligent conversational assistant, **is integrated into every data panel with an embedded feedback button.** Centralists can **report inaccuracies or incomplete data** directly through this system. During this interaction, they can correct the data and **explain the reasons for updates.**

In the background, Syntilio **forwards the updated data and associated case details to senior Centralists** authorized to review and officially register the changes, improving overall platform data quality over time.

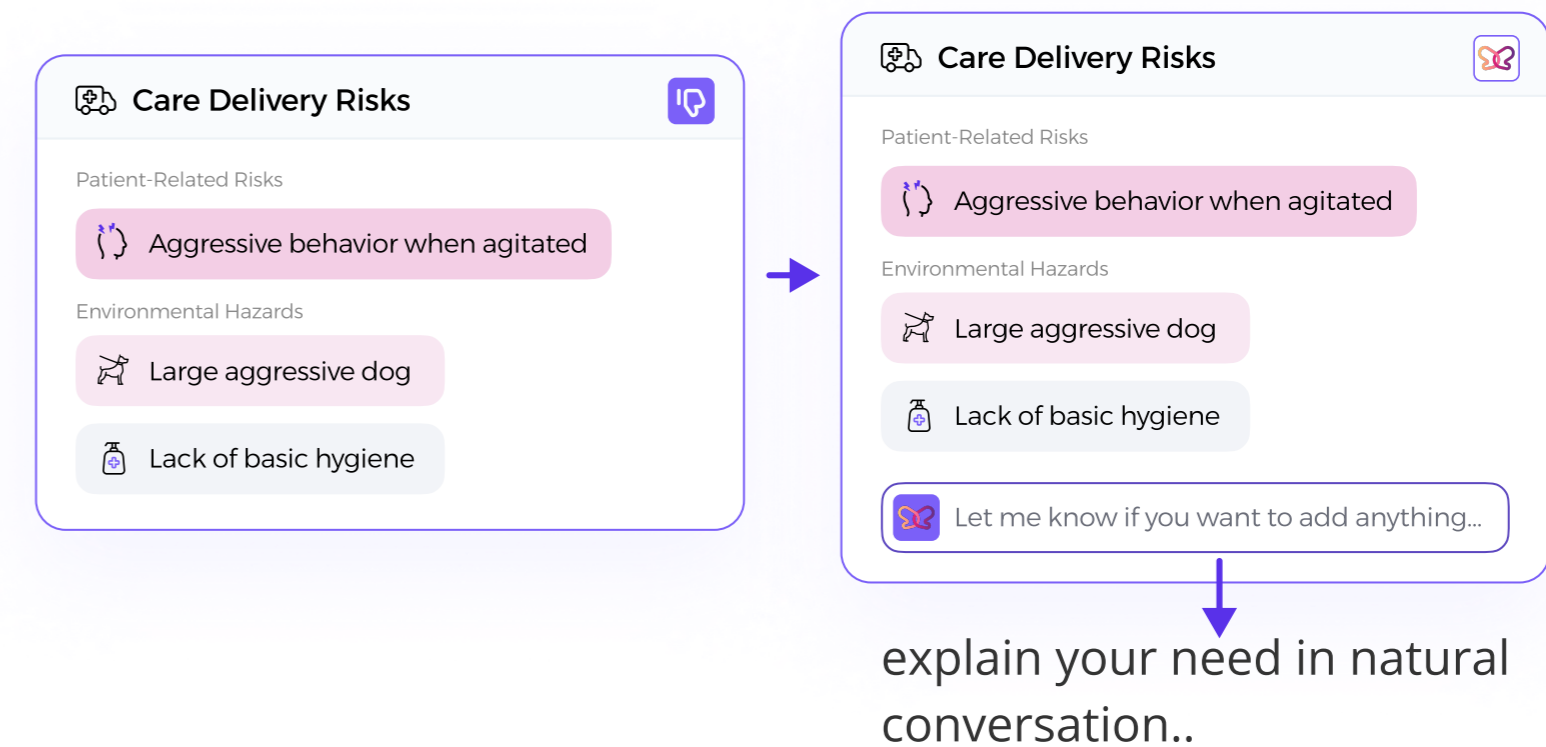


Figure 4.1 Feedback in Data Panels

#### b.Customizable Data Panels

A new "Add Data Panel" function on the case page allows Centralists to customize their workspace by **rearranging and adding relevant information displays.**

Centralists can also interact with Syntilio to **query backend data and build new data panels as needed**, further tailoring the interface to their specific tasks and enhancing operational efficiency.

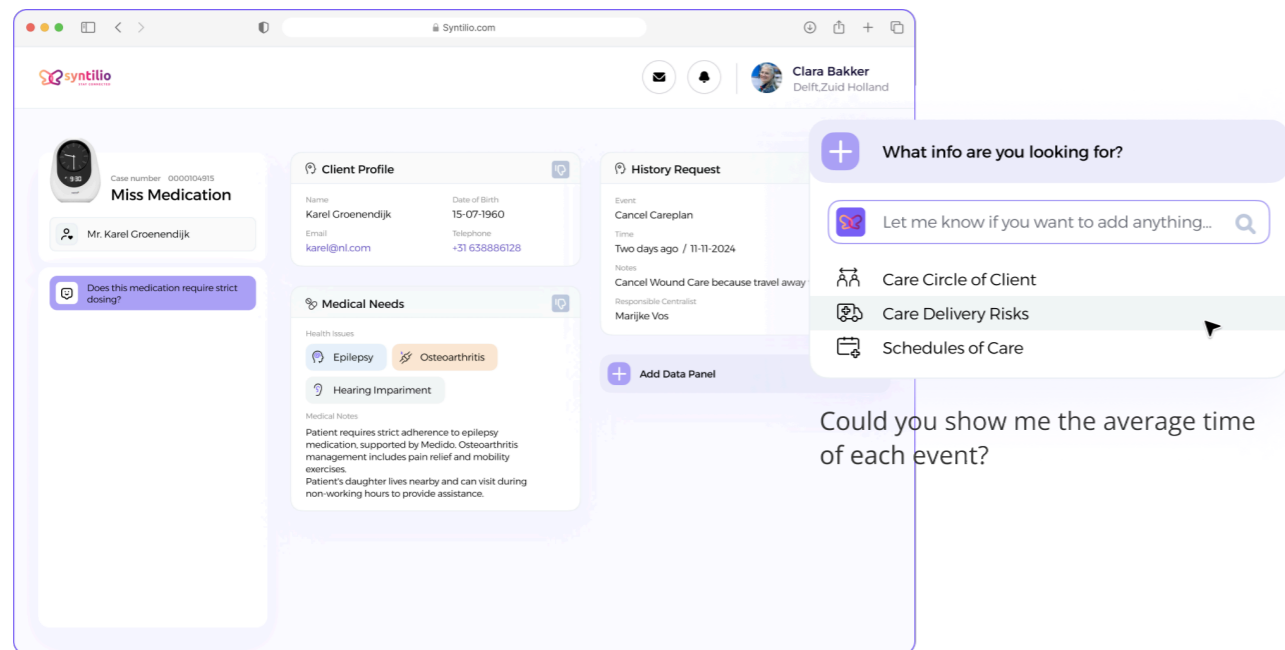


Figure 4.2 Customizable Data Panels

## End Result of H1

Improve Centralists' overall experience with data by ensuring they can access the necessary information at the right place and time.

## Horizon 2 \_ Centralists as Data Curator

Horizon 2 introduces a strategy that repositions Centralists as active refiners of care protocols, addressing the limitations of **rigid and ineffective workflows that currently hinder their efficiency**. As frontline workers, Centralists are uniquely positioned to identify gaps between pre-defined event-handling workflows and the reality needs of unplanned care situations. Therefore, horizon 2 advocates for Centralists to actively participate in the **refinement and adjustment of event workflows**.

## Key Features

### ① Track and Monitor Cases and Clients

Introduces a new "Track & Monitor" module, enabling Centralists to follow the progress of cases and clients they are particularly concerned about. Centralists can **observe case follow-ups and monitor long-term client care outcomes**, fostering a deeper understanding of how their decisions impact situations over time. This feature also contributes to knowledge-building in chronic disease management, empowering Centralists to develop the skills and insights needed to make more impactful and informed decisions.

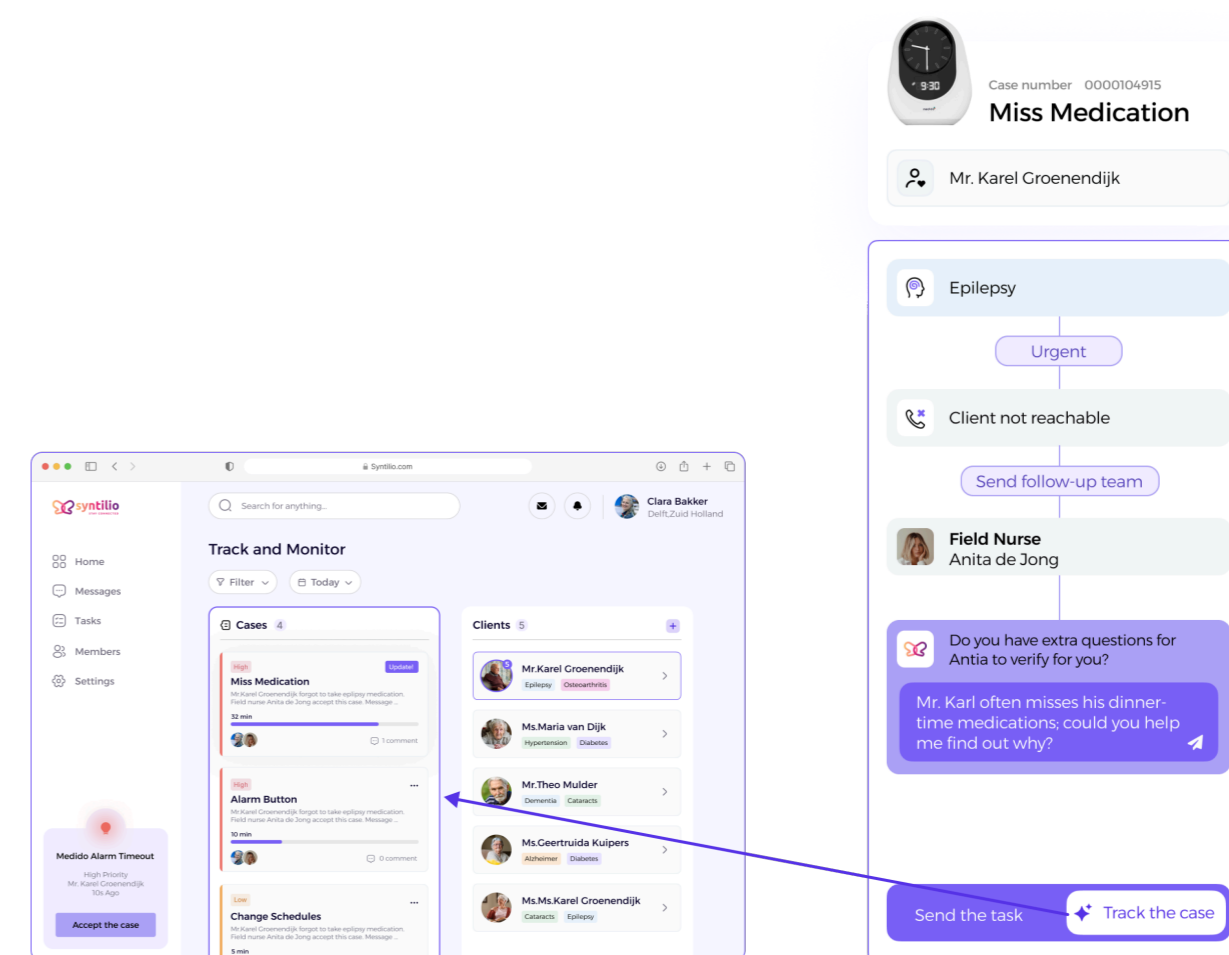


Figure 4.3 Track & Monitor Module

## ② Dynamic Workflow Configuration and Refinement

Establishes preconfigured workflows for handling various types of events, seamlessly integrated into the Syntilio platform to guide case-handling processes step by step. Centralists move away from purely intuitive case management to a structured, guided approach within Syntilio's assistance. While following these workflows, Centralists have the option to adhere to the suggested steps or propose modifications. This enables the creation of workflow branches, allowing for continuous refinement of event-handling processes to better align with real-world scenarios.

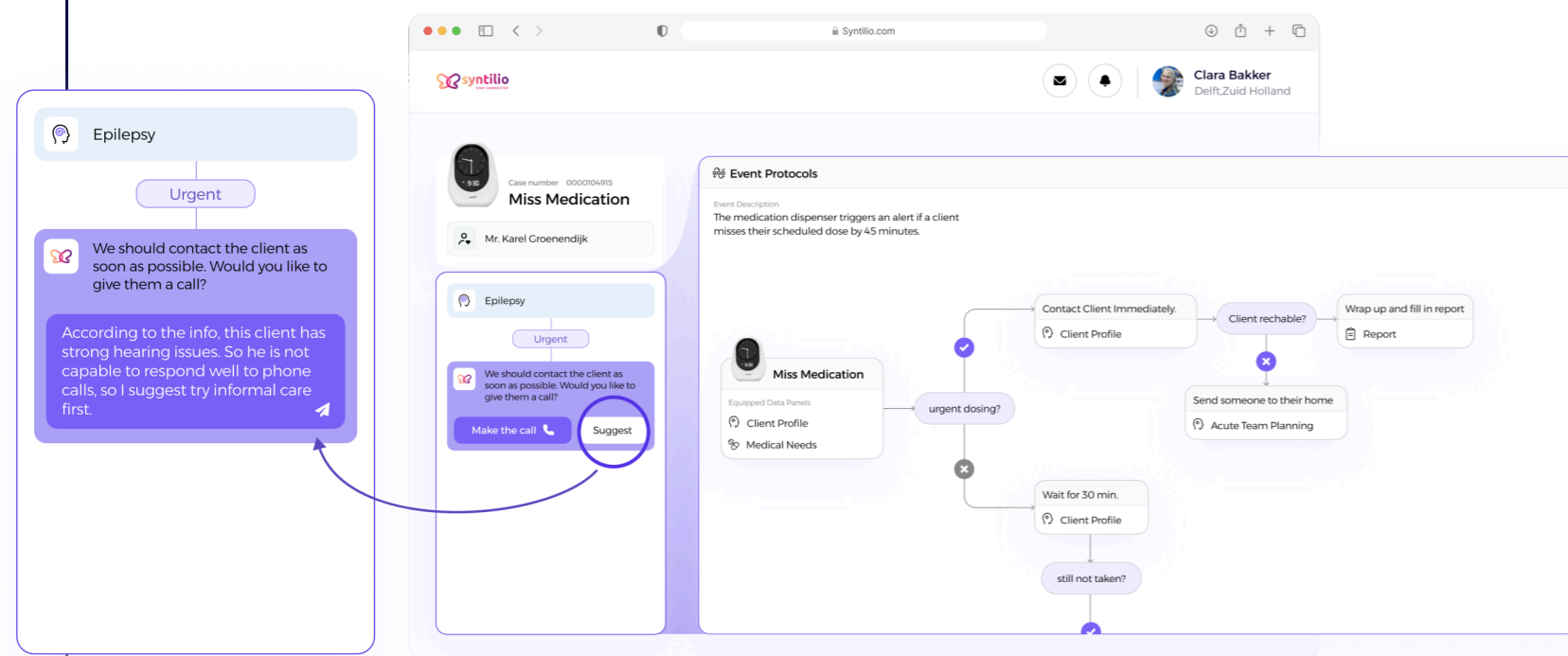


Figure 4.4 Workflow Refinement

## End Result of H2

Develop flexible protocols that are tailored to real-world needs and adaptable to various specific scenarios. With the support of Syntilio's step-by-step guide, Centralists can effortlessly and efficiently handle cases, delivering high-quality outcomes.

## Horizon 3\_ Centralists as Care Advisor

Horizon 3 signifies the expansion of Centralists' roles into proactive care advisors, marking a shift from handling isolated episodes of fragmented case care to providing continuous and integrated client care. Centralists are empowered to engage in deeper investigative work to uncover the underlying causes of abnormal care patterns. They can even offer recommendations for adjusting clients' treatment plans, contributing to more personalized and effective care strategies.

## ① Pattern Detection and Reporting

Syntilio continuously observes and analyzes clients' care needs, summarizing patterns over time. When a client **exhibits behavior or care demands that deviate significantly from their historical averages or from comparable client groups, Syntilio flags these anomalies.**

For example, a sharp increase in miss medication events compared to recent trends or peers is detected and reported to Centralists.

Centralists receive alerts about these patterns, enabling them to **investigate potential underlying causes of the anomalies.** Based on these insights, Centralists can provide informed care recommendations, such as adjustments to treatment plans or identifying other necessary interventions.

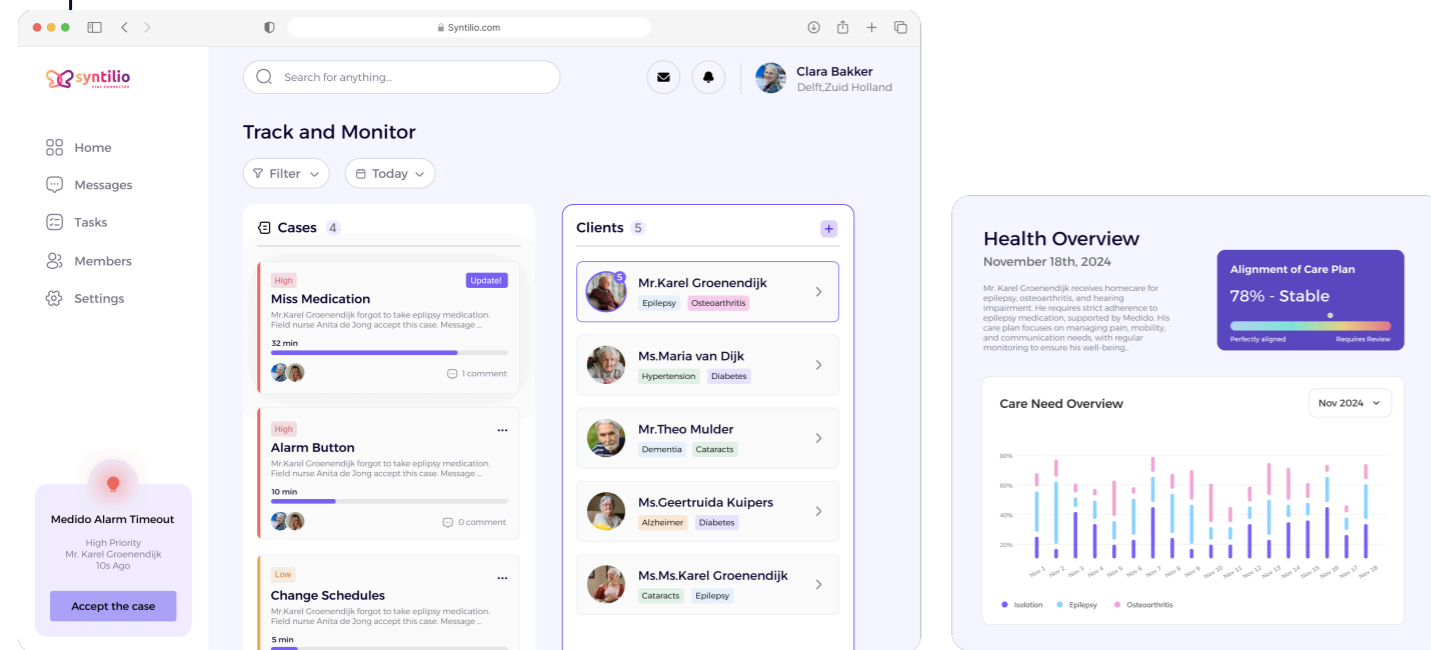


Figure 4.5 Client Health Overview

## Pitfalls identified from evaluation.

In evaluating the proposed roadmap and the three Horizon stages, several gaps and shortcomings have been identified that highlight areas for refinement and further exploration.

### 1. Data Correction Burden in Horizon 1

The data correction process introduced in Horizon 1 places additional responsibilities on Centralists, requiring them to engage in manual updates to ensure data accuracy. However, this process is heavily reliant on Centralists' personal interest and initiative, with no clear endpoint to confirm when the corrections have been sufficiently completed. This lack of a definitive completion marker not only increases workload but also introduces inefficiencies and inconsistencies in data quality.

### 2. Challenges to Protocol Integrity in Horizon 2

The Horizon 2 initiative entails involvement in the modification and refinement of medical protocols, an area traditionally governed by strict guidelines and professional oversight. This proposal raises concerns about potentially compromising the rigor and integrity of these protocols. Moreover, whether homecare medical systems would permit frontline Centralists to play a role in policy-making processes remains uncertain and largely unaddressed. This reveals a critical blind spot in the feasibility of implementing such an initiative.

### 3. Lack of Strategic Coherence

While the roadmap demonstrates a coherent progression in fostering trust between Centralists and the platform, encouraging proactive involvement, and transitioning care centers from case-oriented to client-oriented care, it falls short in presenting a unified and streamlined strategy. Each Horizon emphasizes a distinct core function—data management (Horizon 1), protocol refinement (Horizon 2), and pattern identification (Horizon 3)—with implicit, more granular steps that are not clearly articulated. This segmented approach detracts from the overall clarity and fluidity of the strategy.

### 4. Multifocus Approach

The proposal reflects a multifocus approach, attempting to address too many priorities simultaneously. For instance, while Horizon 2 aims to optimize workflows, cross-departmental information sharing and collaboration are considered prerequisites. However, these elements lack a dedicated position within the roadmap, creating ambiguity

about their implementation. This broad scope conveys an intention to solve all design challenges, which risks diluting the strategy's focus and effectiveness.

#### Reflection and Knowledge Gaps

This reflection on the initial strategic proposal for homecare highlights significant knowledge gaps between the current state and the envisioned future. To address these gaps, further research was conducted through desk studies and interviews, focusing on key areas that require deeper understanding and clearer articulation in the roadmap.

## New knowledge about the system.

### Care plans, Protocols and Workflow

In the homecare system, protocols and workflows form the backbone of operational efficiency and care quality. Protocols, as formal guidelines, are primarily created by protocol specialists who operate outside care center departments. These experts ensure protocols align with medical regulations and best practices. While senior Centralists are not directly involved in designing protocols, they play a crucial role in testing and validating them, providing operational insights to enhance practicality. Additionally, homecare administrators, who are part of the broader homecare organization but not care center departments, adapt protocols to align with organizational needs.

Workflows, on the other hand, are operational processes specific to handling events and cases, and their creation is entrusted to senior Centralists. With their medical expertise and extensive experience in managing various event types, they design workflows tailored to meet the nuanced demands of care centers. These workflows serve to streamline processes and ensure consistency in addressing care tasks.

Care plans, which provide holistic treatment strategies for clients, are created and adjusted exclusively by care managers—highly qualified senior nurses responsible for crafting personalized and comprehensive care plans. While Centralists contribute valuable feedback based on their operational insights, they lack the authority to modify care plans due to the higher medical qualifications required for such tasks. This delineation ensures that care plans maintain their rigor and alignment with clients' complex needs.

The system currently faces challenges in cross-departmental data sharing. Reports created by field nurses are uploaded to systems like ONS, but these remain underutilized by Centralists due to a lack of integrated tools for accessing and analyzing such data. Streamlined access to these reports, combined with formalized feedback mechanisms and enhanced communication tools, could significantly improve collaboration between Centralists, care managers, and field nurses, fostering greater consistency and efficiency in care delivery.

**A notable trend in the industry is the push for protocol standardization.** Currently, individual organizations develop their own protocols, creating variability that complicates cross-agency collaboration. Standardizing protocols could ensure

consistent care quality, simplify training processes, and enable workflow automation by integrating standardized protocols into digital platforms. This evolution not only supports operational efficiency but also sets the stage for long-term improvements in homecare services.

## Preventive and Proactive Care for Chronic Disease Management

Chronic disease management has become one of the greatest public health challenges worldwide. Transitioning from reactive care to preventive and personalized care is recognized as a necessary path to reduce the escalating burden of care in the future (WHO, 2022). Preventive care and proactive disease management are essential for improving patient health outcomes. Advanced data analytics provides transformative opportunities in chronic disease management, enabling a shift from passive, reactive approaches to proactive, precise care focused on prevention rather than treatment.

### Reactive Approach – Sick-Care Model

Traditional reactive care waits until patients become severely ill before seeking medical help. This "sick-care" model often leads to late diagnoses, uncontrolled disease progression, poor outcomes, and rising healthcare costs.

### Proactive Approach – Preventive Care

Preventive care focuses on addressing chronic diseases proactively to mitigate risks and prevent worsening conditions. In the homecare industry, this approach can be realized through

two key strategies:

1. Monitoring known patients: Detecting exacerbations early and intervening promptly.
2. Prescribing treatments: Slowing or halting disease progression through medication and lifestyle adjustments. For homecare, this could involve tailoring treatments to align with each patient's needs, ensuring care plans remain flexible and adaptive.

### Leveraging Data Analytics

Advanced data analytics, powered by technologies like machine learning and artificial intelligence, offers a structured process to enable proactive care:

1. Data Aggregation: Collecting data from diverse sources such as wearable devices and electronic health records.
2. Insight Extraction: Analyzing large datasets to derive actionable insights.
3. Integration into Decision Support: Embedding these insights into decision-making tools for personalized patient care.

### Benefits of a Data-Driven Proactive Approach

A proactive approach driven by data analytics yields several critical benefits:

- Early Risk Detection: Identifying potential risks before they escalate.
- Slowing or Preventing Disease Progression: Reducing the likelihood of complications through timely interventions.
- Avoiding Complications: Preventing secondary health issues and improving overall outcomes.
- Enhancing Quality of Life: Delivering targeted interventions tailored to each individual, improving both care quality and patient satisfaction.

**D**

**Design**

**to Deliver**

# Comprehensive Overview and Rationale for the Final Strategy.

## Data as the Driving Force

In this project, the decision to center the strategy on “deliver intelligent insights” represents a natural alignment between user needs and Syntilio's core strengths.

Syntilio's competitive advantage extends beyond its role as an online care hub and digital workstation for streamlining case workflows. **At its core, Syntilio operates as a data-driven platform.** Its infrastructure integrates an extensive range of datasets, including patient medical records, critical care decisions, and hundreds of historical care reports.

While its current functionality focuses on data integration and presentation, the platform **possesses the technological capacity to manage and apply these datasets in far more intelligent ways.**

Additionally, as a digital workspace, it has the capability to collect and **utilize behavioral data from Centralists' interactions**, further enhancing its ability to optimize workflows and improve efficiency.

Moreover, insights from the co-creation sessions during the solution-finding phase revealed that **most ideas proposed by both users and Syntilio team members were fundamentally revolved around functionalities rooted in insightful data.**

This observation reinforces a principle identified in the define

phase: having clear and comprehensive information to understand the care situation is a fundamental prerequisite for establishing a better balance of control and autonomy.

## A Key Dilemma and A Defining Opportunity

Thus, the central question our strategy needs to address becomes: **Which features or functions should Syntilio focus on to leverage its data advantage and achieve the greatest impact in addressing the existing imbalance?**

As concluded in Chapter 3, Centralists currently face a dual challenge characterized by **limited control over their tasks** and **an excess of superficial autonomy**. This imbalance arises from the absence of clearly defined workflows and operational guidelines for delivering care, forcing Centralists to rely heavily on subjective judgment when making care-related decisions. At its core, these challenges are rooted in a single fundamental issue: **ambiguity**. This ambiguity manifests in two distinct dimensions:

**Internal ambiguity:** Within care centers, there is a significant lack of clear and professional guidance on the ideal management of care tasks. This absence of standardized protocols leads to inconsistencies and inefficiencies in task execution.

**Systemic ambiguity:** At the broader level of the homecare system, the role of care centers remains poorly defined. This uncertainty has, in some cases, resulted in care centers being mischaracterized as simple

call-routing units, which significantly underutilized their potential to contribute meaningfully to client care.

In response to the question of the systemic role care centers should fulfill, this project proposes a core design opportunity: **care centers have the potential to serve as maintainers of long-term treatment plans.**

First, as departments focused on addressing “unplanned care needs,” care centers are uniquely positioned to **collect data on all instances of “deviations from the plan”** during the execution of treatment plans. This information holds significant value in improving the adaptability of treatment plans to meet clients’ evolving care needs.

Second, through practical experience, Centralists have already **recognized that isolated episodes of care are insufficient to fully address clients’ challenges.** They have observed that clients’ needs often form identifiable patterns and have expressed a desire to manage these patterns more effectively.

Finally, **proactive care and preventive care have emerged as broader trends within the healthcare field.** These developments strongly support the rationale for advocating a transition of care centers toward a proactive care approach.

Together, these three points demonstrate the validity and feasibility of repositioning care centers to play a more proactive role in patient care.

## What Syntilio shall do?

If the transformation of care centers is an inevitable development, my strategic recommendation for Syntilio, as a workplace platform, is to take an active role in driving this transformation rather than passively adapting to it.

To address the dual ambiguities outlined earlier and to facilitate the shift toward proactive care, I propose two core functionalities leveraging intelligent data analysis:

Step-by-step Workflow Guidance :

**Syntilio as smart workflow assistant.**

Pattern Identification, Management, and Resolution:

**Syntilio as pattern observer.**

## Strategic Proposal. Meet intelligent Syntilio

Just as Siri embodies Apple’s personal assistant services, **Intelligent Syntilio serves as the humanized manifestation of Syntilio’s data analysis capabilities.** Designed as a small, white, butterfly-like figure with wings, this virtual pet resides on the homepage of the Syntilio platform. It bridges the front-end user interface and the database, acting as a “messenger” that understands and responds to Centralists’ needs while offering companionship and care.

Intelligent Syntilio is more than a static tool; it actively engages with Centralists to foster a sense of encouragement and connection, here are three examples of daily interaction scenarios:

### ① Casual Greetings

Intelligent Syntilio starts the day with cheerful messages to set a positive tone.

For instance, when a Centralist logs in at 8 a.m., it might say:

“Hey, look who's here! It's so good to have you here, my friend.”

### ② Acknowledging Efforts

After peak periods, it recognizes hard work and promotes self-care. For example, if a Centralist resolves multiple cases efficiently, it might comment:

“New record! You handled 5 cases in just 30 minutes. Want to take a little break?”

### ③ Dynamic and Exploratory Nature

Intelligent Syntilio occasionally leaves the homepage, signaling its activity with notes or small tokens like virtual flowers. For example, it might say:

“ I've gone on an adventure in the data backend to learn more! Message me if you need anything.”

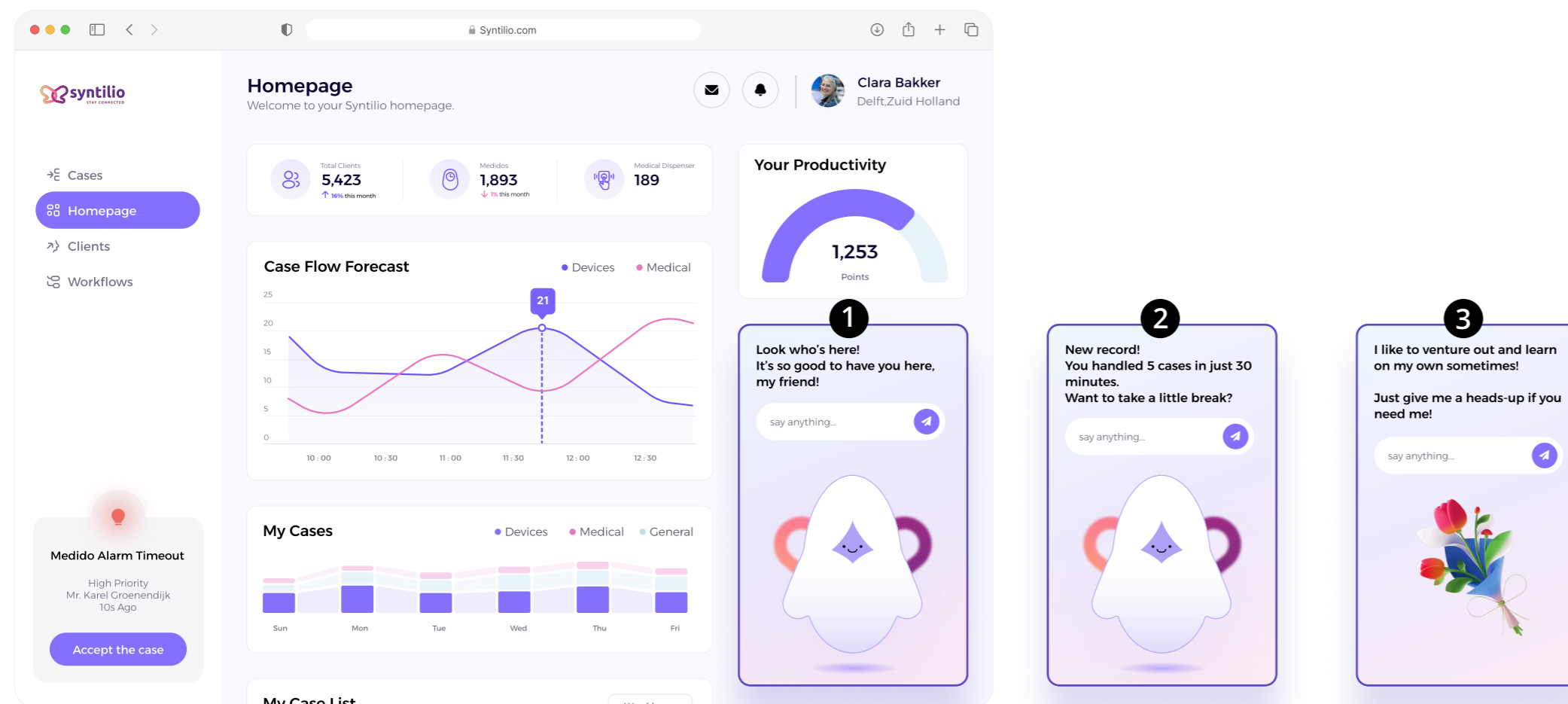


Figure 5.1 Track & Monitor Module

To ensure Intelligent Syntilio grows stronger and more impactful over time, its development is guided by two key roles:

- **Smart Workflow Assistant**  
It identifies recurring trends in Centralists' workflows, facilitating better task management and decision-making.
- **Care Pattern Observer**  
It focuses on understanding patient care patterns to support proactive and preventive care initiatives.

Intelligent Syntilio evolves and grows stronger over time by adopting two roles: as a Smart Workflow Assistant and a Care Pattern Observer. Its growth is driven by a structured data analysis model with three phases: **data preparation, training, and implementation**, ensuring it continuously adapts and improves to meet the demands of modern care systems.

## Track 1: Intelligent Syntilio as Workflow Assistant .

In this role, Intelligent Syntilio assists Centralists in handling their tasks in a way that is step by step well structured and guided. Its primary value lies in helping Centralists work with greater **confidence** by making their workflow more **streamlined, reliable and effortless**.

### Horizon 1: Configure Event Workflows

In the first stage, workflows for handling different event types are configured on the Syntilio platform. Senior Centralists use the **Configure Workflow Panel** to design ideal workflows for specific event types and **integrate protocol questions into these workflows**.

Intelligent Syntilio supports this process by enabling Centralists to describe each workflow step **conversationally**. It interprets these inputs, parses the requirements, and assists in generating the workflow configurations.

### Who is involved?

**Senior Centralists:** Responsible for designing and configuring workflows.

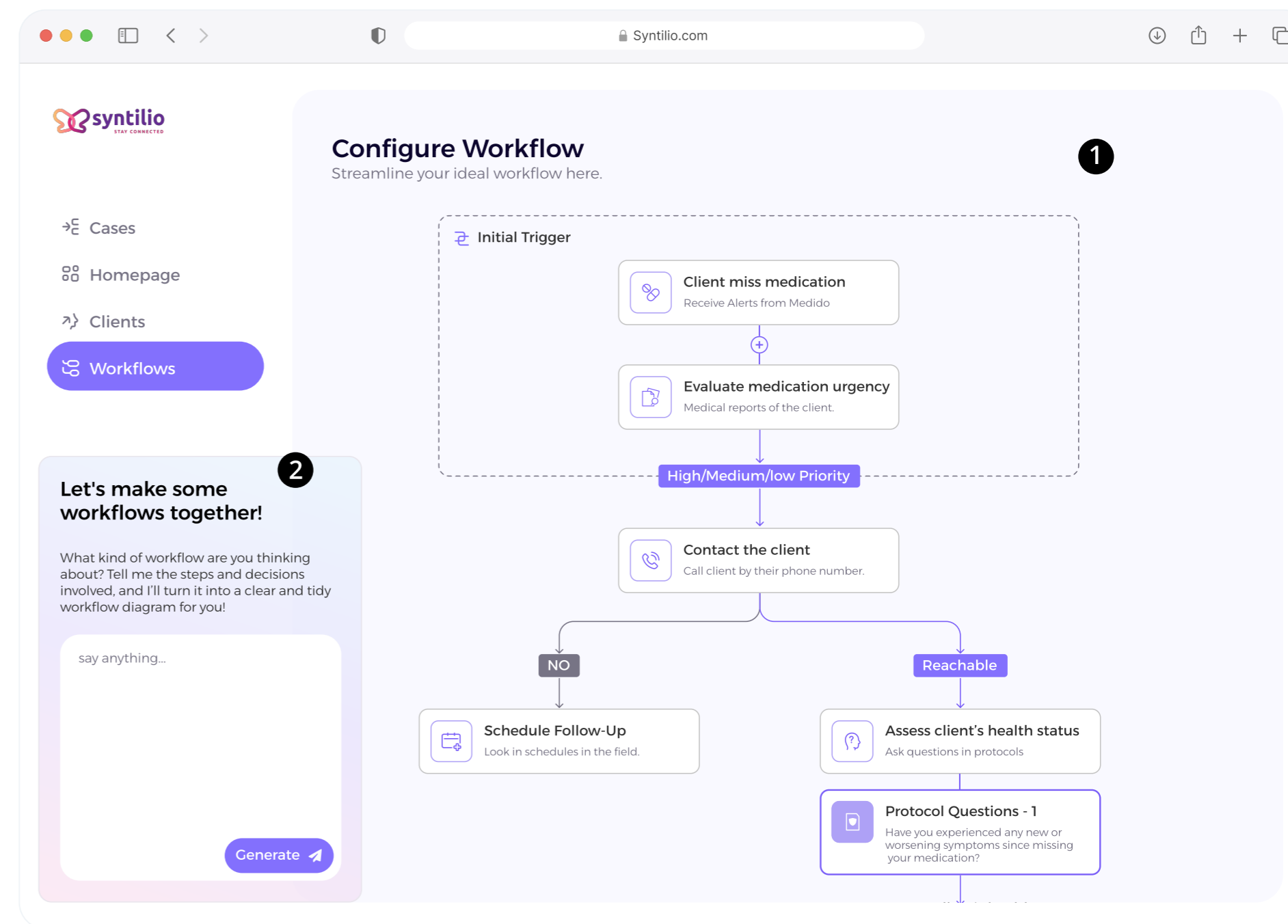


Figure 5.2 Configure Workflow Panel

## Key Features.

① **Configure Workflow Panel:** A flowchart tool where workflows can be customized.

② **Natural Language Support:** Intelligent Syntilio assists by understanding, parsing, and generating workflows based on user input.

## Value for Stakeholders.

### For Home Care Organizations

Standardized workflows  
Enhanced transparency  
Easier management

### For Senior Centralists

Easy-to-use & low learning curve tool

## Horizon 2: Workflow Training and Feedback

In Horizon 2, the workflows configured by Senior Centralists in Horizon 1 are applied directly to Centralists' practice. **Using these structured workflows, Centralists are guided step-by-step** through event resolution **via natural dialogue** with Intelligent Syntilio.

Previously, Centralists worked with an integrated interface displaying all case information, requiring them to **self-organize their processes** and independently decide on priorities. Now, with Intelligent Syntilio's structured and reliable guidance,

Centralists can focus on the specific task or decision at hand without needing to manage the entire workflow themselves.

This stage is referred to as the Training Phase, as **Centralists provide continuous feedback to Intelligent Syntilio** while following structured workflows. Through this feedback, Syntilio learns to refine its understanding, decision-making, and support capabilities, becoming smarter and more adaptive over time.

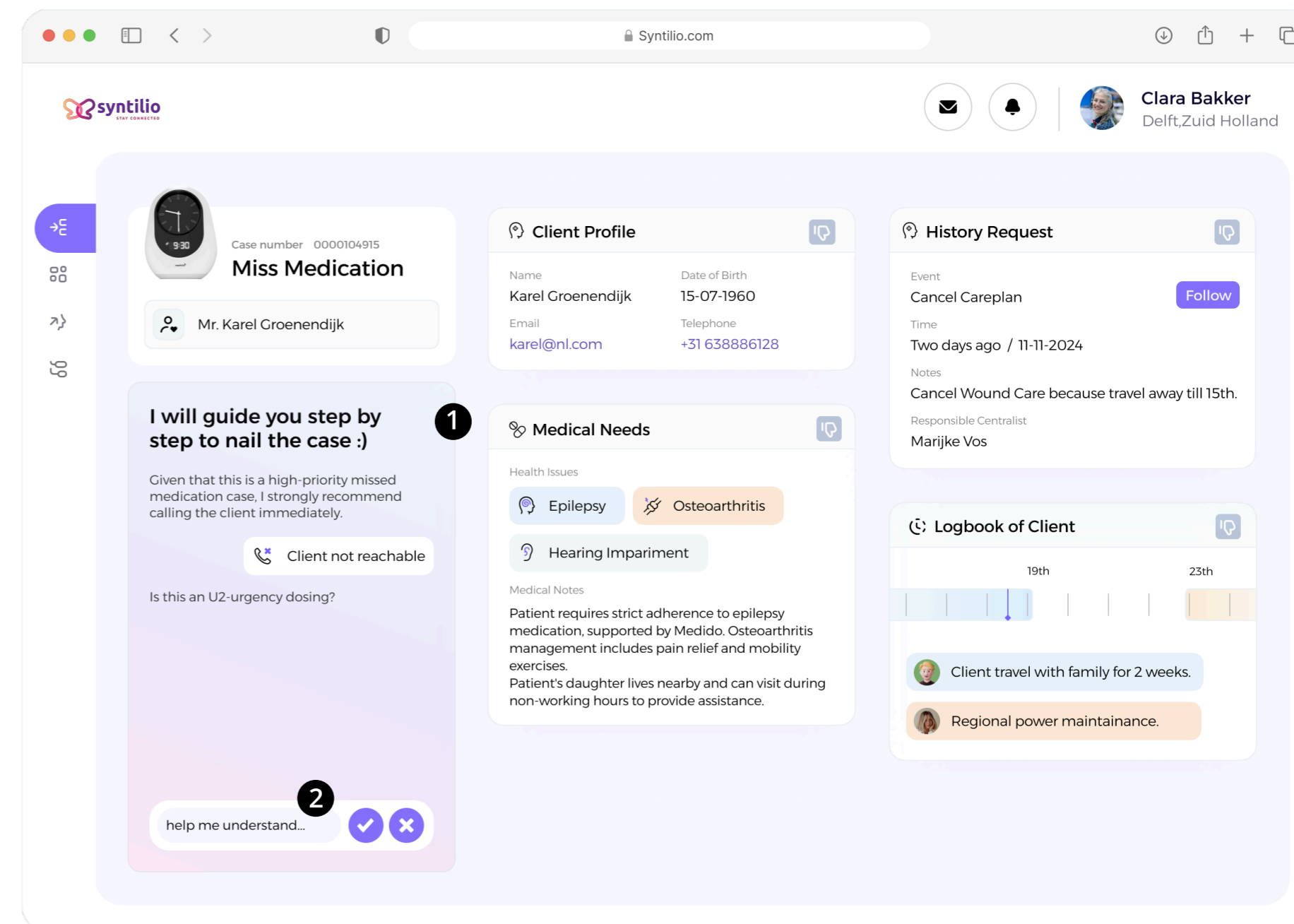


Figure 5.3 Training and Feedback

## Who is involved?

**All Centralist:** Executes workflows, provides feedback, and trains the system.

## Key Features.

### ① Step-by-Step Guidance

Centralists are guided through workflows via natural language interactions, especially at critical decision points.

### ② Feedback Mechanism

Centralists have the flexibility to choose between two types of feedback, depending on their workload or availability.

**Simple Feedback:** Quick classifications, such as assigning urgency levels.

**Detailed Feedback:** In-depth reasoning when workload allows, such as explaining why a case requires urgent attention.

### ③ Training Memory:

Syntilio make use of these collected feedback to refine:

**Case-Specific Memory:** Remembering patterns tied to specific clients or events (e.g., urgent medication responses for Parkinson's patients).

**Decision-Making Models:** Learning how to prioritize information and make context-aware judgments.

"I determined this is an Urgency Level 3 case because the client has Parkinson's, and this specific medication must be taken within one hour to avoid complications."

## Value for Stakeholders.

### For Centralists

Structured guidance reduces cognitive load.  
Retain the ability to contribute expertise and reasoning.

### For Home Care Organizations

Improved consistency in event resolution.  
Enhanced efficiency through guided workflows.

## Horizon 3: Enhanced Decision Support

In Horizon 3, Intelligent Syntilio evolves to not only guide Centralists step-by-step through workflows but also provide **decision references** to support key judgments. For example, it can independently classify a Parkinson's missed medication case as an Urgency Level 2 situation and recommend appropriate next steps. These references are generated based on historical data, best practices, and protocol requirements, ensuring that decisions are aligned with care center standards.

This stage emphasizes the improvement of **decision consistency** and the delivery of **balanced care quality**, as all recommendations adhere to a unified standard. Centralists

retain the final authority to validate Syntilio's suggestions and provide approval, ensuring adaptability to unique case contexts.

## Who is involved?

**All Centralist:** Validates Intelligent Syntilio's suggestions and provides final approvals during workflow execution.

## Key Features.

### ① Automated Decision Suggestions

Intelligent Syntilio offers references to support key decisions, such as determining urgency levels or recommending follow-up actions as well as presenting all info required to make such judgement. These suggestions are grounded in accumulated knowledge from Horizon 2, historical data, and protocol requirements. Centralists validate and approve these recommendations, ensuring human oversight and adaptability.

## Value for Stakeholders.

### For Centralists

**Streamlined Workflows:** Reduces repetitive decision-making tasks, enabling focus on complex cases.  
**Unified Guidance:** Ensures decisions are supported by standardized references, improving consistency and confidence.

### For Home Care Organizations

**Balanced Care Quality:** Recommendations are aligned with organizational standards, ensuring equitable and reliable care outcomes.  
**Improved Efficiency:** Decision-making becomes more efficient and consistent across the care center..

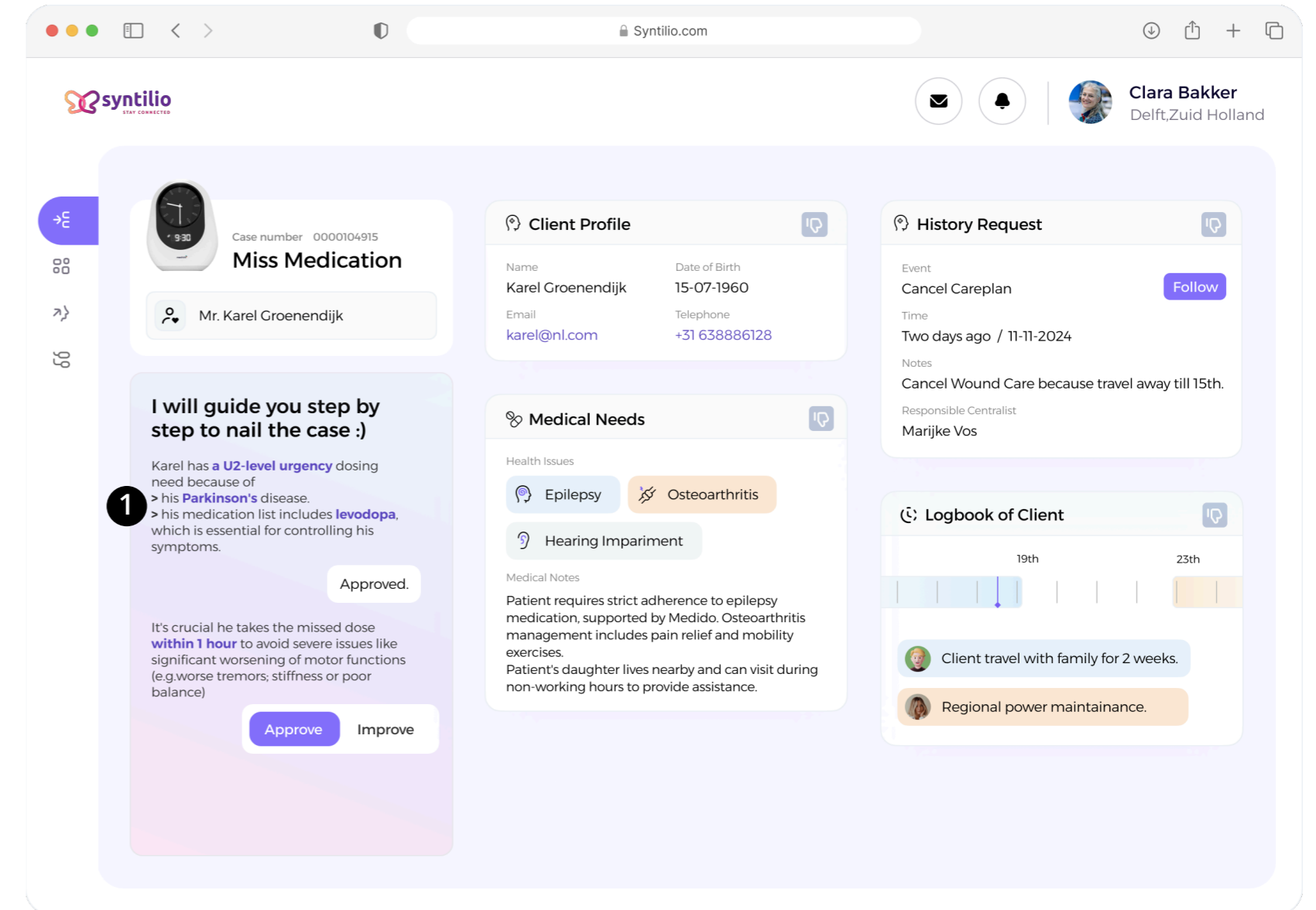


Figure 5.4 Judgement Suggestions

# Track 2: Intelligent Syntilo as Pattern Observer.

In this role, Intelligent Syntilo supports Centralists in identifying, addressing, and resolving patterns in clients' care needs. This strategy creates a win-win scenario for Centralists, clients, and care centers alike.

By enabling **early attention to clients' evolving care needs**, the approach significantly enhances both the **quality of care** and clients' **quality of life** through more comprehensive management of deeper care requirements. Additionally, this process empowers Centralists and care centers to play a more impactful role in chronic disease management.

Moreover, by addressing the root causes of these patterns, the strategy helps reduce unplanned care requests, thereby alleviating the workload on care centers and fostering a more sustainable care environment.

## Horizon 1: Manual Pattern Identification

The initial phase of the strategy focuses on the manual identification and resolution of client care patterns, transitioning from addressing isolated cases to understanding and managing recurring client needs. This stage leverages Centralists' ability to observe and recognize patterns within their cases, providing structured support to capture and address these patterns effectively.

## Key Features.

Centralists initiate pattern identification through proactive sharing:

### ① Share a pattern.

Centralists can directly interact with Intelligent Syntilo on the homepage to report observed patterns. For example, they might say, "I've noticed that Mr. Karel has been frequently forgetting to take his medication recently, which seems unusual. I think this could be a pattern." Intelligent Syntilo then assists in establishing a Pattern Care Case, enabling further exploration and resolution.

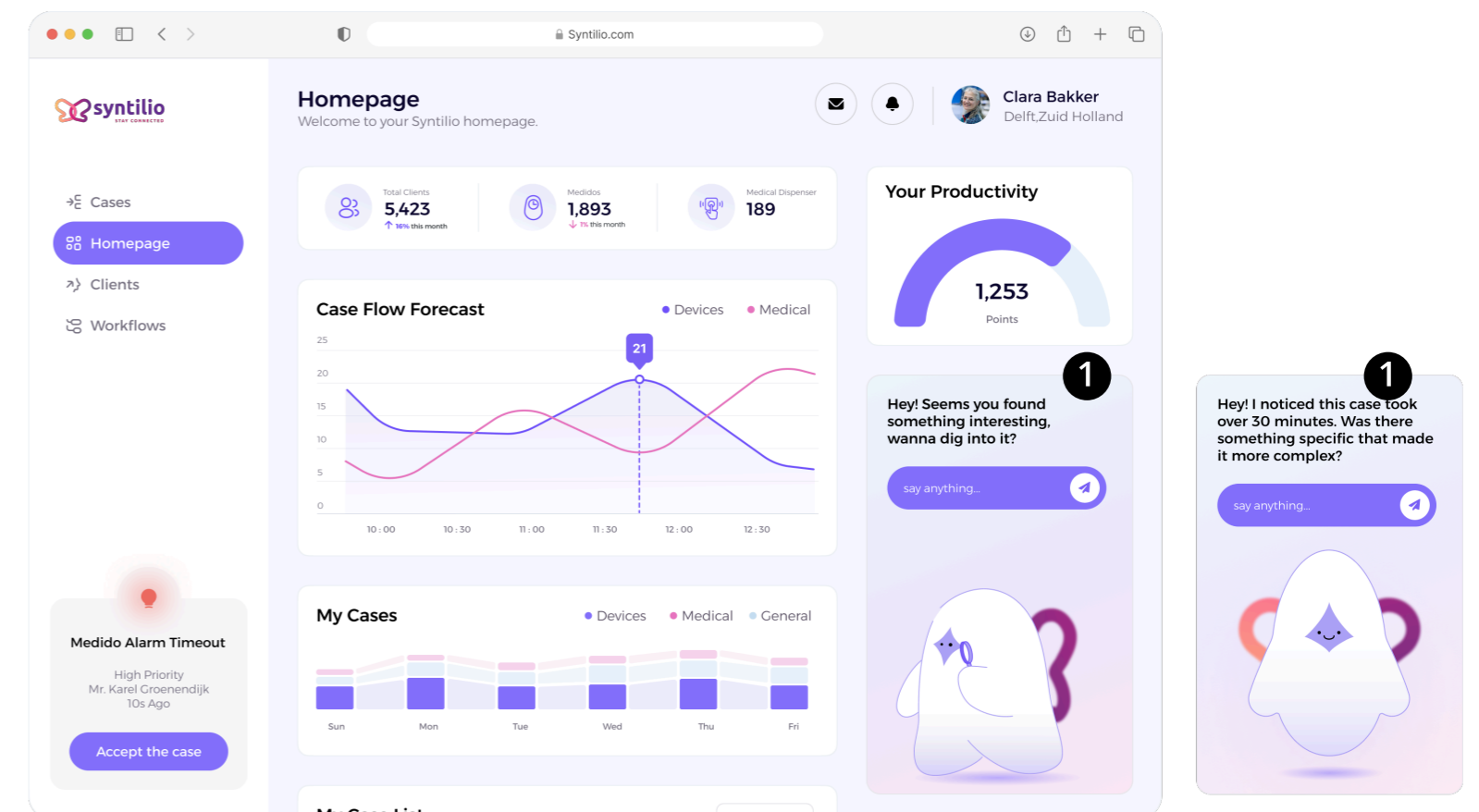


Figure 5.5 Share a Pattern

## ②Pattern Care Case

Once a Pattern Care Case is created, Intelligent Syntilio provides the following support:

- **Historical Record Filtering:** Centralists can filter historical care records by date, pattern type, and event type to confirm the consistency of a pattern.
- **Case Packaging:** Relevant records tied to the identified pattern can be compiled into a dedicated Pattern Care Case, simplifying subsequent actions.

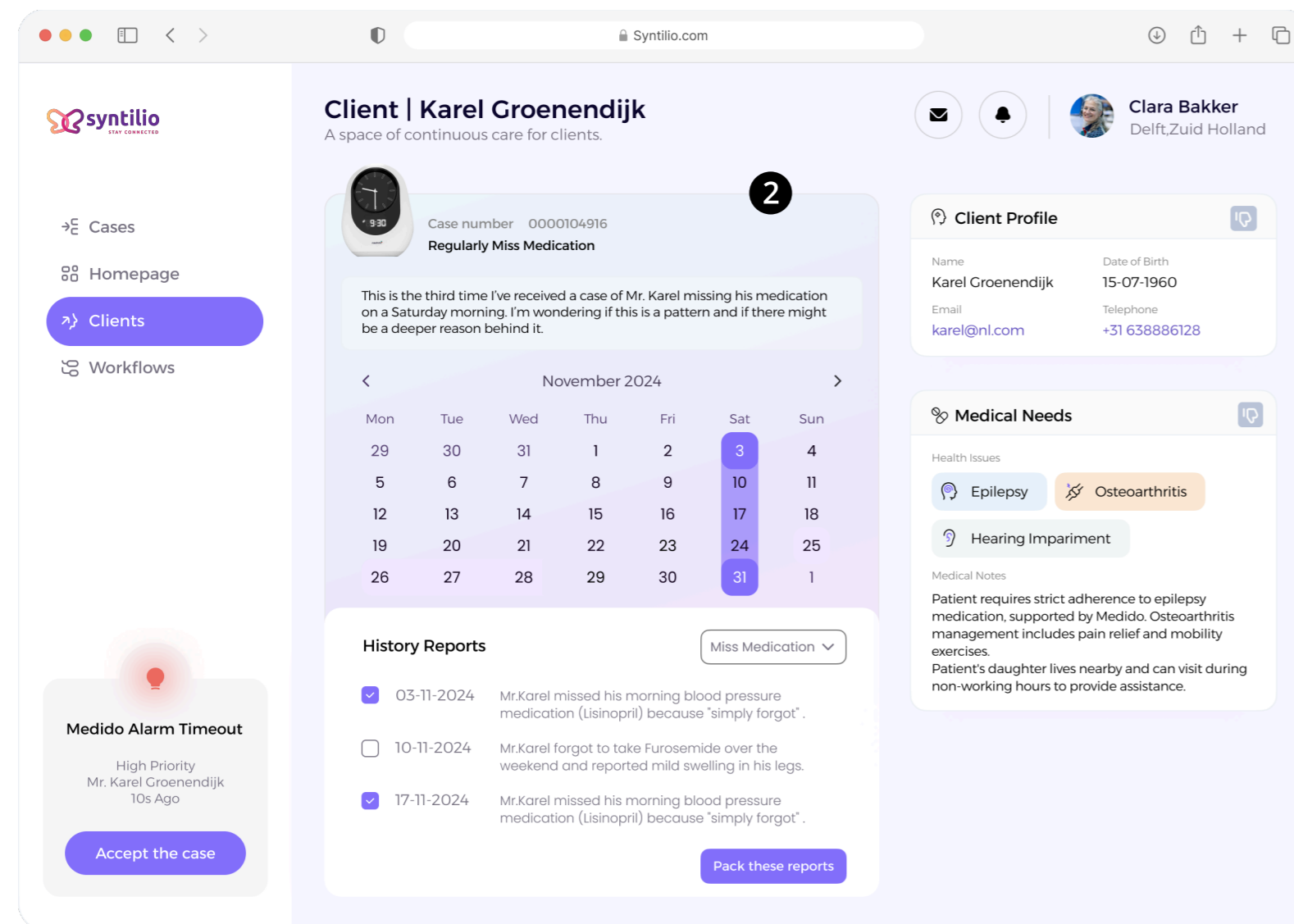


Figure 5.6 Pattern Care Page

This phase lays the groundwork for pattern-based care by equipping Centralists with intuitive tools to systematically identify and address recurring client needs, paving the way for more proactive care management in subsequent stages.

## Who is involved?

**All Centralist:** Observes, identifies, and creates Pattern Care Cases using the platform tools.

## Value for Stakeholders.

### For Centralists

Intuitive tools, structured support, and a systematic approach to managing recurring client needs.

### For Clients

Earlier identification and resolution of recurring care needs, improving quality of life and care.

### For Care Centers

Establishes a structured foundation for pattern-based care, enabling better resource management.

## Horizon 2: Collaborative Pattern Observation

The second phase of the strategy marks a shift from manual processes to a collaborative approach, where Intelligent Syntilio evolves into an active Pattern Observer capable of autonomously identifying and initiating Pattern Care Cases. Building on the knowledge and workflows established in Horizon 1, this phase focuses on improving efficiency and accuracy in pattern detection while maintaining Centralists' control through validation and feedback.

Key advancements include Intelligent Syntilio autonomously scanning client data to identify patterns without manual input. For instance, it might detect repeated missed medications in a client's care records and suggest creating a Pattern Care Case. These suggestions are routed to Centralists for review and approval, ensuring that human oversight remains integral to the decision-making process.

This collaborative phase improves pattern detection efficiency while ensuring Intelligent Syntilio continues to grow as a robust and reliable assistant through feedback from Centralists.

### Key Features.

#### ① Autonomous Pattern Detection:

Intelligent Syntilio proactively scans client data to identify potential patterns (e.g., frequent missed medications) and suggests creating a Pattern Care Case.

#### ② Centralist Validation Mechanism:

All autonomously initiated cases are routed to Centralists for review and approval, ensuring adaptability and human oversight.

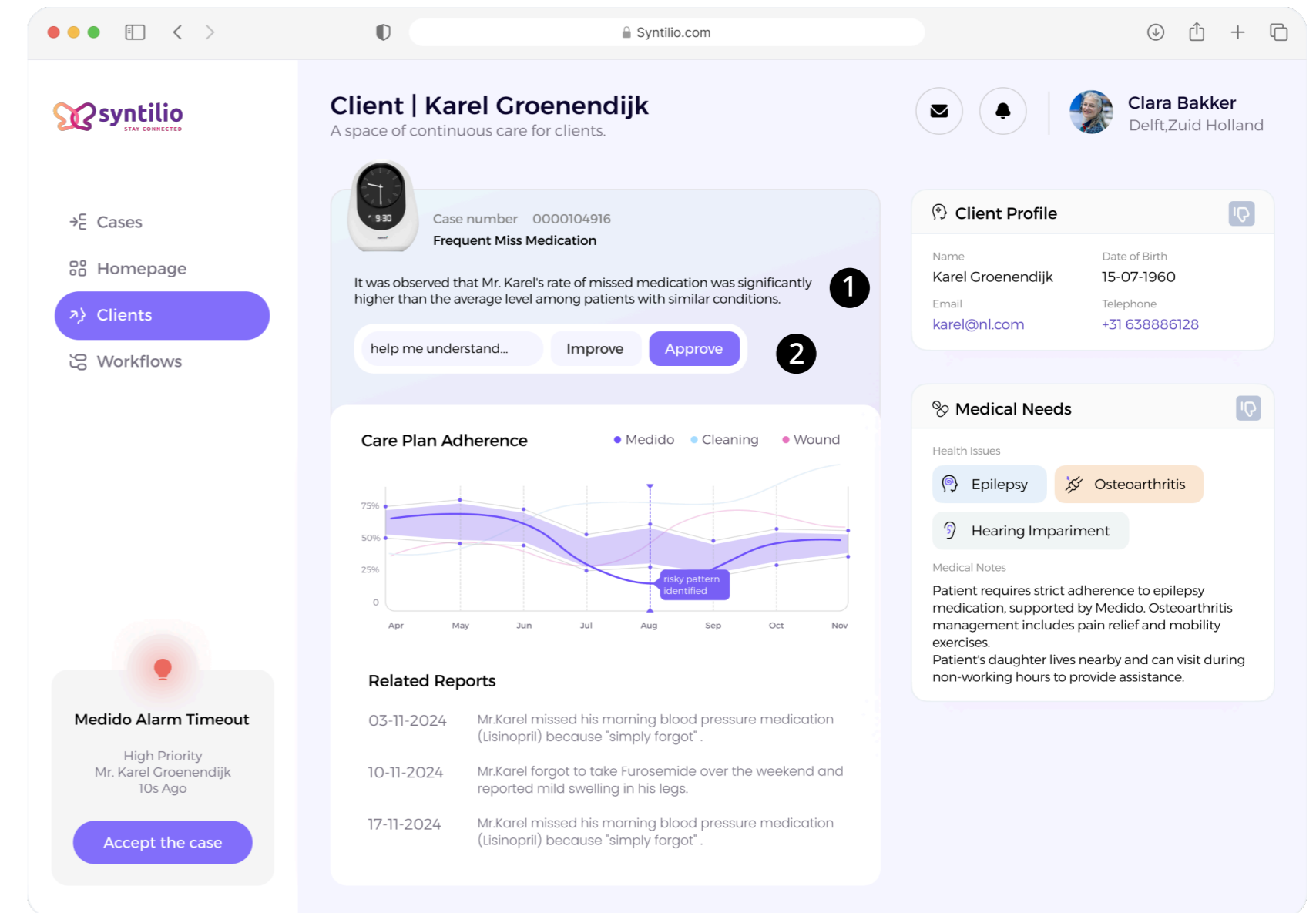


Figure 5.7 Collaborative Pattern Observation

### Who is involved?

#### Senior Centralists

Review and validate autonomously suggested Pattern Care Cases and provide final approval.

## Value for Stakeholders.

### For Senior Centralists

Reduced workload in identifying patterns.  
Maintained control through validation mechanisms.

### For Clients

Earlier identification and resolution of recurring care needs, improving quality of life and care.

### For Care Centers

Increased consistency in managing recurring needs.  
Enhanced efficiency through refined processes.

## Horizon 3: Mature Pattern Observation and Proactive Insights

Horizon 3 represents the maturity of Intelligent Syntilio as a Pattern Observer, signifying a major leap in its capabilities. In this phase, Intelligent Syntilio evolves from merely identifying patterns to providing proactive insights and actionable recommendations based on its accumulated experience from past Pattern Care Cases.

Intelligent Syntilio can now detect and predict patterns with greater precision while analyzing the underlying causes behind these patterns. For instance, using historical data and insights from similar cases, Intelligent Syntilio might identify potential reasons for a recurring issue, such as frequent missed medications, or highlight potential health risks for the client. This functionality empowers Centralists to move beyond reactive care and implement more informed and effective interventions.

Additionally, Horizon 3 introduces the History Pattern Visualization feature, which provides Centralists with a comprehensive view of a client's care journey. This visualization highlights how the client's needs and patterns have evolved over time, enabling Centralists to deliver more personalized and well-rounded care strategies.

By integrating these advanced features, Intelligent Syntilio solidifies its role as a fully capable Pattern Observer, offering predictive capabilities, insightful recommendations, and historical data that enhance care delivery and foster a deeper understanding of clients.

## Who is involved?

### Senior Centralists

Validate and act on Intelligent Syntilio's proactive insights and recommendations.

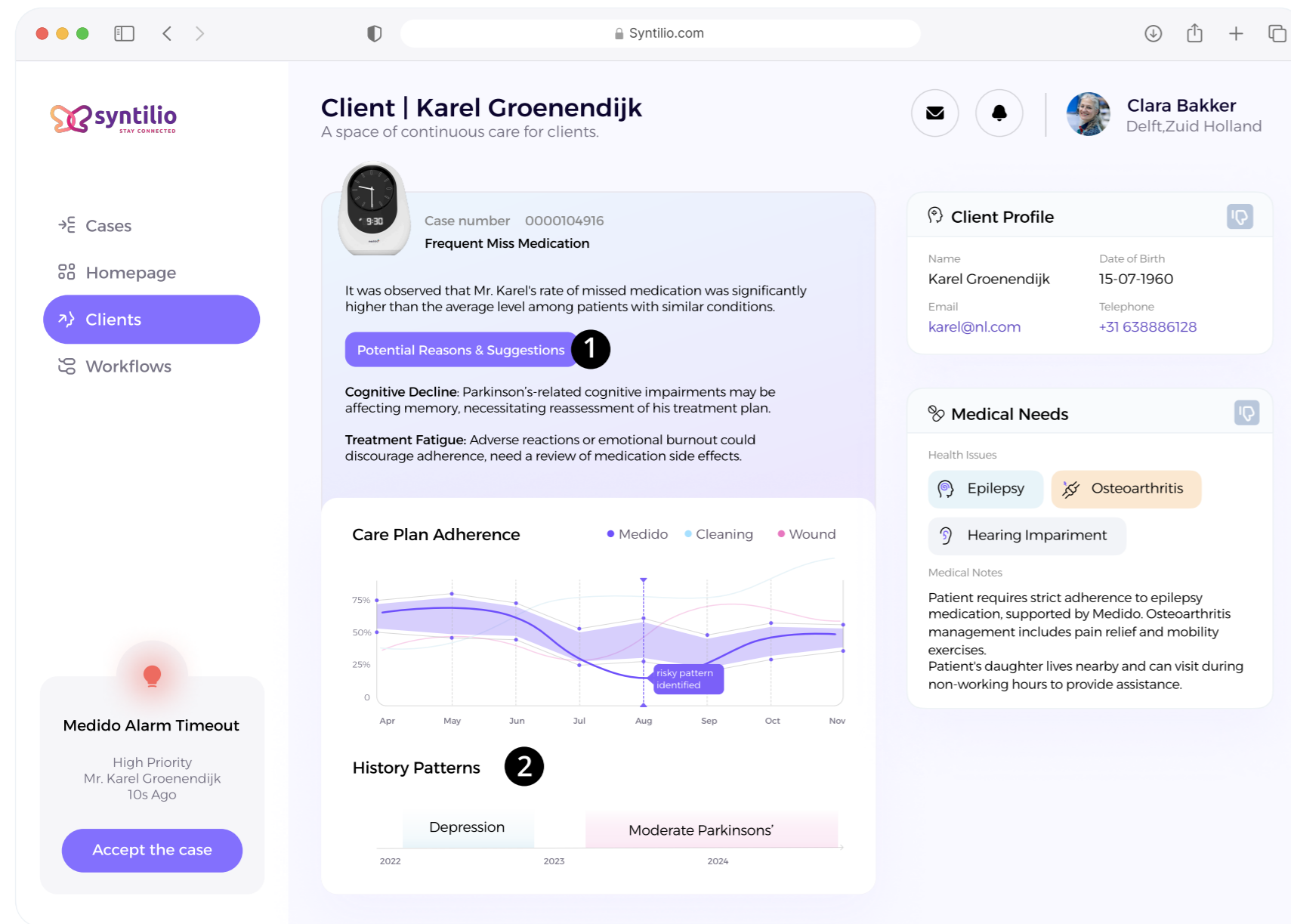


Figure 5.8 Proactive Pattern Insights

## Key Features.

### ① Proactive Insights:

Intelligent Syntilio analyzes underlying causes behind identified patterns and provides actionable recommendations to address root issues or highlight potential health risks.

### ② History Pattern Visualization:

Offers a comprehensive view of clients' care journeys, highlighting the evolution of their needs and patterns.

## Value for Stakeholders.

### For Centralists

Enhanced decision-making through proactive insights and comprehensive data visualization.  
Improved ability to deliver personalized and effective care strategies.

### For Clients

More targeted and proactive interventions improve care outcomes and quality of life.

### For Care Centers

Increased efficiency and consistency in addressing recurring care needs.  
Better resource management through data-driven care strategies.

# Recommendation.

This project has proposed a core strategy to reverse the current imbalance of Control and Autonomy within care centers. However, realizing this vision requires addressing several foundational gaps and exploring under-researched areas. The following recommendations outline key opportunities for further development and research:

## 1. Strengthen Foundational Functions

While the ultimate goal is to achieve a mature, high-quality care system, care centers are still in their infancy. It is essential to focus on developing foundational features such as:

- a. Establishing mechanisms for sharing and synchronizing special care considerations within teams.
- b. Building channels that facilitate cross-departmental interaction and ensure smooth communication of upstream and downstream care information.

These steps will bridge the gap between the current state of care centers and their potential as fully developed, effective entities.

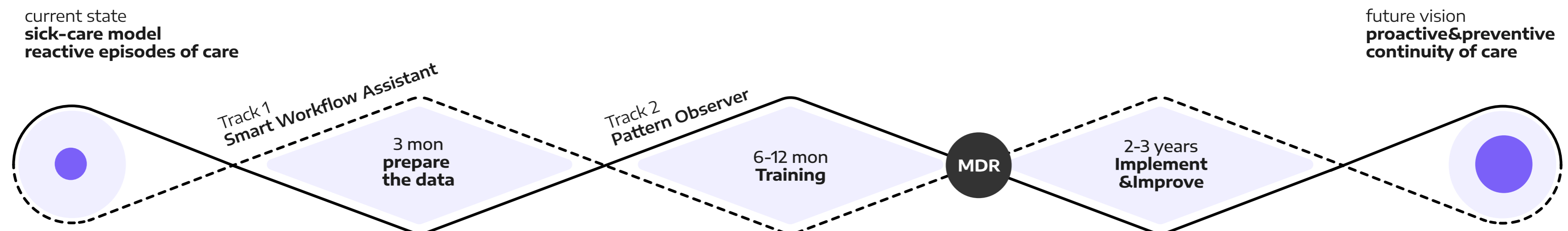
## 2. Expand Research on Device-Initiated Cases

Although this project focused on device-initiated cases, resource limitations prevented a comprehensive understanding of how these cases differ from regular ones. This remains a highly valuable research area for two key reasons:

- a. The ongoing adoption of smart medical devices suggests significant potential for these cases in future applications.
- b. As digital literacy improves, particularly among the aging population, the possibilities for interactions in this context will become increasingly diverse and enriched. Future research could explore these dynamics to better integrate device-initiated cases into homecare workflows.

## 3. Evaluate Systemic Impacts of Proposed Strategies

As highlighted in this project, care centers operate as a component within the complex homecare system. The strategies proposed here represent an idealized development model, but their implementation may trigger unforeseen chain reactions within the broader system. Given the current understanding of the homecare ecosystem, these impacts remain largely unknown. Practical trials and iterative evaluations will be essential to address challenges as they arise and refine the strategies accordingly.



#### 4. Explore Additional Design Themes

This project identified three design themes that were not explored in depth but hold significant potential as independent research topics. Future studies could investigate these themes further to uncover new opportunities for improving the care center ecosystem.

By addressing these recommendations, Syntilio and related stakeholders can continue to refine their strategies and expand their understanding of care centers' roles within the evolving homecare system. These efforts will contribute to the creation of a more resilient, proactive, and patient-centered care environment.

## Conclusion.

Amid the overwhelming pressures on homecare capacity, this paper delves into the underlying challenges faced by homecare remote care centers through a series of qualitative research activities, including observations, diary studies, and interviews. It identifies four layers of affective crises currently experienced by Centralists: **little control coupled with excessive yet hollow autonomy, a lack of meaningful communication, struggles between empathy and urgency, and a deficiency in recognition and appreciation.** Among these, the imbalance between control and autonomy emerges as the root cause that triggers or exacerbates the other three negative circumstances.

In the context of care centers, a lack of control means **being unable to steer a case toward a desired outcome**, while autonomy represents **the ability to exercise individual judgment to shape an improved course of action.**

Centralists today find themselves unable to maintain authority over case resolution, while also unclear on how to effectively utilize the autonomy available to them to deliver better care outcomes for clients.

Examining this imbalance through the lens of occupational theory reveals that its underlying cause stems from **insufficient job resources provided by the organization.** This lack of resources leaves **Centralists without a supportive environment to meet the demands of their work.** Essential job resources for care center tasks include clear care guidelines and service standards, accessible data and tools, and support from other caregivers and supervisors.

As a future digital workplace, this paper envisions Intelligent Syntilio as a platform capable of offering a highly supportive environment by leveraging its strengths in data storage and analysis. Insightful data is proposed as the core enabler for empowering Centralists. One pathway emphasizes seamless support for Centralists through precise workflow guidance and actionable recommendations. Another pathway expands Centralists' influence on care planning by providing insightful care suggestions, enabling more precise and effective client care while enhancing the overall quality of homecare services.



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