

# MOBILIZE & Delft University of Technology

Driving States of Mind: A Strategic Framework for Mobility Behaviour in Grand Paris 2040

Illustrated by a first concept /

Riding the Wave: Orchestrating Urban Resonance Through Public Movements

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# PREFACE

Welcome to my master’s thesis report.

For me, this journey has been anything but ordinary. From the first day stepping into the design studio in Paris to the final sprint toward the finish line, there hasn’t been a dull moment. What was supposed to be a smooth start got delayed by a fractured knee—an ironic twist for a project about mobility. But even that brought insight: from the reality of restricted movement to the daily commutes between Paris and Guyancourt, I gained a first-hand understanding of the very topic I was researching. These rides became moments of reflection on mobility, on rhythm, and on what it means to move through a region in transition.

This report documents my graduation project at Mobilize, the urban mobility brand of Renault Group. It explores the future of movement in the Grand Paris region, where massive infrastructural change meets social complexity and environmental urgency. Instead of focusing on the next vehicle or route, this project looks at how people relate to mobility—how they feel, behave, and decide. By using the Vision in Product Design (ViP) method and drawing inspiration from biomimicry and systems thinking, I tried to imagine what mobility could mean in 2040: not just as a technical challenge, but as a human and ecological one.

The report is structured to take you on a journey—from understanding today’s realities to imagining what might lie ahead. Along the way, it weaves together research, design, and personal reflection to explore how we might navigate the future of mobility in more meaningful ways. Rather than offering definitive answers, it aims to open new ways of thinking about movement, about cities, and about the roles we each play within them.

On my last day in Paris, I came across the following quote at Montmartre:

*“And mind, my dear fellow: Paris is Paris. There is but one Paris, and however hard living may be there—and if it became worse and harder even—the French air clears up the brain and does one good. A world of good.”* - Vincent van Gogh, 1886

I hope this report gives you a glimpse into that air and into a vision of mobility that moves with meaning.

Valentijn



# ACKNOWLEDGEMENTS

This project wouldn’t have been possible without the people who supported me, both virtually and physically, along the way. It’s rare to find yourself surrounded by a group that understands what you’re working on, where you’re heading, and offers encouragement at every step. I feel incredibly grateful to have had that.

First and foremost, I want to thank the TU Delft team for their ongoing support throughout the project. Your visit to the design studio in Paris and your enthusiasm from the very beginning gave me the energy and motivation to push myself. It meant a great deal—and it helped me deliver a result I’m proud of.

**Matthijs**, thank you for always making time when I needed it. Your ability to make complex ideas understandable is energising and pushed my thinking further, helping bring the project to a level of depth I hadn’t expected at the start.

Suzanne, thank you for our calm, open sessions, where I always felt free to share thoughts and doubts. You kept the deliverables sharp and coherent, and your guidance helped me stay focused on the bigger picture when things got blurry.

Nicolas, thank you for showing me ‘the way’. Your guidance went far beyond the scope of this thesis—it’s been personally meaningful as well. Working with you has been an absolute pleasure. I’ve learned more than I expected, in ways I didn’t anticipate.

Jean-Philippe, thank you for welcoming me into the Mobilize team and for the energising interactions along the way. Your enthusiasm is contagious. Being part of the studio for five months gave me a unique window into the automotive world—one I’ll carry forward.

Laurens, I’m grateful for the trust you placed in me from the start and the opportunity you gave me. Your help getting me settled at Renault and the time you made for me, during sessions or when the TU Delft team visited, meant a great deal. And of course, just being able to hear a simple “hoe gaat het?” added a Dutch touch to the studio and made me feel at home, even in Paris.

To everyone at Renault Group who crossed paths with this project: thank you for your openness, your time, and your positivity. You helped me find my footing—and that gave this project the grounding it needed to grow.

To my parents, thank you for standing by me. Whether from a distance or in person, your support was always felt. And Julia, thank you for listening to my endless reflections, for keeping me smiling, and simply for being you. You’re the best.

To each of you: thank you for being part of this journey. I couldn’t have done it without you.

# GLOSSARY

- » **Mobility Ecosystem** / A dynamic network of users, services, vehicles, and infrastructures that collectively shapes how people move within urban environments.
- » **Vision in Product Design** (ViP) / A design methodology that begins with societal and contextual change rather than existing user needs, aiming to create meaningful, future-oriented design visions (Hekkert & van Dijk, 2011).
- » **Product-Service System** (PSS) / A strategic design approach that integrates products and services to deliver unified value propositions, often across physical, digital, and systemic levels.
- » **Biomimicry** / A design philosophy that draws inspiration from nature’s forms, processes, and ecosystems to solve human challenges sustainably.
- » **Swarm Intelligence** / A collective behaviour observed in nature (e.g., birds, fish) where individuals interact locally to create coordinated group movements.
- » **Context Factors** / Value-free descriptors of shifts or patterns in society (principles, trends, states, developments) used to construct future scenarios in design.
- » **Emerging Conditions** / Thematic clusters of context factors that reveal potential future behaviours or attitudes within a design domain.
- » **States of Mind** / Conceptual positions in the framework that describe how people may relate to mobility in Grand Paris by 2040, based on motivations and perceived freedom.
- » **Public Movements** / A new category of urban travel proposed in the FLO concept that exists between public and private transport, enabled by collective orchestration.
- » **Flocking** / A behaviour model in which low-emission vehicles (LEVs) align temporarily to form safe, visible, and coordinated mobility groups.
- » **Light Electric Vehicle (LEV)** / Electrically powered vehicle category including e-bikes, e-scooters, mopeds, and quadricycles, classified under EU Regulation 168/2013 by speed, weight, and power.
  - L1e-A** – Pedal-assisted cycles; max 25 km/h, ≤1 kW.
  - L1e-B** – Two-wheel mopeds; max 45 km/h, ≤4 kW.
  - L2e** – Three-wheel mopeds; max 45 km/h, ≤4 kW, ≤270kg
  - L6e** – Light quadricycles; max 45 km/h, ≤425kg, ≤4 kW.
  - L7e** – Heavy quadricycles; ≤450–600kg, ≤15 kW.

# ABBREVIATIONS

- » **BA** / Beyond Automotive
- » **EV** / Electric Vehicle
- » **FLO** / mobility concept in this thesis
- » **FS** / Financial Services
- » **LEV** / Light Electric Vehicle
- » **MGP** / Métropole du Grand Paris
- » **PSS** / Product-Service System
- » **RATP** / Régie Autonome des Transports Parisiens
- » **TU Delft** / Delft University of Technology
- » **UI** / User Interface
- » **UX** / User Experience
- » **ViP** / Vision in (Product) Design
- » **ZFE** / Zone à Faibles Émissions (Low Emission Zone)

# EXECUTIVE SUMMARY

This master’s thesis explores how future urban mobility in the Métropole du Grand Paris (MGP) can be designed to move beyond infrastructure-driven solutions and instead enable more meaningful, inclusive, and adaptive forms of movement. Conducted in collaboration with Mobilize—Renault Group’s urban mobility brand—and supported by TU Delft, the project applies the Vision in Product Design (ViP) methodology to develop a visionary concept that responds to long-term societal shifts and strategic brand ambitions.

## CONTEXT AND OBJECTIVE

The Grand Paris region is undergoing an unprecedented transformation. Major infrastructure projects such as the Grand Paris Express, combined with urgent climate targets and demographic change, are reshaping mobility dynamics across the metropolitan territory.

However, structural challenges—ranging from suburban car dependency to socio-spatial inequality—continue to constrain this transition. In this context, the central design challenge addressed in the project is:

**How can Mobilize meaningfully contribute to shaping (sub)urban mobility ecosystems in the Metropole du Grand (MGP) by 2040, in ways that respond not only to instrumental demands, but also to evolving experiential and societal needs?**

## METHODOLOGICAL APPROACH

The project follows a phased approach grounded in the ViP method, supported by expert interviews, literature reviews, and design thinking tools. The process is structured in five main phases:

**0 / PROJECT OUTLINE** - Defined the opportunity space of the region, project goals, and alignment between TU Delft, Mobilize, and the student.

**A / DECONSTRUCTION** - Mapped current systemic pressures of MGP and brand capabilities. Defined the future design domain as: (Sub) urban mobility ecosystems in the Grand Paris region by 2040.

**B / FUTURE FRAMING** - Gathered and synthesised 199 interdisciplinary context factors into twelve emerging conditions. These were structured into a two-dimensional framework of future states of mind, describing how people may relate to mobility through psychological and societal lenses.

**C / EXPLORATION** - Translated the framework into four visionary directions focused on world-centric mobility mindsets. Through collaborative evaluation, the project focused on the Resonating state where users move in sync with shared urban rhythms, aiming for flow, efficiency, and collective alignment.

**D / ILLUSTRATION** - Designed the concept FLO, a Product–Service–System (PSS) inspired by wave logic and collective rhythms. FLO enables orchestrated Light Electric Vehicle (LEV) waves across the region, aligning user flows through sync points and shared cues, enhancing personal autonomy and systemic coherence.

## KEY OUTCOMES

**FRAMEWORK FOR FUTURE MOBILITY MINDSETS** - A structured framework of twelve future states of mind, offering Mobilize design-oriented insights into how people may experience and relate to mobility in 2040.

**STRATEGIC GAP ANALYSIS** - A comparison between user needs and regional ambitions revealed that while infrastructural and environmental goals are advancing, behavioural, cognitive, and emotional mobility dimensions remain underserved.

**VISION-DRIVEN POSITIONING & DESIGN CONCEPT** - The FLO concept embodies the Resonating state of mind and positions Mobilize as an orchestrator of public movements in collaboration with the Métropole du Grand Paris. It translates future mobility needs into a tangible Product–Service System (PSS), supported by a stakeholder blueprint, a feature architecture, and a phased development roadmap aligned with the region’s 2040 climate goals.

## CONCLUSION

This project offers a new perspective on urban mobility—reframing it as a collective and psychological experience shaped by responsibility and meaning. It equips Mobilize with a strategic design framework and concept to inspire future offerings. By adopting meaning-based design tools and partnering with public actors, Mobilize can strengthen its role as a system orchestrator, contributing not only to the ambitions of Grand Paris 2040 but to the future of metropolitan mobility at large.

## MOBILIZE & Technical University of Delft

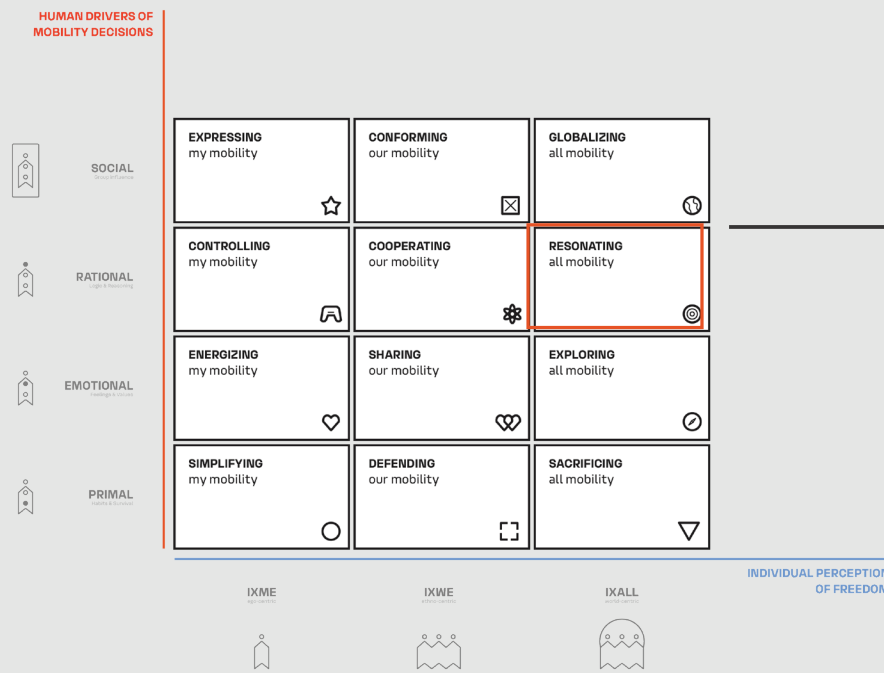
Driving States of Mind: A Strategic Framework for Mobility Behaviour in Grand Paris 2040  
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### / FRAMEWORK, “12 driving states of mind”

A FUTURE FRAMEWORK THAT DESCRIBES TWELVE DRIVING STATES OF MIND IN MOBILITY BEHAVIOUR IN METROPOLE DU GRAND PARIS BY 2040

This framework outlines twelve future states of mind—conceptual mindsets that describe how people may relate to mobility in 2040. Each state combines a core human driver (from primal to social) with a personal perception of freedom (from ego-centric to world-centric), offering a multidimensional view of urban movement.

HELPING MOBILIZE DESIGN WITH MEANING—BY TUNING INTO HOW PEOPLE WILL FEEL, THINK, AND MOVE IN THE FUTURE GRAND PARIS REGION.



#### RESONATING STATE NEEDS

1. RESPONSIBLE AUTONOMY WITHIN A SHARED SYSTEM
2. CONFIDENT NAVIGATION IN DYNAMIC URBAN FLOWS
3. ENERGY-CONSCIOUS AND RHYTHM-BASED MOBILITY

### / CONCEPT FLO, “Riding the Wave”

A NEW WAY OF TRAVELLING TOGETHER, INSPIRED BY NATURAL PATTERNS OF FLOW STRUCTURES, WAVE RHYTHMS AND FLOCKING BEHAVIOUR.

FLO is a product-service system (PSS) that orchestrates public movements, enabling individuals to sync their movements with each other and the collective rhythm of the metropole, optimising the use of city infrastructure and collective energy usage.

HELPING METROPOLE DU GRAND PARIS TO REACH CARBON-NEUTRALITY GOALS, WHILE OFFERING MOBILIZE A STRATEGIC POSITION WITHIN IT.

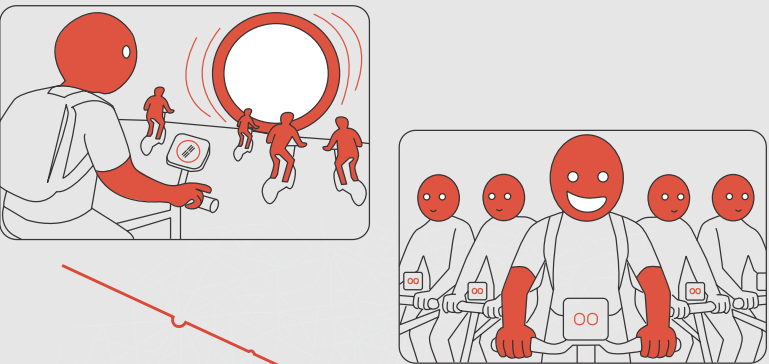


Figure 1: Overview of research outcomes and deliverables

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# 0 / PROJECT OUTLINE

This initial phase established the foundation of the project. It defined the opportunity space, clarified the design challenge, and aligned expectations across the academic, professional, and personal domains. Early desk research provided a first understanding of the regional context, brand positioning, and theoretical framing.

The Vision in Product Design (ViP) method was selected as the core approach, offering a structured yet open framework to address future-oriented design questions. Together, these elements framed the project around a central ambition: to explore how Mobilize could contribute meaningfully to the transformation of (sub)urban mobility ecosystems in the Métropole du Grand Paris by 2040.

The following chapters detail how this initial alignment informed the project’s scope, stakeholder roles, and methodological structure.

With the project frame in place, the next phase, A / Deconstruction, dives deeper into the systemic and contextual forces that shape today’s product-context relationships.

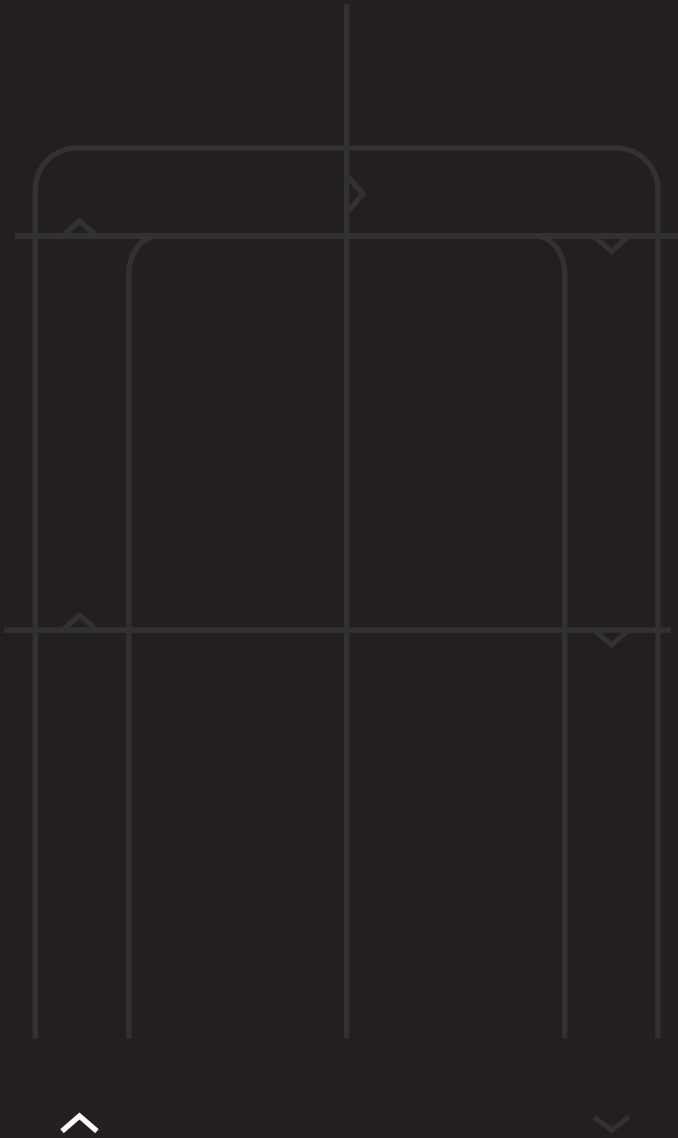


Figure 2: Outline of the Grand Paris map



# 01 INTRODUCTION

## 1.1 Introduction

Urban mobility systems across Europe are facing unprecedented transformation. In the Métropole du Grand Paris, this transition is particularly complex, driven by one of Europe’s largest infrastructure projects, the Grand Paris Express, and shaped by urgent climate targets, demographic shifts, and socio-spatial inequalities (Métropole du Grand Paris, 2023; Insee, 2021). These developments reflect a broader ambition to create a connected, sustainable, and inclusive metropolis by 2040.

However, the path to that future is not linear. Despite extensive investments in public transport, soft mobility, and emissions reduction, the region continues to grapple with deep inequalities, suburban car dependency, and diverging mobility experiences (Apur, 2021; Oliver Wyman, 2022). The vision of a seamless, low-carbon urban mobility system is often constrained by infrastructural, behavioural, and cultural barriers. These frictions challenge the dominant logic of mobility as a purely functional or infrastructural issue. They raise a deeper question:

**How can we ensure that future mobility systems are not only efficient and sustainable, but also meaningful and adaptive to the lives of those who use them?**

This graduation project responds to that question. Developed in collaboration with Mobilize—a next-generation mobility brand within Renault Group—it applies the Vision in Product Design (ViP) method (Hekkert & van Dijk, 2011) to explore the future of (sub)urban mobility in Grand Paris. Rather than starting from technological solutions or modal shift strategies, the project investigates how people’s relation to mobility—functionally, emotionally, and socially—might evolve in the next 15 years.

By combining the ViP method with a multidimensional lens inspired by Cresswell’s (2012) theory of mobility, the project constructs a future-facing design framework and visionary concept. In doing so, it contributes to a more holistic understanding of urban mobility—one that connects infrastructural ambition to experiential relevance and long-term societal change.



Figure 3: Métropole du Grand Paris as a chosen context



### 1.2 Stakeholders and expectations

This graduation project was conducted during an internship at Mobilize, located in Guyancourt, France, and carried out on behalf of Delft University of Technology (TU Delft).

Mobilize, founded in 2021 as part of the Renault Group, aims to redefine urban mobility by developing user-centric, climate-neutral solutions that bridge the space between the car and the pedestrian (Mobilize, n.d.). As a young and evolving brand, Mobilize benefits from strategic design explorations that support its long-term positioning. This project contributes by investigating the role Mobilize could play in shaping mobility within the Métropole du Grand Paris by 2040.

TU Delft acted as the academic stakeholder, ensuring the project was grounded in rigorous analysis and theoretical relevance.

The supervisory team consisted of:

#### TU DELFT

- » Matthijs van Dijk (Chair)
- » Suzanne Hiemstra-van Mastrigt (Mentor)

#### MOBILIZE

- » Nicolas Dortindeguy (Client Mentor)
- » Jean-Phillipe Salar (Client mentor)

### INITIAL ALIGNMENT

Before the project's kick-off, expectations were clarified from three perspectives: university, client, and personal development. These are summarised below:

#### ACADEMIC REQUIREMENTS

- » Collect, analyse, and synthesise relevant knowledge for the project
- » Justify methodological and design choices
- » Deliver a relevant and well-substantiated design or research outcome
- » Communicate effectively with all stakeholders
- » Independently manage the project within the given timeframe
- » Manage the project independently within the given timeframe.

#### CLIENT EXPECTATIONS

- » A new way of thinking that results in an inspiring vision, helping Mobilize in defining their future strategy and brand territory.
- » Envision Mobilize as a central player in the urban mobility ecosystem
- » Deliver a solution applicable to Grand Paris, with potential relevance to other metropolitan contexts

#### PERSONAL GOALS

- » Articulate a personal design vision within a professional and creative setting.
- » Gain deeper insight into the mobility industry to inform future career direction.
- » Apply and test the Vision in Product Design (ViP) method in a real-world context, making sure everyone stays on board.
- » Embrace the learning experience of working and living in Paris to build professional confidence.



Figure 4: Industrial Design Engineering, faculty at Technical university of Delft



Figure 5: Technocentre, main office of Renault Group and Mobilize design



### 1.3 Opportunity definition

The Grand Paris region is entering a pivotal moment of change. Anchored by the Grand Paris Express and shaped by climate policy, digitalisation, and decentralisation, the region is poised to redefine how it connects, moves, and lives. However, as the territory densifies and diversifies, a mismatch emerges between systemic capacity and lived reality. High-density urban cores interface with car-dependent suburbs, revealing a fragmented landscape of mobility needs, behaviours, and values.

While large-scale infrastructure projects improve macro-level accessibility, they often fall short on last-mile connectivity, local adaptability, and user agency. In this context, expectations toward mobility are evolving. Users increasingly demand experiences that are not only efficient and sustainable, but also adaptive, intuitive, and inclusive.

Against this backdrop, expectations toward mobility are rising. Future systems must not only deliver on sustainability and efficiency but also respond to the desire for more fluid, adaptive, and inclusive movement. These pressures signal the limits of infrastructure-led planning and invite a broader understanding of what mobility means—functionally, socially, and culturally.

To engage meaningfully with this complexity, the project adopts a theoretical lens grounded in Cresswell's (2012) triadic definition of mobility:

- » **PHYSICAL MOVEMENT:** how people travel, shaped by infrastructures and technologies;
- » **IDEAS OF MOBILITY:** why people move, and what mobility symbolises in their lives;
- » **EMBODIED PRACTICES:** how everyday routines, social structures, and economic shifts influence mobility behaviours.

This lens supports a shift from infrastructure-led logic toward a relational understanding of mobility as lived experience. For Mobilize, this evolving context offers a pivotal moment for defining its role. As a brand positioned between the car and the pedestrian, its ambitions go beyond electrification and vehicle-sharing only. The question becomes:

**How can Mobilize contribute to the shaping of (sub)urban mobility ecosystems that go beyond infrastructure-driven change and meaningfully address the diverse, evolving ways in which people will experience and engage with mobility in the Grand Paris region by 2040?**



▼ Figure 6: Opportunity lens for Mobilize in Metropole du Grand Paris by 2040



02 PROJECT APPROACH

2.1 Methodological approach

This project applies the Vision in Product Design (ViP) method (Hekkert & Van Dijk, 2011) as its core methodology. ViP is a future-oriented design approach that enables designers to develop concepts grounded in long-term societal transitions rather than short-term user needs or existing market demands. It begins not with the solution, but with a structured exploration of the evolving relationships between people, products, and their socio-technical environments.

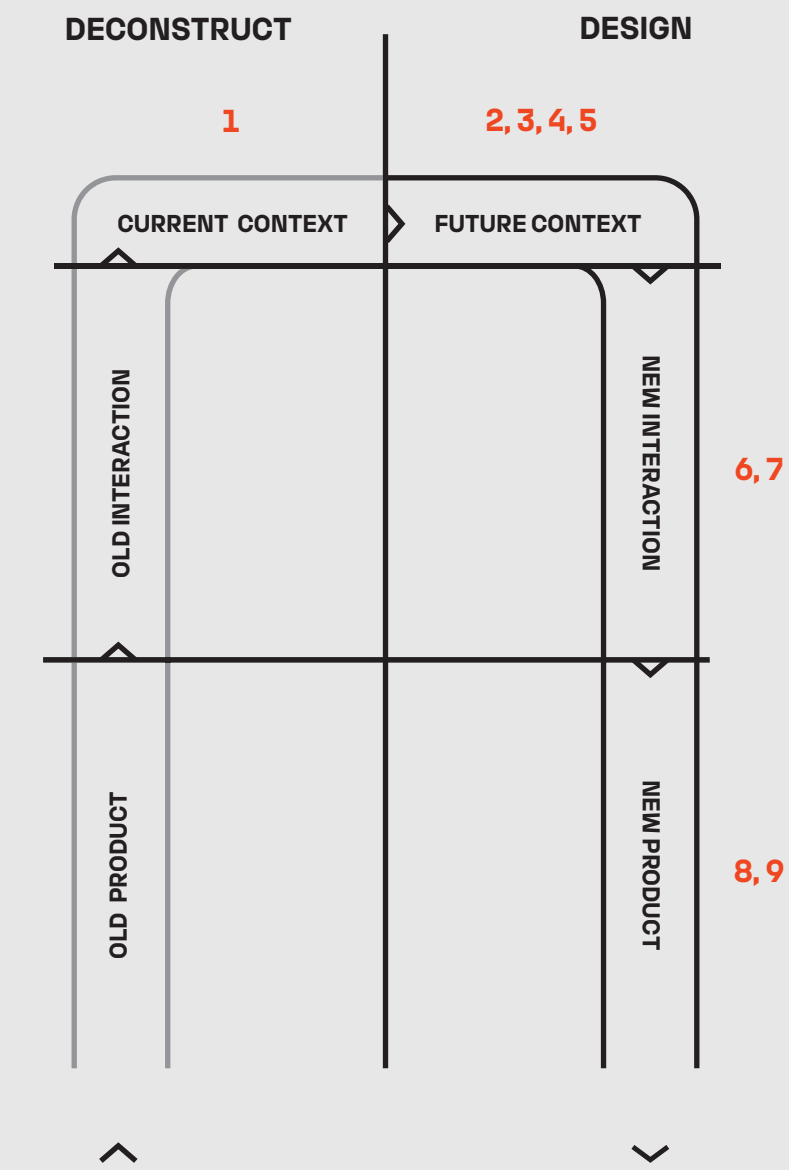
The method unfolds in two main phases:

**DECONSTRUCT**, which seeks to understand the present by analysing systemic structures and contextual forces

**DESIGN**, which formulates a vision-led response to a probable future. This vision becomes a guiding framework for design interventions that are both intentional and contextually relevant (Hekkert & Van Dijk, 2011).

Mobilize, as a future-facing brand, seeks not just a new product or service, but a meaningful positioning and brand territory within the evolving mobility landscape, in this case the Grand Paris region. During early discussions, it became clear that they were not looking for incremental improvements, but for an inspiring, visionary direction.

By applying ViP, the project balances analytical depth and imaginative scope. It investigates social, technological, and environmental developments to construct a probable future context and defines a strategic design response grounded in the brand’s values (Hekkert & van Dijk, 2011). This enables Mobilize to not only define its technological role but also express its societal role within a rapidly transforming urban mobility landscape.



OVERVIEW OF VIP STEPS

To guide this process, the ViP method follows nine key steps:

- 1. **DECONSTRUCTION**  
Understand the current product-context relationship and the systemic forces shaping it.
- 2. **DOMAIN DEFINITION**  
Define a relevant future-facing design domain that frames the intended scope of exploration.
- 3. **CONTEXT FACTOR GENERATION**  
Gather developments, trends, principles, and states from a wide range of disciplines.
- 4. **CLUSTERING & STRUCTURING**  
Identify patterns across factors and cluster them into emerging conditions and a conceptual framework.
- 5. **VISION STATEMENT**  
Describe the intended experiential effect through a compelling metaphor or interaction analogy.
- 6. **DESIRED EFFECT & ANALOGY**  
Derive concrete experience qualities that will inform the design of the concept.
- 7. **QUALITATIVE CHARACTERISTICS**  
Derive concrete experience qualities that will inform the design of the concept.
- 8. **CONCEPT DEVELOPMENT**  
Develop a design concept that embodies the vision and qualitative characteristics.
- 9. **TRANSITION PATH**  
Connect the concept to today's reality through a strategic roadmap toward implementation.

Figure 7: Visual presentation of existing ViP framework and steps

2.2 Report structure

The structure of this report reflects a tailored translation of the Vision in Product Design (ViP) method into a six-phase process. Besides the project outline and conclusion, each phase operationalises specific ViP steps, while also integrating additional tools and methods to support the project’s implementation. The sequence ensures a clear progression from contextual understanding to design development.

PHASE 0 / PROJECT OUTLINE

This introductory phase sets the foundation. It defines the opportunity space, clarifies the design challenge, and aligns expectations between the university, client, and personal ambitions. Early desk research and internal analysis help frame the scope and intent of the project.

PHASE A / DECONSTRUCTION

In this phase, the present is analysed to uncover the underlying product-context relationships between the Grand Paris region and the Mobilize brand. Through contextual research, expert interviews, company analysis, and literature studies, the project constructs a grounded understanding of how current systems and societal forces shape mobility today. This results in the formulation of a clearly defined design domain, which acts as a lens for the next phase. > (STEP 1, 2)

PHASE B / FUTURE FRAMING

This phase shifts from analysis to foresight. A wide range of context factors—drawn from disciplines such as psychology, ecology, governance, and technology—are gathered and clustered into emerging conditions. These are synthesised into a framework of future states of mind that describe how people may relate to mobility in Grand Paris by 2040. This framework establishes a future context that enables the articulation of a meaningful design vision. > (STEP 3, 4)

PHASE C / EXPLORATION

Here, the project translates the conceptual framework into a visionary response. Focusing on the selected states of mind, a guiding vision statement is developed, along with an interaction analogy and qualitative characteristics. These elements form the concept brief and guide the development of future-facing mobility concepts aligned with the brand and regional ambitions. > (STEP 5,6,7)

PHASE D / ILLUSTRATION

The final phase illustrates one of the envisioned concepts as a tangible Product-Service-System (PSS). This includes outlining the system logic, user interactions, and actor orchestration. It also offers insight into what features need to be developed, and maps the development roadmap through a feature list and stakeholder ecosystem map. It demonstrates how Mobilize could start shaping this future today. > (STEP 8,9)

PHASE 00 / CONCLUSION

The concluding phase reflects on the outcomes of the project. It provides final recommendations on methodological approach and use of the outcomes, discusses the limitations encountered during the process, and presents a closing reflection on the relevance and potential of the concept. This phase reinforces the project’s contribution to both academic and professional design practice.

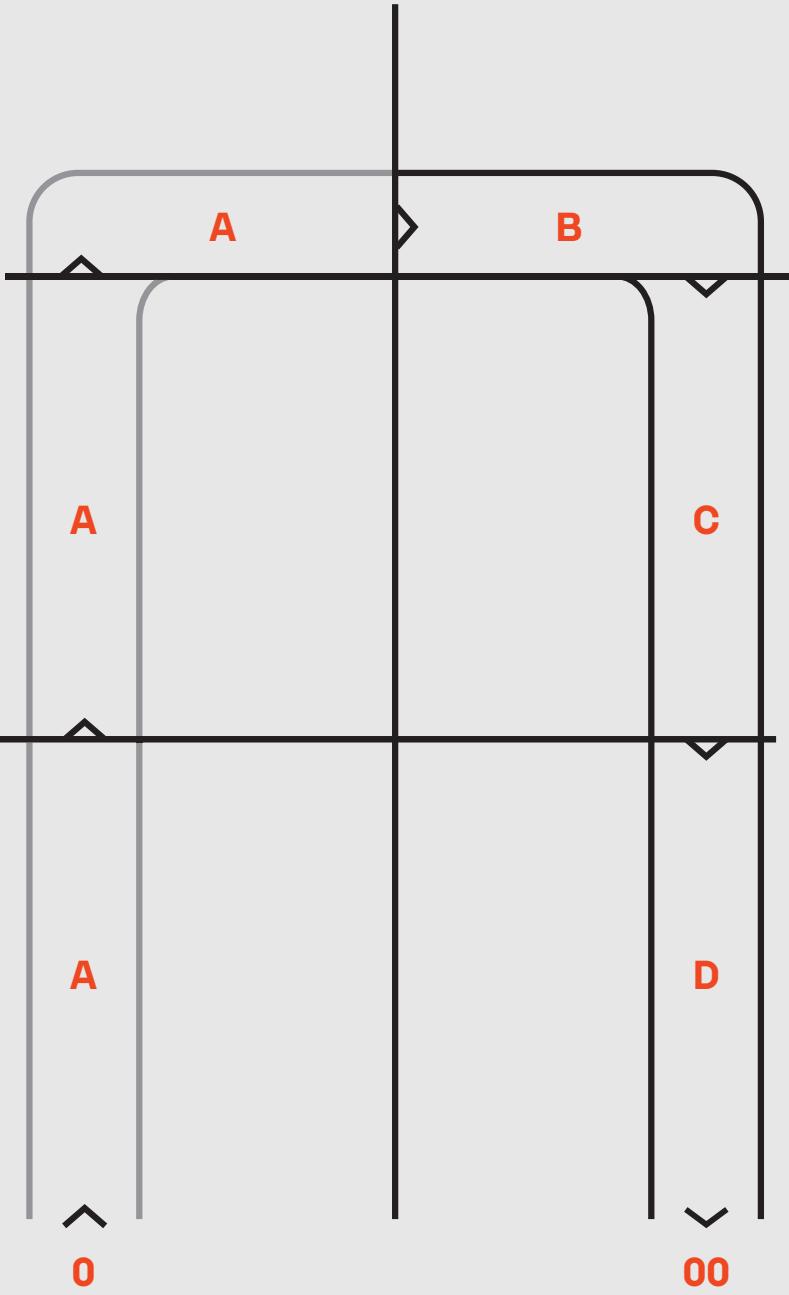


Figure 8: Project approach following ViP steps and methodology



2.3 Approach and methodologies per phase

As previously outlined, the project follows a phased translation of the Vision in Product Design (ViP) methodology. Each phase combines theoretical methods and applied tools to support the transition from contextual analysis to concept development:

0 / PROJECT OUTLINE

This phase defined the project structure, scope, and expectations:

- **Preliminary literature review** on biomimicry, Métropole du Grand Paris, and Mobilize to understand contextual starting points
- **Supervisory team meetings** to align on initial goals from th university, client, and personal perspectives
- **Project planning** to define milestones, timelines, and deliverables

A / DECONSTRUCTION

This phase focused on understanding the current product–context relationships and defining the domain for exploration:

- **Contextual literature research** on the Grand Paris region and systemic mobility challenges
- **Semi-structured expert interviews\*** with professionals at Renault Group to understand current mobility practices and future-oriented perspectives
- **Brand analysis** of Mobilize to understand brand values, positioning, and strategic direction
- **Synthesis of insights** into a clearly defined design domain, guiding the direction for future framing

B / FUTURE FRAMING

This phase established a probable future context through interdisciplinary foresight:

- **Collection of context factors** through literature review and semi-structured expert interviews
- **Clustering and synthesis** of over 200 factors into emerging conditions that reveal key societal patterns
- **Framework construction** to articulate a structured map of future states of mind within the design domain

C / EXPLORATION

This phase developed a visionary response to the future framework:

- **Evaluation workshops** with the supervisory team to assess the strategic relevance of the future states
- **Conceptual narrowing** based on project relevance and brand alignment, focusing on a section of the framework
- **Journey mapping\*** and **early ideation** to define the intended experience and interaction
- **Use of analogy** (‘surfing the wave’) to define the experiential effect
- **Derivation of qualitative** characteristics to guide the design direction

D / ILLUSTRATION

This phase translated the concept into a tangible Product–Service–System (PSS):

- **Brainwriting facilitation\*** with the Mobilize team to explore concept directions from concept brief
- **Biomimicry** as design method to derive system logic from natural principles such as swarm intelligence, wave dynamics, and flow structures
- **Service blueprinting\*** to align user experience, front-stage interactions, and back-end processes
- **Stakeholder ecosystem mapping\*** to define actor responsibilities across system, service, and product layers
- **Roadmapping\*** to outline a phased development plan of the FLO concept

\*Across all phases, tools and techniques from the Delft Design Guide (Van Boeijen et al., 2020) were integrated where relevant.

2.4 Biomimicry philosophy

In addition to the Vision in Product Design (ViP) methodology, this project was guided by a personal design philosophy rooted in biomimicry—the practice of learning from nature’s evolutionary strategies to inform sustainable and adaptive solutions. While ViP structured the overall process, biomimicry shaped how design questions were framed and how systemic logic was embedded in the final concept.

Coined by Janine Benyus in Biomimicry: Innovation Inspired by Nature, the term describes how biological forms, processes, and ecosystems, refined over 3.8 billion years, can offer valuable models for human innovation (Benyus, 1997). The approach encourages designers to ask: What would nature do here?

Biomimicry operates on three levels, from micro to macro (Biomimicry Institute, 2021):

/ FORM

Mimicking physical structures for functional benefits

/ PROCESS

Emulating behaviours such as cooperation, signalling or feedback mechanisms

/ ECOSYSTEM

Considers how whole ecosystems function, emphasising interdependence and resilience

In this project, biomimicry served as a lens through which natural intelligence was translated into design logic, particularly through principles like swarm intelligence, wave dynamics, and flow structures.



Figure 9: Whaleflipper-inspired wind turbine blades, form-level



Figure 10: Bird-inspired flocking models simulating group behaviour, process-level

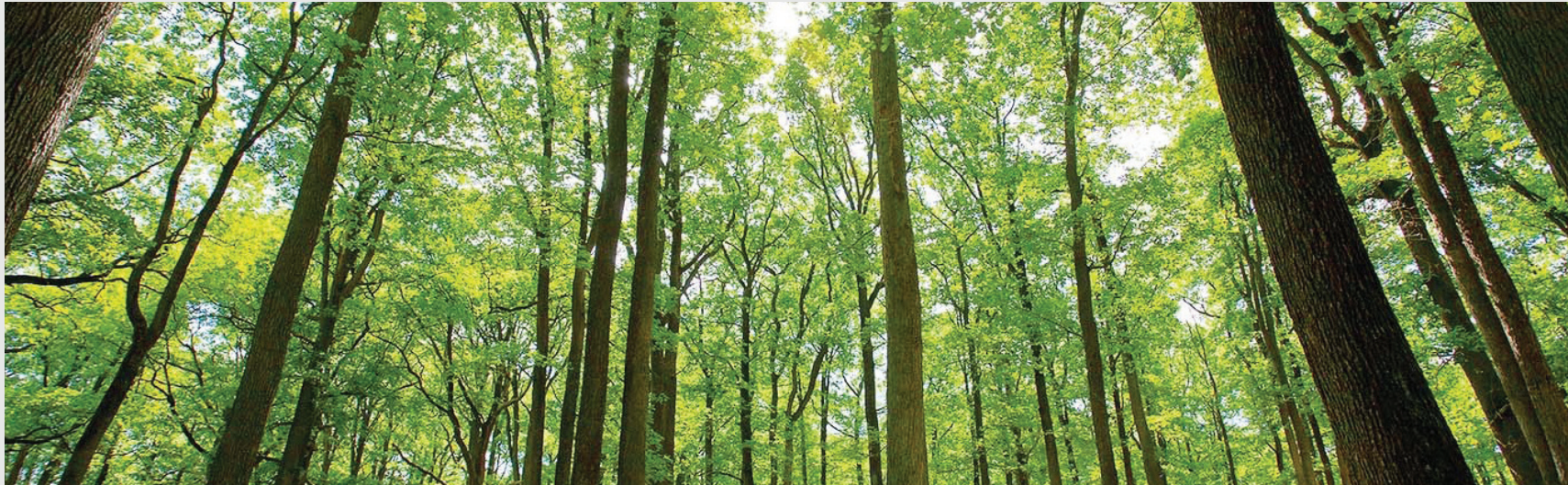


Figure 11: Forest-inspired circular economy practices that focus on resilience, ecosystem-level



# A / DECONSTRUCTION

This phase examines the present to understand the systemic and contextual forces shaping urban mobility in the Métropole du Grand Paris. Through a structured deconstruction of the current product-context relationship between the region and the Mobilize brand, the project identifies the underlying dynamics that influence mobility today.

Contextual research and expert interviews uncovered the socio-spatial, behavioural, and infrastructural pressures within the metropolitan landscape. In parallel, a company analysis of Mobilize was conducted to examine its strategic orientation and evolving role within the Renault Group—highlighting its shift from vehicle manufacturer to mobility ecosystem provider.

The findings depict a fragmented, multi-density region marked by deep-seated inequalities and divergent mobility patterns. At the same time, they reveal a clear opportunity for a service-led, systemic design approach that responds to these complexities. These insights inform the definition of the project's future-facing design domain:

**(Sub)urban mobility ecosystems in the Métropole du Grand Paris by 2040.**

This domain forms the design lens for the next phase—Future Framing—where trends and systemic developments will be synthesized into a future framework that describes twelve states of mind.

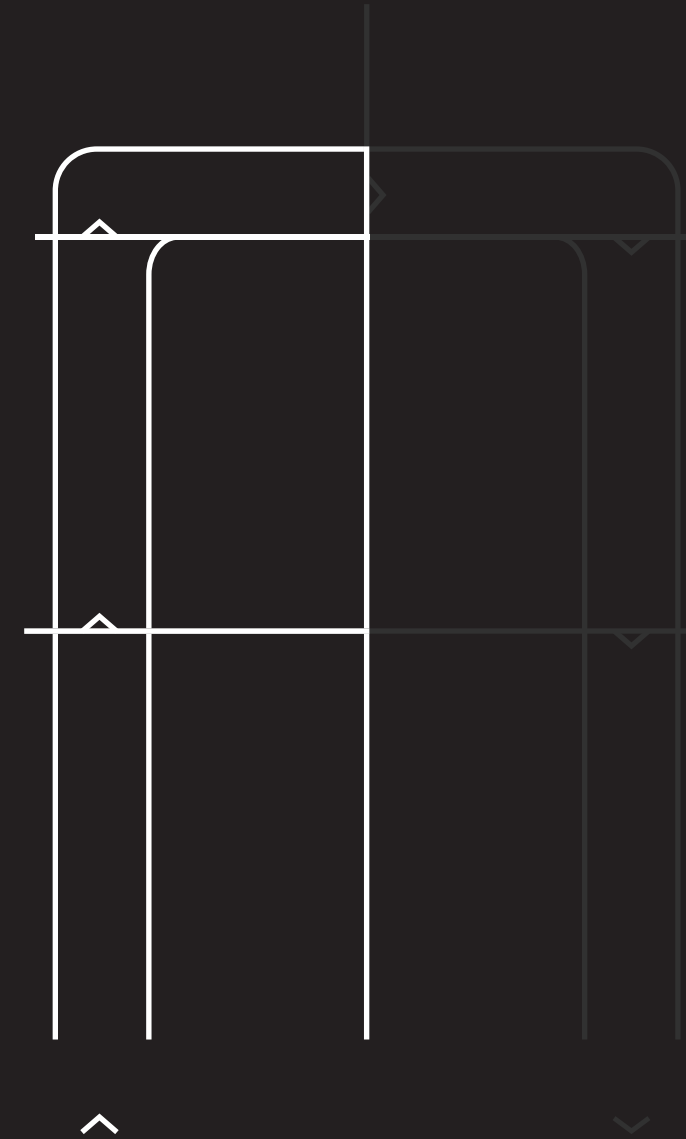


Figure 12: Urban context and Mobilize vehicle in it



# 03 GRAND PARIS

## 3.1 Scope and territorial dynamics of Grand Paris

The Île-de-France region, encompassing the Paris metropolitan area, is France’s most densely populated region. This demographic concentration underscores the complexity of governance in the area (Insee, 2021).

To address metropolitan challenges, Métropole du Grand Paris (MGP). The MGP encompasses the City of Paris (T1) and 11 surrounding territorial establishments (EPTs).

The MGP was created to facilitate integrated planning, infrastructure development, and environmental protection across municipal boundaries. While this nested governance model enables coordinated metropolitan initiatives, it also introduces complexity due to overlapping jurisdictions and diverse local interests, posing challenges to cohesive policy implementation (Métropole du Grand Paris, n.d).

This chapter analyzes Grand Paris as a multi-density metropolis facing socio-spatial divides and suburban car dependency, outlining its climate-aligned mobility transformation through transit expansion, soft mobility promotion, and transport decarbonization strategies.

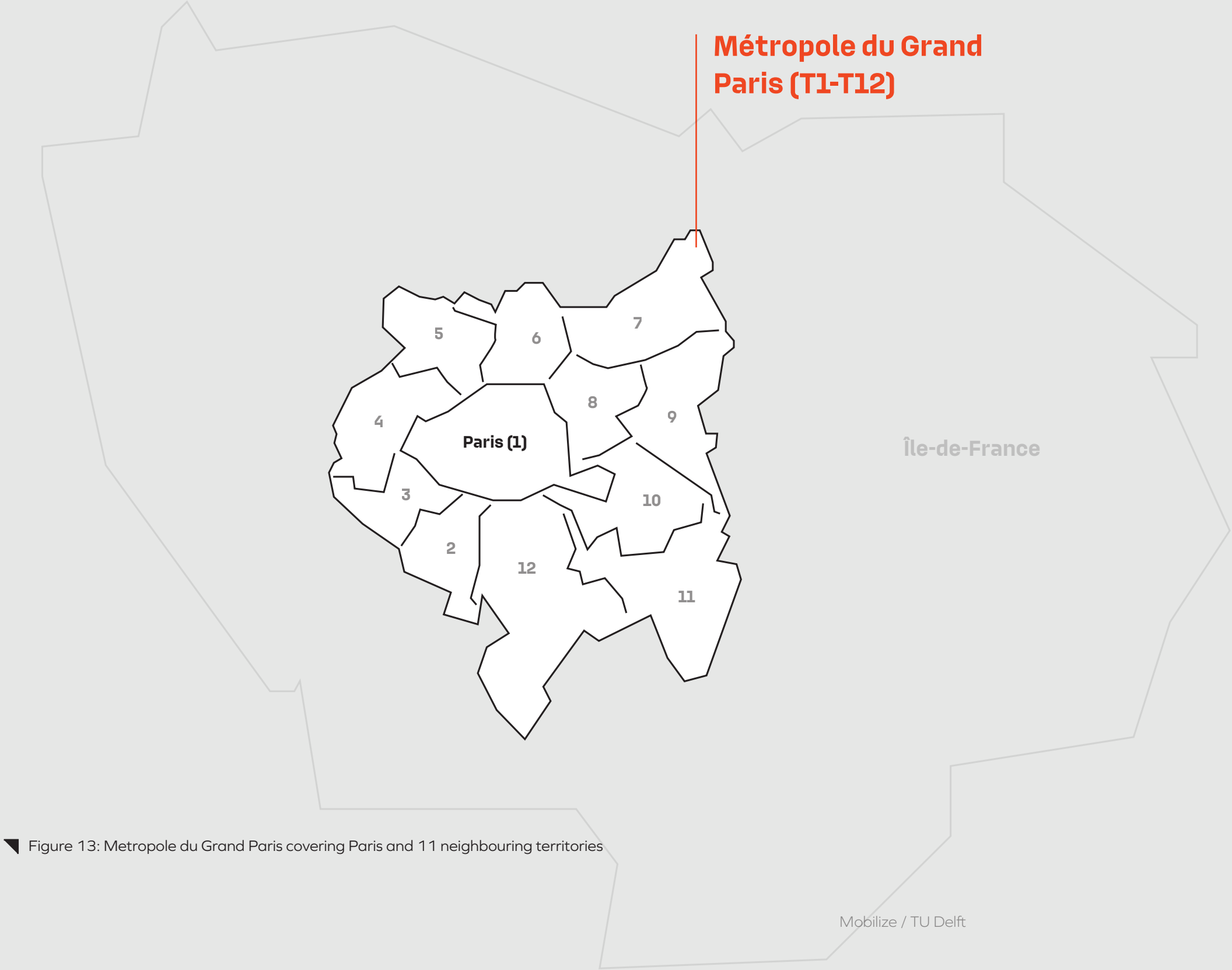
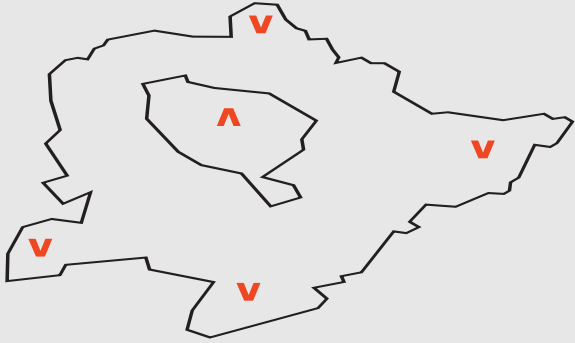
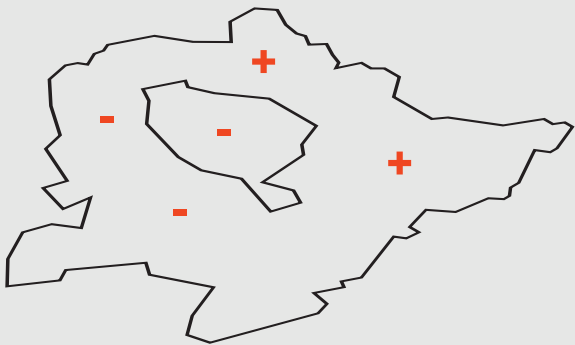


Figure 13: Métropole du Grand Paris covering Paris and 11 neighbouring territories



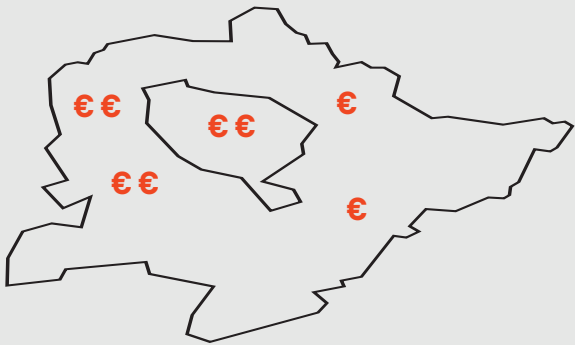
## A MULTI-DENSITY METROPOLIS

The region exemplifies a “multi-density” structure, housing 7.1 million inhabitants (Apor, 2025). Herein, the city of Paris (T1) exhibits an extreme urban density exceeding 20,000 inhabitants per km<sup>2</sup>, while outer territories could report densities below 500 inhabitants per km<sup>2</sup> (INSEE, 2023). This stark spatial difference shapes highly differentiated infrastructural and mobility needs between the core and peripheral areas.



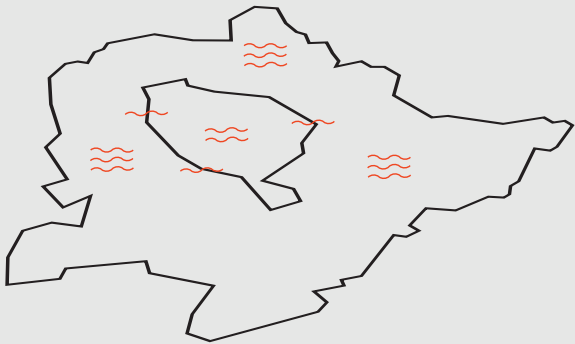
## AN URBAN CONTRACTION

The region continues to grow and is mostly concentrated in the northern and eastern suburbs, while Paris (T1) is shrinking (La Grande Conversation, 2023). This urban contraction, driven by ageing, smaller households, and rising housing costs, threatens the urban density needed to sustain efficient public transport and services, highlighting the need for coordinated densification strategies across the Metropole.



## A SOCIO-SPATIAL DIVIDE

Socioeconomic disparities in the region are deeply entrenched, manifesting in spatial divisions. Affluent territories like Grand Paris Seine Ouest report median incomes nearing €2,919 per month, while areas such as Plaine Commune register significantly lower figures, around €1,102 per month (INSEE, 2023). This income gap influences access to housing, transportation, and public services, often relegating lower-income households to peripheral zones with limited amenities.



## A FUNCTIONAL INTERDEPENDENCE

On an average weekday, the region generates approximately 27.4 million trips per day, reflecting strong interdependencies across its twelve territories (Apor, 2021). While 7.6 million trips occur within Paris (T1), 6.7 million connect Paris and the inner territories, and 8.4 million occur between the outer territories. As population growth shifts further outward, suburb-to-suburb and suburb-to-centre travel will intensify, reinforcing the need for an integrated, metropolitan-wide mobility system that ensures equitable access across the area.

Figure 14 - 18: Simplified demographic representations of Métropole du Grand Paris



3.2 Mobility modes and emissions trends

The Métropole du Grand Paris presents a relatively balanced mobility mix compared to other global cities. According to 2022 figures, private cars account for 43% of trips, public transport for 36%, walking for 16%, and cycling and powered two-wheelers for the remaining 5% (Nienhaus & Oliver Wyman Forum, 2023).

DEMAND AND EMISSIONS

While mobility demand is projected to grow by 9% by 2030, emissions are projected to fall by 24%—largely through electrification, modal shift, and public investment. These emission decreases are a direct result of the MGP's Climate-Air-Energy Plan that aims for carbon-neutral public transport, building on investments made ahead of the 2024 Olympics, including bike lanes, metro expansions, and pedestrian infrastructure (Métropole du Grand Paris, 2023).

However, projections show that these efforts remain insufficient to meet the Paris Agreement target of limiting warming to 1.5°C. Current commitments still leave an emissions gap requiring an additional 39% reduction in transport emissions by 2030 (Nienhaus & Oliver Wyman Forum, 2023).

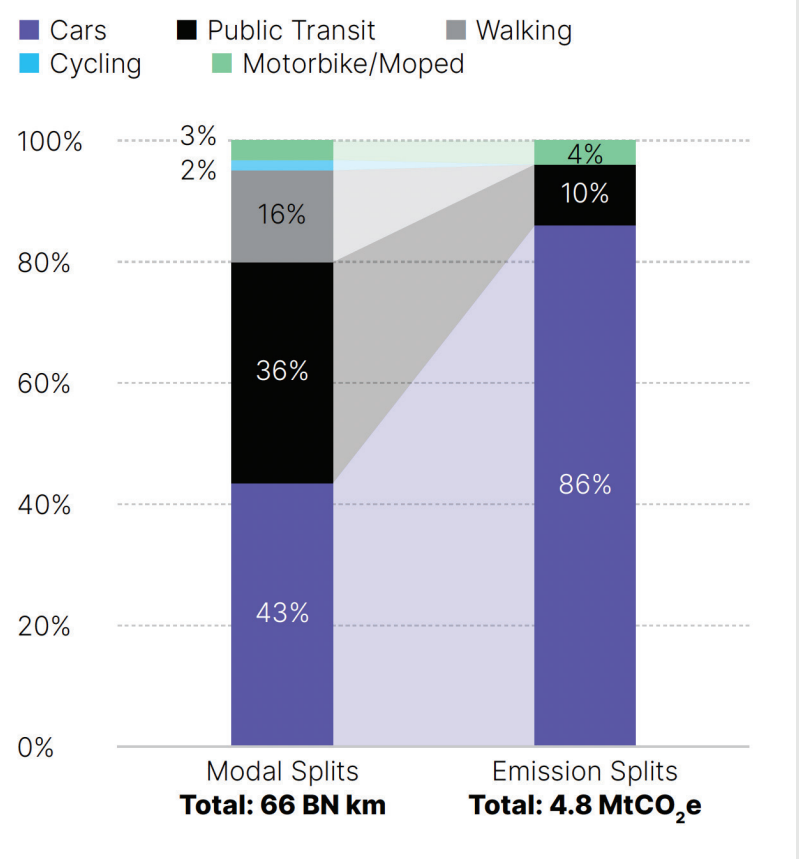


Figure 19: modal share and emissions (Oliver Wyman, 2022)

DIFFERENT MOBILITY PATTERNS

The mobility patterns across the MGP area strongly reflect underlying density differences.

- In Paris (T1), nearly half of all trips are made on foot, supported by urban proximity and high public transport coverage (Apur, 2021).
- Between Paris and the suburbs, public transport dominates daily flows, yet the modal share of cars remains significant (Apur, 2021).
- Within the suburbs, although walking and transit use have grown, car dependency persists — especially in lower-density and less connected territories — where car trips still account for over 3.2 million daily trips. (Apur, 2021).

These disparities highlight the need for differentiated strategies that account for both high-density transit reliance and tackle persistent suburban car use.



Figure 20: High, multi-modal streetview of Paris, and low-density, car-centered streetview of suburb Santeny

3.3 Ambitions for a carbon-neutral Metropolis

The transformation of the Grand Paris mobility landscape is closely tied to its climate policy.

The MGP's Climate-Air-Energy Plan sets a goal of carbon neutrality by 2050, with interim targets of a 50% reduction in emissions by 2030 and 75% by 2040. Parallel ambitions include meeting EU air quality standards by 2024 and WHO thresholds by 2030 (Métropole du Grand Paris, 2023).

To reach the carbon-neutrality and air quality goals, the region has launched a multifaceted mobility strategy, which can be structured into three core ambitions:



EXPAND PUBLIC TRANSIT

The Grand Paris Express will add 200 km of automated metro lines and 68 stations, enhancing suburb-to-suburb connectivity and reducing car reliance. Upon completion, 90% of residents will be within 2 km of a station. The project includes plans for 250,000 to 400,000 new housing units near stations to support transit-oriented development. (The Grand Paris Express, n.d)



PROMOTE SOFT MOBILITY

Plan Vélo Métropolitain will deliver 200 km of dedicated lanes, and the RER V network will span 750 km of high-capacity cycling corridors. The Vélib' bike-sharing scheme now covers 131 communes (Paris, n.d.).

Complementary urban planning strategies—such as 15-minute city principles—encourage proximity-based living, reducing travel distances and dependence on cars (Moreno, 2022).



DECARBONISE ROAD TRANSPORT

The Zone à Faibles Émissions (ZFE) in Paris aims to phase out fossil-fuel vehicles by 2030, permitting only zero-emission vehicles within its boundaries.

Additionally, Paris is reallocating road space to prioritize carpooling and Bus Rapid Transit (BRT) systems, reflecting a broader policy shift towards efficient, low-emission travel without increasing road capacity (Apur, 2024).



Figure 20: Grand Paris Express



Figure 21: RER V network



Figure 22: ZFE boundaries 2030



# 04 MOBILIZE

This chapter introduces Mobilize as Renault Group’s service-led mobility brand, detailing its ecosystem model, strategic role in the Renaulution plan, brand values, and transformation challenges toward sustainable, user-centric urban mobility systems.

## 4.1 A next-generation mobility brand

Mobilize, founded in 2021 by the Renault Group, is a forward-thinking mobility brand conceived to address critical inefficiencies and environmental challenges inherent in urban transportation. It responds to three pivotal issues (Mobilize, n.d.):

- 1. the **UNDERUTILISATION** of private vehicles, which remain idle approximately 90% of the time;
- 2. the pressing need to **DECARBONISE** the automotive industry, responsible for 15% of European CO<sub>2</sub> emissions;
- 3. the rapid **DEPRECIATION** of vehicle value, with up to 50% lost within the first three years.

### FROM PRODUCT-CENTRIC TO USER-CENTRIC

Mobilize signifies a strategic shift from traditional automotive manufacturing to a service-oriented model, emphasising Vehicle-as-a-Service (VaaS).

This approach prioritises user needs and contextual requirements over mere vehicle production. By integrating electric vehicles, energy services, digital connectivity, and innovative financing solutions into a cohesive ecosystem, Mobilize aims to redefine mobility, making it more sustainable, efficient, and aligned with contemporary urban lifestyles.

*“Mobilize is not just about products, it’s also a brand that gives you access to mobility that suits you: by the minute, by the day, by the week or by the month.”*

Laurens van den Acker, Chief Design Officer Renault Group (Lignes/auto, 2024)

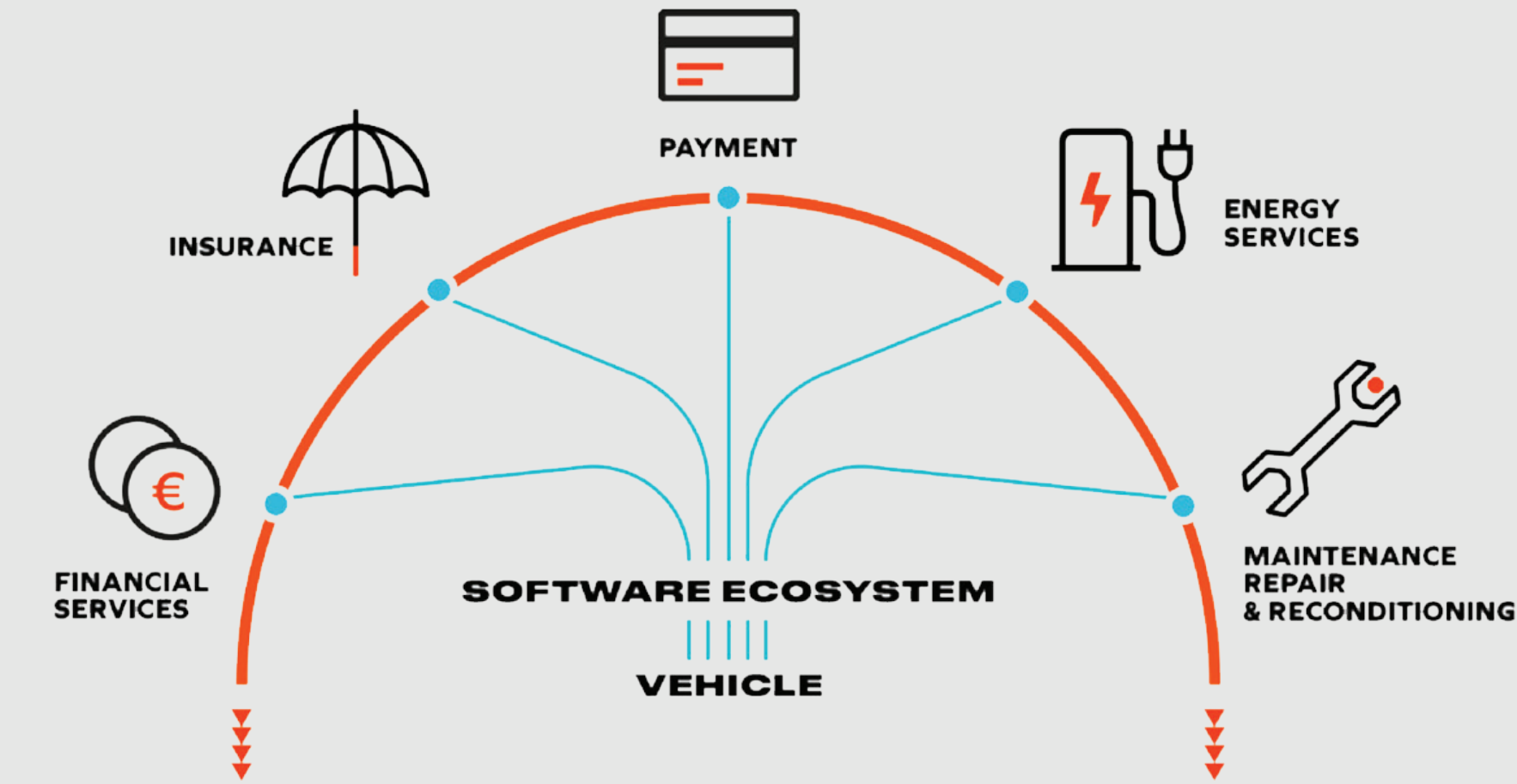


Figure 23: Mobilize Vehicle-as-a-Service model of Mobilize

## BUSINESS STRUCTURE

Mobilize operates through two entities that align short-term financial performance with long-term innovation.

**MOBILIZE FINANCIAL SERVICES (FS)** manages financing, leasing, and insurance solutions across Renault Group brands, including electric vehicle subscriptions and savings products. With operations in 36 countries and over 4 million customers, FS provides a stable revenue base and supports the shift toward usage-based mobility models (Mobilize, n.d.).

**MOBILIZE BEYOND AUTOMOTIVE (BA)** focuses on emerging mobility offerings such as car-sharing, energy services, and data-driven platforms.

## MOBILIZE BEYOND AUTOMOTIVE

This dual-entity structure enables Mobilize to balance immediate commercial viability with strategic experimentation, positioning it as a long-term investment in the evolving mobility landscape.

*“It’s not yet obvious in terms of immediate profitability, because there’s a lot of competition to find the right solution. But we all know that in ten years’ time it’s going to be a huge business. And if you want to be there in ten years’ time, you have to start today.”*

Laurens van den Acker, Chief Design Officer Renault Group (Lignes/auto, 2024)

## OFFERING

Mobilize offers an integrated service portfolio across four key domains (Renault Group, 2025):

### MOBILITY

Mobilize operates vehicle-sharing platforms like Zity and provides purpose-designed electric vehicles such as Mobilize Duo and Bento.

### DATA

Mobilize develops platforms that enable fleet optimisation, usage analytics, and mobility-as-a-service coordination.

### ENERGY

Mobilize delivers charging infrastructure and solutions through initiatives like Mobilize Power Solutions and the Advanced Battery Storage program.

### FINANCIAL

Mobilize Financial Services supports flexible leasing, subscriptions, and insurance products tailored to new mobility needs.

Figure 24: Product offering Mobilize



4.2 Strategic role within the Renault Group

Mobilize is the fourth strategic brand of the Renault Group and the first launched in 120 years.

PART OF RENAULT GROUP

Founded in 1898 by the Renault brothers, Renault Group has evolved through significant milestones:



The Group has consistently demonstrated adaptability, notably by pioneering mass-market electric vehicles in the early 2010s.

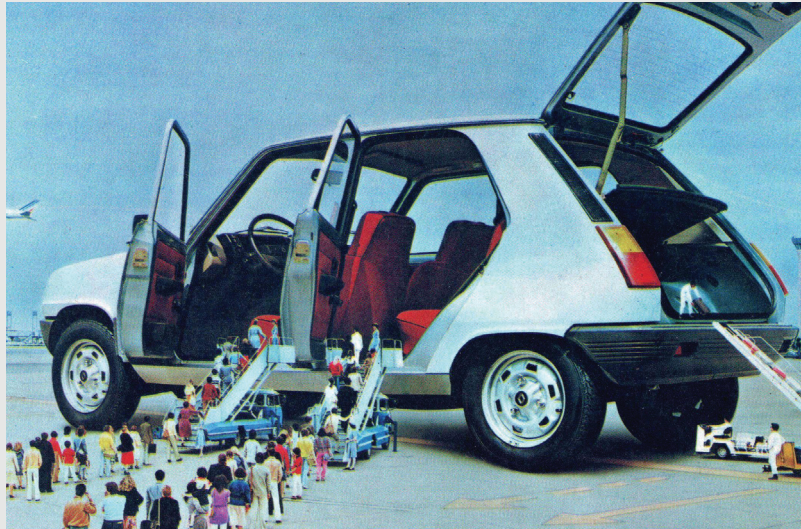


Figure 25: Creative adaptability of Renault Group in retro commercial

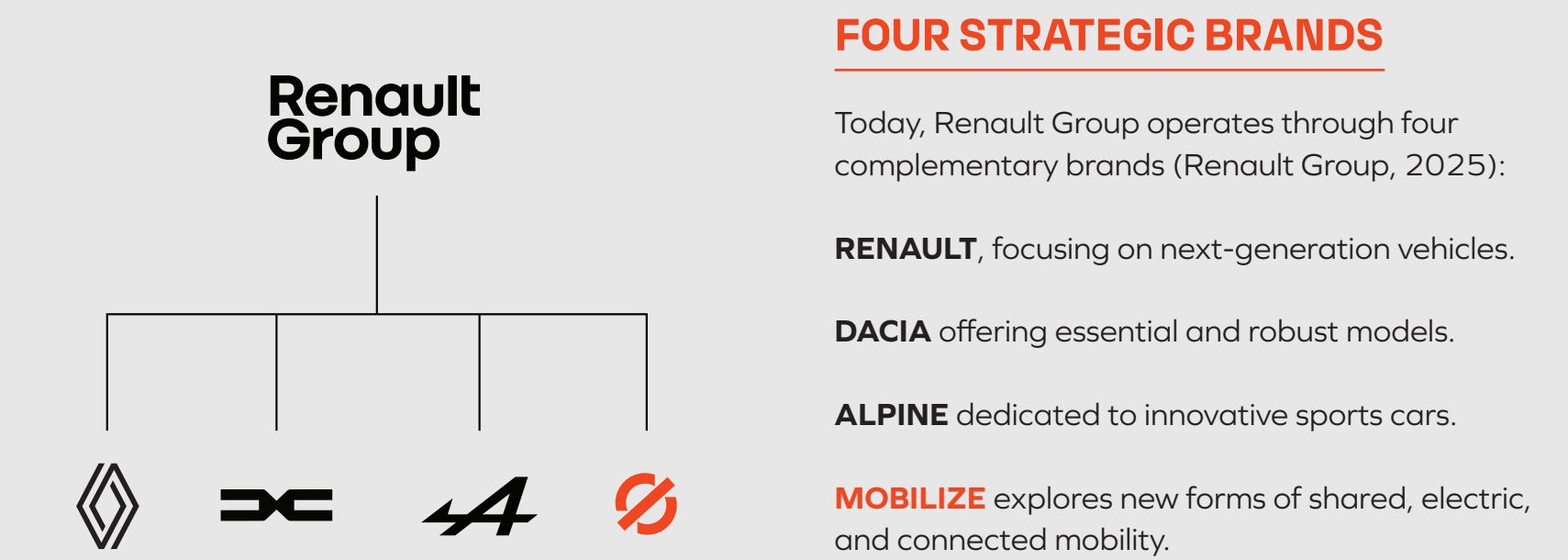


Figure 26: Brand tree of Renault Group



Figure 27: Vehicle line-up of the Renault Group after Renaulution plan

FOUR STRATEGIC BRANDS

Today, Renault Group operates through four complementary brands (Renault Group, 2025):

RENAULT, focusing on next-generation vehicles.

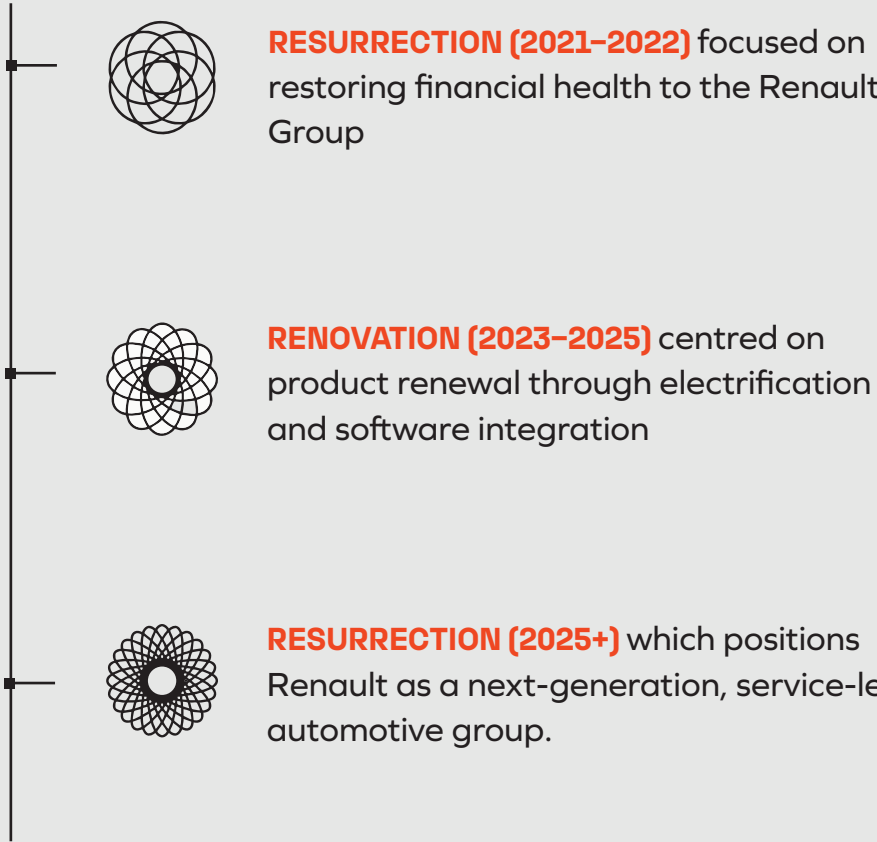
DACIA offering essential and robust models.

ALPINE dedicated to innovative sports cars.

MOBILIZE explores new forms of shared, electric, and connected mobility.

RENAULTION STRATEGY

Mobilize represents a pivotal element within Renault Group’s “Renaulution” strategy—an ambitious transformation plan launched in January 2021 to restore profitability and transition the company from a volume-driven automaker to a value-oriented mobility provider. This strategy unfolds in three overlapping phases (Renault Group, 2024):



Mobilize is a cornerstone of this final phase. Tasked with reimagining mobility beyond car ownership, it supports the Group’s shift toward service ecosystems by addressing electrification, urbanisation, and data-driven mobility. As CEO Luca de Meo stated, Mobilize embodies Renault’s pivot to “starting with services and going to the product,” marking a structural evolution rather than a cyclical product refresh.

“Mobilize is one of the major building blocks of our Renaulution! A new-generation automotive company: we now start with services and go to the product, we go from digital technology to the object and not the other way around! [...] Mobilize’s mission is to be Renault Group’s pivot to the future of mobility and new value-creating activities.”

Luca de Meo, CEO Renault Group (Mobilize, n.d.)

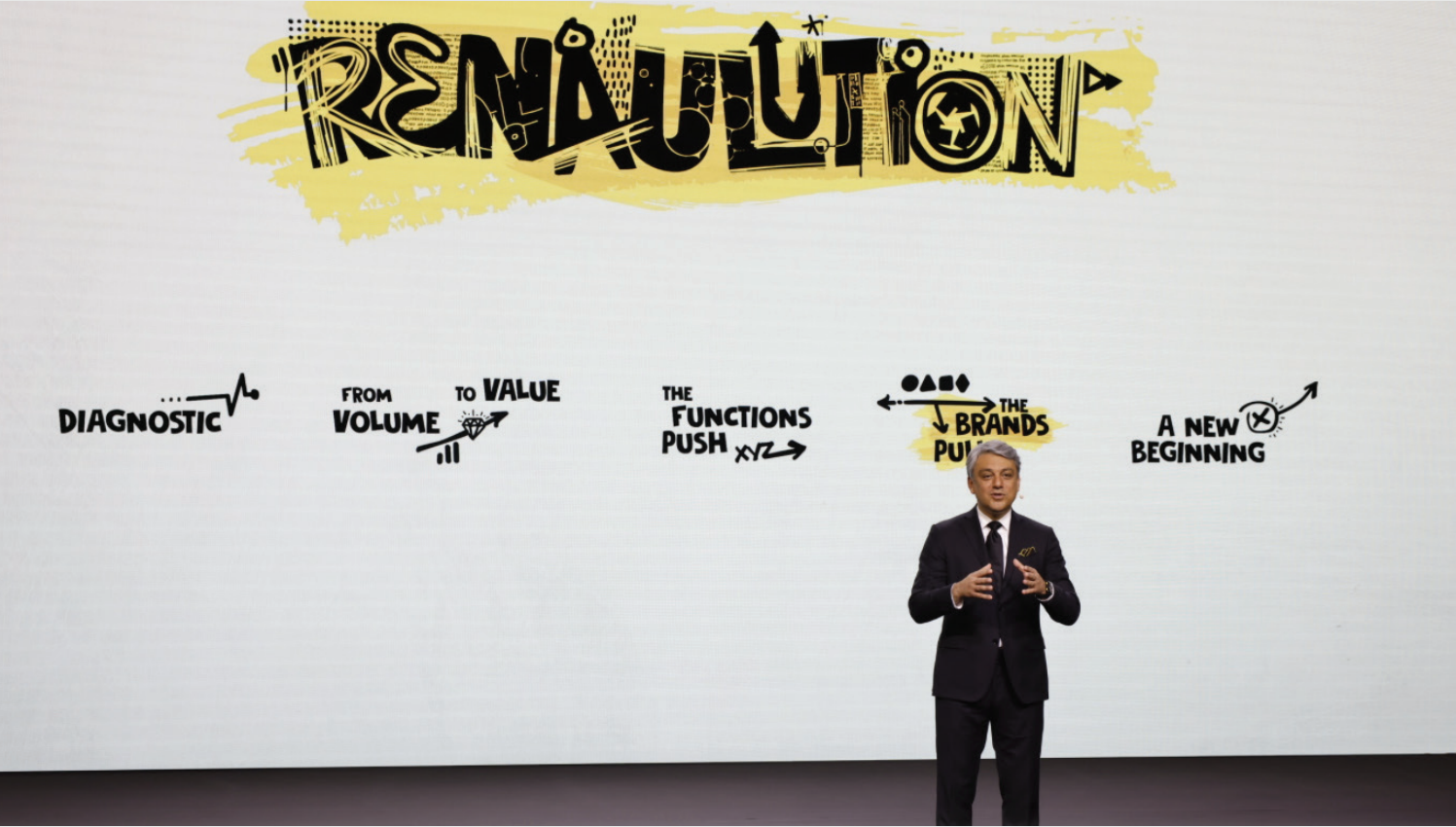


Figure 28: Luca de meo (CEO of Renault Group) presenting Renaulution and strategic objectives



### 4.3 Brand values

Mobilize's brand values are deeply rooted in its ambition to redefine urban mobility through a sustainable, inclusive, and collaborative approach.

The brand positions itself at the intersection of transport, energy, and digital innovation and financial services, promoting a vision that extends beyond car manufacturing to encompass systemic change in urban ecosystems. Central to this identity are the values of boldness, optimism, and collectiveness—not merely as aspirational terms but as operational principles guiding its strategy (Mobilize, 2020).

#### **BOLDNESS**

Boldness is reflected in Mobilize's commitment to exploring uncharted technological and service domains, such as smart charging and vehicle-to-grid systems.

#### **OPTIMISM**

Optimism manifests in its forward-looking stance on battery circularity and carbon neutrality, challenging prevalent critiques of electric mobility.

#### **COLLECTIVENESS**

Collectiveness underscores Mobilize's emphasis on partnerships with public and private stakeholders to co-develop solutions tailored to diverse urban contexts.



Figure 29: Brand values and personality reflected in marketing imaging, from top to bottom: boldness, optimism, collectiveness

Mobilize / TU Delft

### 4.4 Transformation challenges

Mobilize's foremost challenge lies in transitioning within a traditional vehicle manufacturer ecosystem to a service-oriented provider focused on mobility, energy, and data.

This cultural shift and role within the Renault Group demands a start-up mindset within a large industrial group, emphasising agility, experimentation, and user-centric thinking.

Structurally, Mobilize must integrate diverse capabilities—from engineering and design to digital platforms and energy services—into a unified ecosystem. It must also effectively utilise Renault Group's assets, such as its retail network, start-up collaborations, and industrial sites like the Flins Re-Factory (Renault Group, 2025).

Success hinges on balancing innovation with scale: delivering seamless, sustainable mobility services while navigating the complexities of a changing automotive landscape.

**FROM PRODUCT-CENTRIC  
TO USER-CENTRIC DESIGN**

**FROM MANUFACTURING  
TO A SERVICES-ORIENTED COMPANY**

**FROM DESIGNING THE PHYSICAL  
TO DESIGNING THE ECOSYSTEM**

Master thesis - Valentijn Raes



# 05 DOMAIN DEFINITION

This chapter defines the future design domain as “(sub) urban mobility ecosystems in Métropole du Grand Paris by 2040,” emphasizing a shift from product-centric models to service-led, ecosystemic approaches that address the regional complexity of the Grand Paris region.

## 5.1 Results from deconstruction

The domain defined in this project results from a deconstruction of the current product–context relationship between the Métropole du Grand Paris and the brand strategy of Mobilize. This section transitions from understanding the present (Chapters 03 and 04) to defining a lens for future exploration in the next phase, B / Future Framing.

### PRESSURES IN THE GRAND PARIS REGION

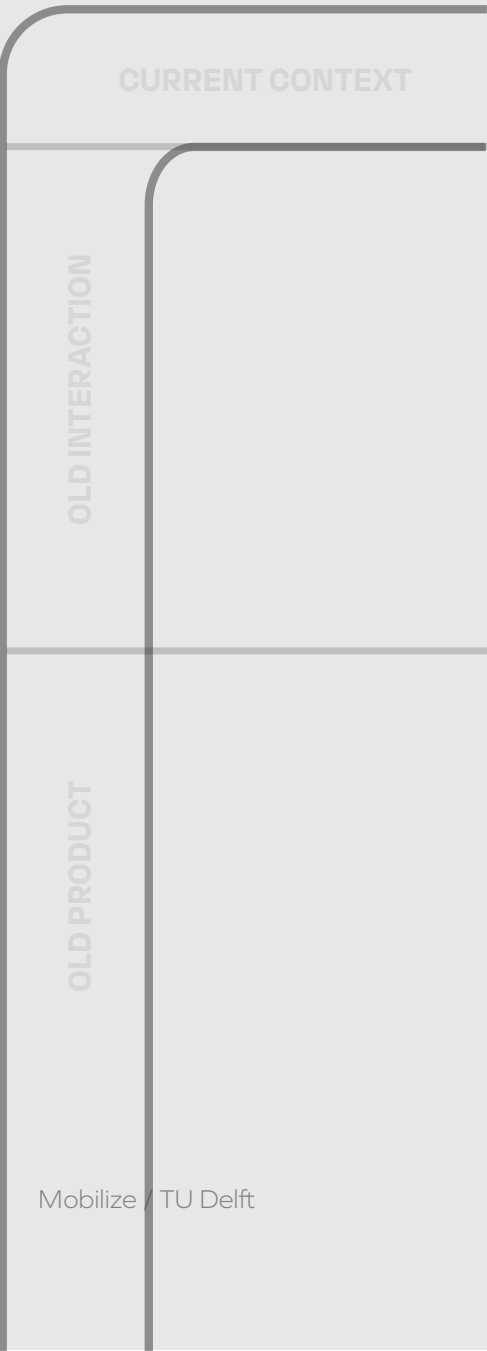
As shown in Chapter 03, the Paris metropolitan region faces a convergence of systemic challenges: the urgent need for decarbonization, demographic shifts toward outer suburbs, and persistent socio-spatial inequalities. These dynamics place pressure on existing infrastructure and transform mobility from a personal convenience into a basic enabler of access, equity, and climate resilience. Despite large-scale investments such as the Grand Paris Express, current systems remain caught between outdated models of car-dependency and future visions of shared, integrated mobility.

### MOBILIZE AS ECOSYSTEMIC RESPONSE

Chapter 04 outlines how Mobilize repositions the traditional automotive model by taking an ecosystemic approach, through a progressive, resourceful, and optimistic personality. Rather than centring on car ownership, Mobilize offers Vehicle-as-a-Service (VaaS)—integrating electric vehicles, charging solutions, data platforms, and flexible financial services. This shift reframes mobility as a coordinated service system, designed around user needs and contextual realities, rather than product output alone.

### A SERVICE-LED MOBILITY OFFERING

Mobilize now operates across four domains: urban mobility through compact vehicles like Duo and Bento, energy through charging infrastructure and storage, data-driven services for fleet and usage optimisation, and financial tools enabling subscriptions and leasing. These offerings support flexible, sustainable alternatives to private car ownership, especially suited to the complexity of the Grand Paris context.



## 5.2 Domain definition

Based on this deconstruction, a future design lens was defined to guide the area to which this future-facing project aims to contribute (Hekkert & Van Dijk, 2011).

This lens acknowledges that mobility cannot be reduced to vehicles or infrastructure alone but must be understood as an evolving relationship between people, systems, and meaning, particularly in a region striving for carbon neutrality while transportation and the number of inhabitants is expanding beyond its urban core. The selected domain is:

› “(sub)urban mobility ecosystems in the Métropole du Grand Paris by 2040.”

This framing will support further exploration of how mobility systems can be designed to not only match instrumental ambitions but also include the socio-cultural and spatial diversity of the Grand Paris metropolis.

# B / FUTURE FRAMING

This phase marks a shift from analysis to foresight. Building on the previously defined design domain—(sub) urban mobility ecosystems in the Métropole du Grand Paris by 2040—it explores how individuals may relate to mobility within a changing societal context.

A total of 199 context factors were collected through an interdisciplinary literature review and semi-structured expert interviews. These factors, spanning disciplines such as psychology, ecology, governance, and technology, were categorised by typology and clustered into twelve emerging conditions—coherent narratives that describe probable futures within the domain.

To structure these narratives into a design-relevant framework, two underlying dimensions were identified: human drivers of mobility decisions and individual perception of freedom. Together, they form a matrix of twelve future states of mind, each representing a distinctive mental position from which people in Grand Paris might make mobility decisions in 2040.

This framework offers a structured lens through which design opportunities can be envisioned, setting the stage for the next phase, C / Exploration, where vision statements and conceptual directions will be developed in response.

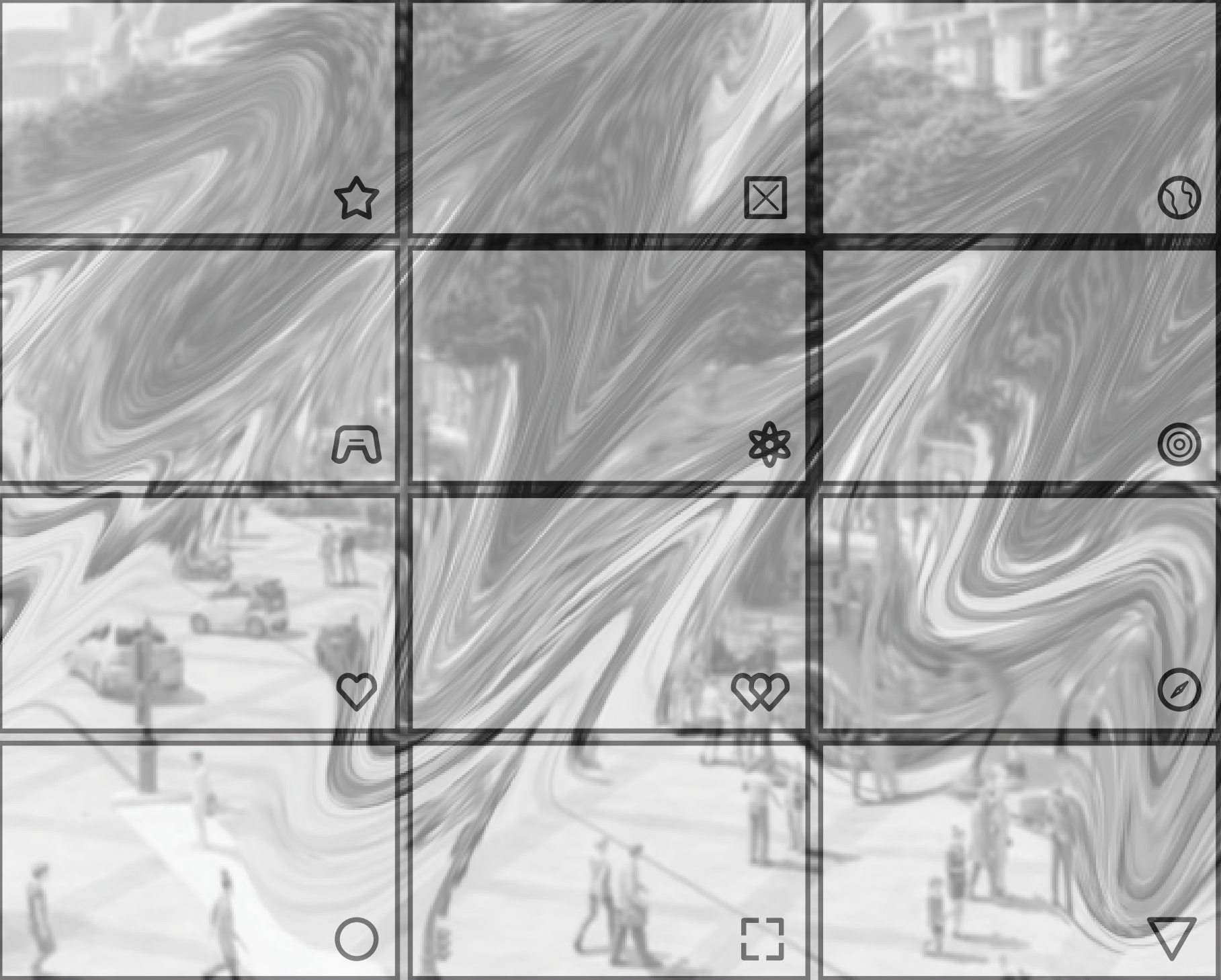
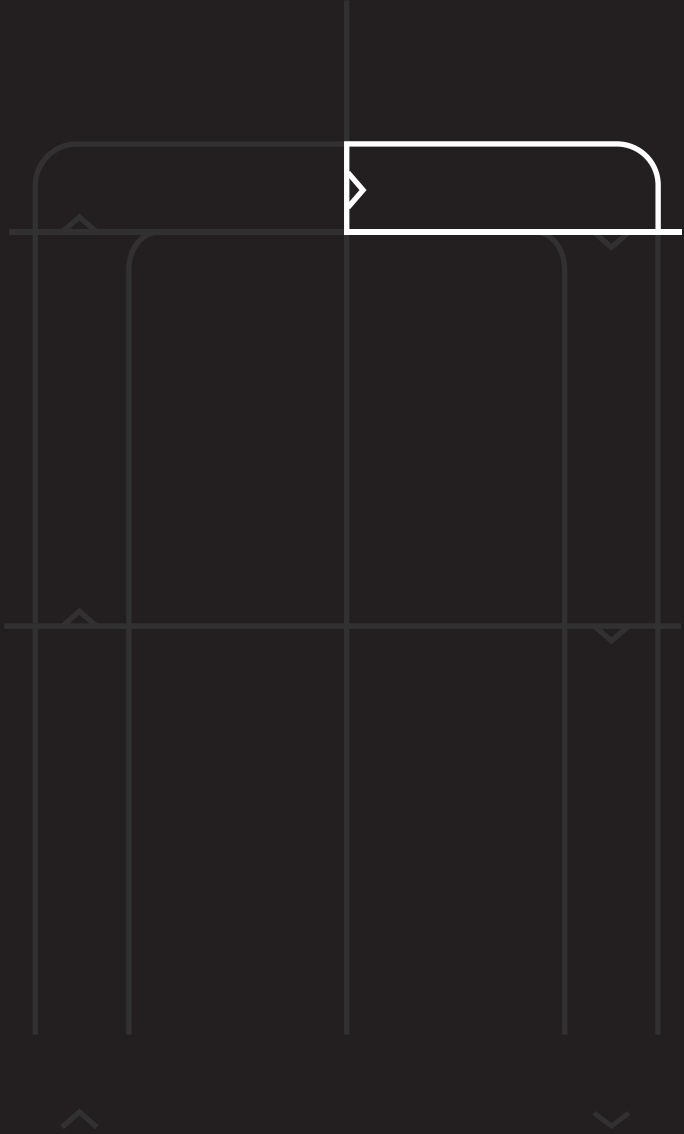


Figure 30: A teaser of a framework that identifies twelve states of mind the probable future of MGP 2040

06 FUTURE CONTEXT

This chapter defines 199 context factors through interdisciplinary research and expert interviews, categorized into principles, states, developments, and trends, to construct a pluralistic, traceable future context.

6.1 Generation of context factors

Designing for a future context begins by identifying context factors relevant to our chosen domain. These are value-free building blocks that describe observable shifts and states in the world, independent of interpretation or design intent (Hekkert & van Dijk, 2011). Herein, originality is highly valued, as this represents an avenue to innovation and exploration of possible new futures.

This originality puts responsibility in the composer of the context, as the factors chosen were of interest to the designer, rather than rationally substantiated. To ensure traceability, each of the context factors is linked to at least one reference.

The full list of factors is in Appendix A.

To avoid disciplinary blind spots and tunnelling only on the ‘mobility’ domain, factors were gathered from a wide range of fields, such as psychology, biology, evolution, sociology, demography, technology, politics, economics, and ecology. This pluralistic perspective was further supported by Wilber’s integral theory (2007), which encourages engaging with both interior (human) and exterior (systemic) dimensions of change.

FOUR TYPOLOGIES

As this context contains both changing shifts as well as more stable situations, four typologies are defined on which the factors selected and categorised (Hekkert & van Dijk, 2011). These can be defined across two axes.

Y: TEMPORAL STABILITY (high vs. low),  
X: TYPE OF INFLUENCE (systemic vs. human-driven).

This includes the following typologies:

/ PRINCIPLES are fundamental truths or evolutionary patterns unlikely to change.

e.g. *Emotionally intense events are better remembered than neutral ones, shaping how individuals perceive and store information. (Pilat & Krastev, n.d.)*

> psychological

/ STATES are temporal configurations or norms within the project’s timeframe.

e.g. *“Freedom in Europe is largely defined by the ability to live without interference, decoupled from institutional, religious, or governmental control. (Mill, 1859)”*

> socio-cultural

/ DEVELOPMENTS are structural or policy-driven shifts that evolve gradually.

e.g. *“European cities commit to reduce GHG emissions by 90% by 2040 (European Commission, 2023)”*

> political

/ TRENDS are emergent behaviours, attitudes, or social signals.

e.g. *“Residents increasingly value neighborhood-level ties due to rising mental health concerns and the need for daily social interaction. (Komonen & Jacobson, 2023)”*

> socio-cultural

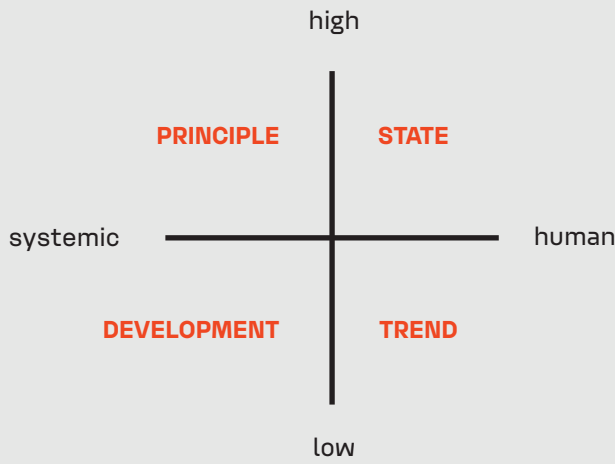


Figure 31: Axes for context factors and typologies

6.2 Qualitative collection

Context factors were derived through literature research and expert interviews. This process was iterative: expert interview insights prompted new literature inquiries, and factors identified in the literature shaped the framing of interview subjects.

To ensure a comprehensive understanding in line with the method’s intent, 12 semi-structured expert interviews were conducted with experts both inside and outside the Renault Group context.

These experts represented a broad cross-section of disciplines relevant to the future of our domain, including urban mobility, governance, futurology, legislation, behavioural science, biomimicry and urban experience. A list of interviewees’ expertise and interview subjects can be found in Appendix B.

Many conversations revealed surprising themes, contradictions, or early signals that prompted further research and triangulation through literature and data sources. In several cases, expert perspectives helped make hidden connections between seemingly unrelated developments, allowing for richer and more layered factor synthesis.

6.3 Collection of 199 context factors

In the end, 199 unique context factors were generated, supported by one source each. To give an overview of the distribution of factors over the fields, a field-typology matrix is shown at the bottom.

199 UNIQUE CONTEXT FACTORS

	Psychological	Biological	Evolutionary	Socio-cultural	Demographic	Technological	Political	Economic	Ecological
Principle	17	4	9	4	-	1	-	-	3
State	4	1	-	8	11	-	1	1	2
Development	7	1	-	12	19	19	9	9	11
Trend	20	-	-	18	2	4	-	-	1

Figure 32: Overview of distribution of context factors across nine research fields (<>) and four typologies



# 07 A PROBABLE FUTURE

This chapter synthesises the 199 context factors into twelve emerging conditions and maps them onto a two-dimensional framework. The resulting twelve ‘future states of mind’ describe how Grand Paris residents may relate to mobility by 2040.

## 7.1 Twelve emerging conditions in MGP

While the factor collection forms the analytical base, it does not yet constitute a cohesive context. To become meaningful for design, factors must be clustered into emerging conditions: probable narratives that describe how people may live, move, and interact in the future context of our domain (Hekkert & van Dijk, 2011).

Emerging conditions represent underlying patterns within the initial set of factors: coherent logics, contradictions, and latent cultural shifts. They reflect the forces that shape thought, behaviour and identity within our defined domain.

## “(sub)urban mobility ecosystems in Métropole du Grand Paris by 2040”

If each factor is a page, each emerging condition can be seen as a chapter in this unfolding future. Some reinforce one another; others stand in stark contrast. All are grounded in factors and stretch those inputs into a more interpretable space.

In Appendix D all emerging conditions are listed, while Appendix A shows which factors belong to which emerging condition.

## OVERVIEW EMERGING CONDITIONS



### HUMANITY IN AN AUGMENTED WORLD

By 2040, as AI deeply embeds into daily life, human agency hinges on whether we master these tools or become mastered by them.



### PARIS REACHING SINGULARITY

By 2040, Paris condenses life into a hyper-efficient urban core, trading freedom of movement for optimised, constrained flows.



### SPIRAL OF SIMPLIFICATION

By 2040, overwhelmed by complexity, people embrace binary thinking and populist promises that offer clarity but erode resilience.



### A NEW CULTURAL ORDER IN EUROPE

By 2040, migration and spiritual exchange reshape Europe’s identity, blending Western ideals with rising Eastern influence.



### PRECIOUS ENERGIES

By 2040, energy will become volatile and decentralised, and individuals will shift from passive consumers to active managers, navigating scarcity with strategy and care.



### MULTI-DIMENSIONAL MOBILITIES

By 2040, mobility will evolve into a tool for equity and identity, demanding cities prioritise inclusion over mere efficiency



### EVERYWHERE VS SOMEWHERE

By 2040, a digital divide redefines mobility and privilege, as the ability to control time becomes the new axis of inequality.



### TRANSCENSION OF FREEDOM

By 2040, freedom is reimagined beyond consumption, as ecological limits demand collective responsibility over individual autonomy.



### DECONSTRUCTED WAYS OF LIVING

By 2040, traditional life paths dissolve into fluid, shared lifestyles that emphasise autonomy and adaptability over permanence and convention.



### SELF-SUSTAINING MICRO-REALITIES

By 2040, society fragments into ideologically isolated, self-sufficient communities where truth is subjective and influence is digital.



### UBIQUITY OF COMPACT CITIES

By 2040, cities will become denser and more sustainable, but the shift to shared space deepens inequality as the wealthy cling to spatial dominance.



### UNLOCKING NATURAL INTELLIGENCE

By 2040, urban resilience is redefined by nature-inspired systems and ancestral wisdom, fostering regenerative cities attuned to ecological balance.



Figure 33: Process clustering independent factors into condition

7.2 Relations between conditions and dimensions

The final step in creating a coherent future context is to synthesise the emerging conditions into a structured framework. While each emerging condition offers a distinct lens on societal change, they are not separated chapters. They interweave into a shared narrative of how people's relation to mobility may evolve in the Grand Paris region.

Once more, this step translates complexity into coherence, finding unity in variety. It defines the overarching dimensions at play: deeper patterns that reveal how the different emerging conditions are connected and relevant to our domain.

Through trial-and-error, two intersecting dimensions were defined on which all emerging conditions can be plotted. This being:

HUMAN DRIVERS OF MOBILITY DECISIONS

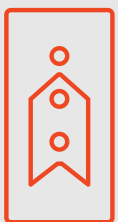
INDIVIDUAL PERCEPTION OF FREEDOM

On the right, each dimension is described in terms of its underlying meaning, the distinct levels it comprises, and its relation to the emerging conditions.

HUMAN DRIVERS OF MOBILITY DECISIONS

powered by HUMANITY IN AN AUGMENTED WORLD

This dimension investigates what fundamentally drives human decision-making in mobility in Grand Paris 2040. As people interact with a shifting technological landscape, their movement decisions are no longer solely shaped by infrastructure or economic necessity but increasingly by deeper psychological and emotional states.



SOCIAL

(powered by MULTI-DIMENSIONAL MOBILITIES & EVERYWHERE VS SOMEWHERE)

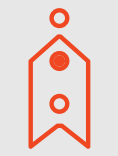
This driver reflects mobility as a form of social positioning. People move to signal identity, access community, or express visibility. It is relational, shaped by group norms and social feedback loops. Inequalities in access are amplified through new mobility hierarchies.



RATIONAL

(powered by PRECIOUS ENERGIES)

This driver reflects mobility as measured, strategic planning, driven by volatility and scarcity of resources. Movement becomes a controlled trade-off: how fast, how light, how sustainable. Decisions are based on data, awareness of energy use, and optimisation.



EMOTIONAL

(powered by A NEW CULTURAL ORDER IN EUROPE)

This driver reflects mobility as a ritual of return to memory, home, or the familiar. It is shaped by nostalgia, emotional grounding, and identity. With rising spiritual and cultural pluralism, decisions prioritise belonging and mood over performance or convenience.



PRIMAL

(powered by PARIS REACHING SINGULARITY & SPIRAL OF SIMPLIFICATION)

This driver reflects instinctive behaviours under stress. In overstimulated urban environments, people simplify decisions into binaries: safe/unsafe, here/there. Movement becomes habitual

INDIVIDUAL PERCEPTION OF FREEDOM

powered by TRANSCENSION OF FREEDOM

This dimension reflects how individuals perceive and pursue their relation to freedom in movement. As traditional values like autonomy and growth are redefined by climate and collective interdependence, the perception of freedom itself becomes contested and reframed.



I x ME (ego-centric)

(powered by DECONSTRUCTED WAYS OF LIVING)

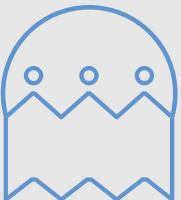
This perception identifies freedom as personalised and detached from broader systems. As stable life scripts dissolve, people design fragmented paths based on autonomy, expression, and experimentation. Herein, movement becomes self-authored.



I x WE (ethno-centric)

(powered by SELF-SUSTAINING MICRO-REALITIES & UBIQUITY OF COMPACT CITIES)

This perception identifies freedom as collectively held and culturally defined. Individuals find agency within shared values and rituals. Movement is shaped by what the group deems accessible, appropriate, or ethical, deepening belonging but limiting cross-boundary exchange.



I x ALL (world-centric)

(powered by UNLOCKING NATURAL INTELLIGENCE)

This perception identifies freedom as stewardship and responsibility. As planetary boundaries tighten, autonomy is no longer infinite. Herein, movement becomes a contribution, not consumption — an act shaped by interdependence, not individual entitlement.

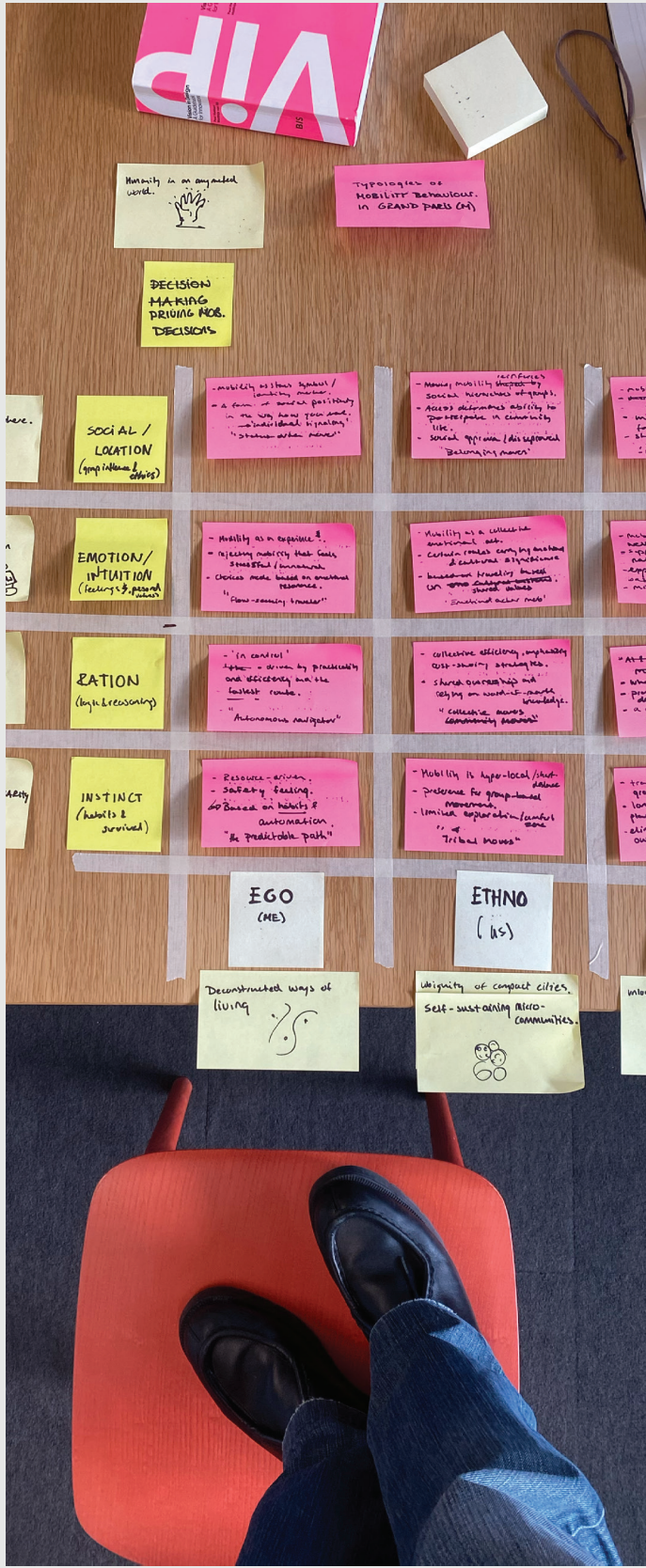


Figure 34: Process of setting up dimensions



7.3 Framework: Twelve future states of mind

Now that two dimensions are defined, a 12-cell framework can be constructed that describes the probable future of our domain.

Herein, each cell in this matrix represents a ‘driving state of mind’ — a distinctive mental position and behavioural stance from which people in the Metropole du Grand Paris make mobility decisions in 2040. Some of these may already exist today; others reflect new positions that emerge from ongoing societal transitions. However, this set of 12 states is unique.

Together, they sketch out a probable future of our domain — not one scenario, but a spectrum of coexisting worldviews shaped by shifting constraints, values, and desires.

It is important to note that these twelve states do not correspond to a rigid target group or fixed demographic. Instead, they represent latent motivations and mindsets that can be found across diverse populations. A single individual may shift between different states depending on their emotional state, cultural context, or situational demands.

On the right, an overview of the framework is shown. On the following pages each state is further described.

A FUTURE FRAMEWORK THAT DESCRIBES TWELVE DRIVING STATES OF MIND IN MOBILITY BEHAVIOUR IN METROPOLE DU GRAND PARIS BY 2040

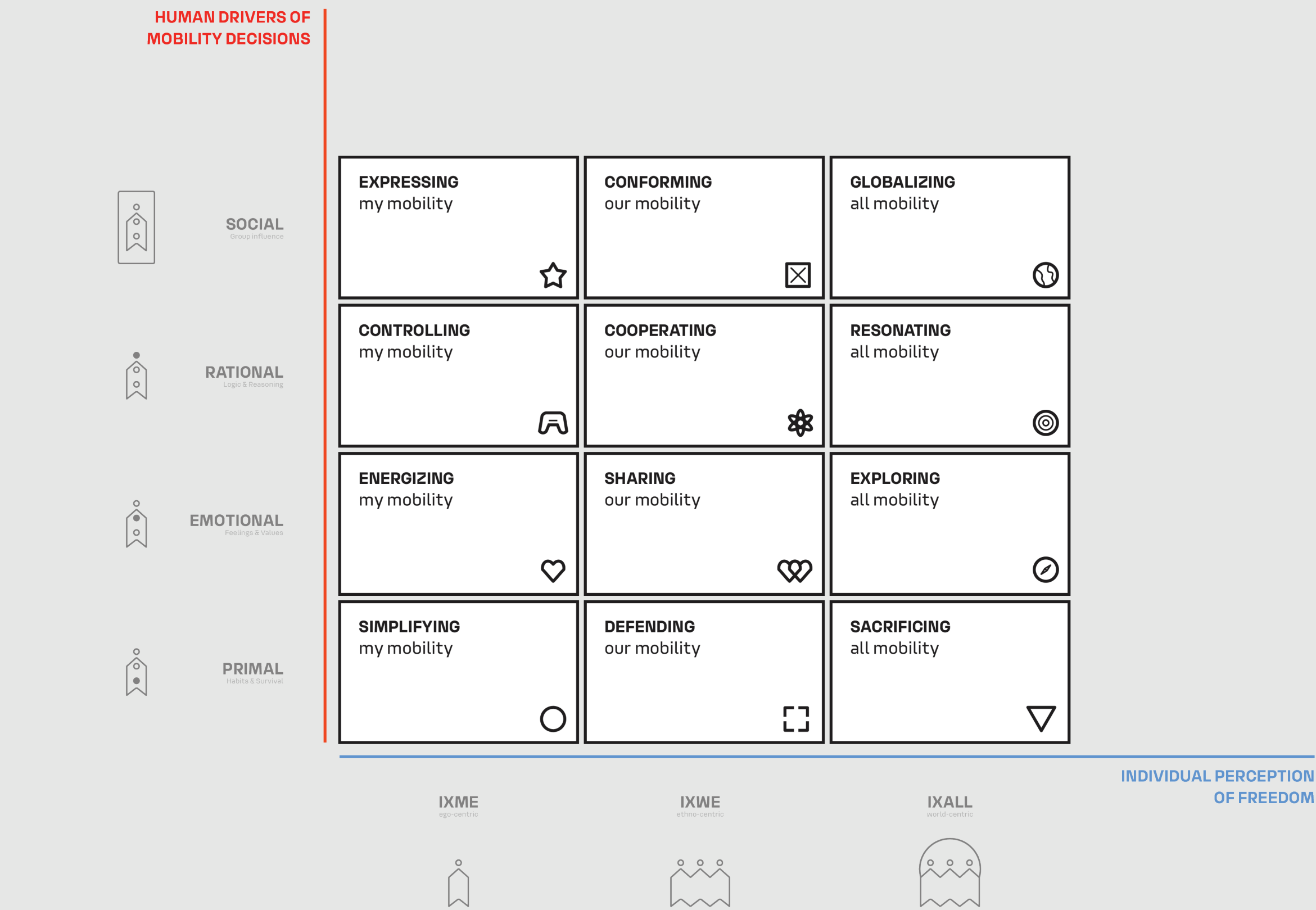
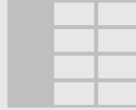


Figure 35: Framework twelve ‘states of mind’ in mobility behaviour in MGP by 2040



### EXPRESSING my mobility



Driven by: personal identity and social status

In this state, people use their travel choices to reflect their identity. They might choose sustainable options, stylish vehicles, or new tech, depending on how they want to be seen. Every choice is part of their personal story — how they move becomes part of how they express themselves.

*“I choose mobility that reflects **my individuality** and **social status**, customising every detail to showcase my identity and values within the socially conscious.”*

### CONTROLLING my mobility



Driven by: autonomy and resource efficiency

In this state, people want to feel fully in charge of their movements. They plan, compare options, and use data to make smart choices. Every trip is carefully thought through, aimed at saving time and avoiding waste. Control means freedom, not depending on others and staying on top of things.

*“I make **intentional, calculated mobility choices**, staying in control of every movement to align with my goals and manage my time, energy, and resources efficiently.”*

### ENERGIZING my mobility



Driven by: personal well-being and comfort

In this state, people use mobility to recharge. They avoid crowded or stressful situations and choose modes that help them feel better, like walking, biking, or calm individual rides. Travel becomes part of their self-care, helping them relax and feel more balanced.

*“I choose mobility that **resonates emotionally**, prioritising modes that energise, relax, and reduce stress, ensuring they enhance my well-being.”*

### SIMPLIFYING my mobility



Driven by: personal safety and biological survival

In this state, people feel overwhelmed by the noise and speed of the city. To stay calm, they choose simple and familiar routes. They rely on digital tools like navigation apps or AI assistants to avoid surprises. Their focus is on predictability and routine, not exploring.

*“I rely on **familiar routes and predictive technologies** to avoid the cognitive overload of urban complexity, maintaining my daily routines and safe zones.”*



### CONFORMING our mobility



Driven by: tribal belonging and shared values

In this state, people travel in ways that reflect their group’s values. They choose transport options that support their culture, beliefs, or lifestyle. The goal is not just to get somewhere, but to conform with others who think and act the same. Travel becomes a statement of which group they belong to.

*“I choose mobility means that **aligns with my group’s ethics and beliefs**, strengthening my **connection and belonging** within their shared values.”*

### COOPERATING our mobility



Driven by: tribal efficienct and interdependence

In this state, people coordinate their movements with their group to save time, money, and energy. They share vehicles, plan routes together, or use community-managed systems. The aim is to reduce waste and help each other. Travel decisions are made for the benefit of the group you belong to.

*“I embrace shared mobility and **group decision-making, prioritising cooperation and resource efficiency** over individual autonomy.”*

### SHARING our mobility



Driven by: tribal experiences and social bonding

In this state, mobility is something people do together. They travel with friends, family, or others in their community, turning each trip into a shared experience. Whether commuting, carpooling, or just walking together, mobility becomes a way to connect, create memories, and feel close to others.

*“I prioritise mobility that fosters **connection and togetherness**, travelling with my community to create shared memories and **reinforce existing emotional bonds**.”*

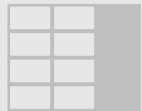
### DEFENDING our mobility



Driven by: tribal protection and territory

In this state, people travel mainly within their community. They stick to familiar neighbourhoods where they feel a strong cultural or social connection. Travel is less about exploration and more about protecting their shared spaces. Any unfamiliar entrant or different environment is seen as a possible risk to their way of life.

*“I move where **my group’s identity and culture prevail**, protecting these shared spaces through social cohesion to **guard against external threats**.”*



# GLOBALING all mobility



Driven by: Collective belonging and accessibility

In this state, people feel overwhelmed by the scale of modern cities and constant digital stimulation. They move through dense, noisy environments and endless information flows, searching for meaning and connection. Mobility feels both limitless and ungrounded — a way to go anywhere, but not always with a sense of purpose or home.

*“I navigate **a fast, connected world**, searching for **grounding and clarity** as I move through complex environments.”*

# RESONATING all mobility



Driven by: Collective connection and effectiveness

In this state, people want to travel better, not just for themselves or their group, but for the sake of everyone. They feel that moving together, through shared, aligned systems, could make mobility smoother, more meaningful and effective. They often feel disconnected from others on the same path, like they’re all travelling alone together.

*“I want to **move effectively in sync with others**, to **feel connected and aligned** as we travel through the same space and time.”*

# EXPLORING all mobility



Driven by: Collective exploration and endless

In this state, people use mobility to learn and grow. They explore new places, cultures, and communities, trying to understand the world more deeply. But despite their curiosity, they sometimes feel like they’re only scratching the surface, feeling like a passive observer as they visit places without truly connecting to them.

*“I **explore new places to grow and connect**, but I **want deeper, reciprocal experiences** that go beyond the surface.”*

# SACRIFICING all mobility



Driven by: Existential concerns and generalisation of choice

In this state, people feel the need to reduce their travel as much as possible to protect the planet. They limit how often, how far, and by what means they move. Each journey is carefully considered, and sometimes even avoided. While they care deeply about doing the right thing, they often feel stuck, trying to balance their values with the practical need to get around.

*“I **reduce my mobility to lower my impact**, even when that means **accepting limits and discomfort in my daily life**.”*



# C / EXPLORATION

This phase translates the previously defined future framework into a visionary design direction. Drawing from the twelve future states of mind, a structured evaluation was conducted to assess their strategic relevance for Mobilize. Based on brand alignment, societal value, and innovation potential, the project narrowed its focus to the third column of the framework—I x ALL—which reflects world-centric modes of mobility behaviour.

Four vision statements were developed, each articulating a desired experiential effect for one of the selected states: Sacrificing, Exploring, Resonating, and Globalizing. These vision statements serve as future-facing intentions that Mobilize could embody, grounded in the psychological, ecological, and societal conditions of Grand Paris 2040.

To make these visions actionable, an interaction analogy was introduced—particularly for the ‘Resonating’ state—which became the primary focus moving forward. This analogy, “surfing the wave,” expresses the ambition to align individual movements with collective urban rhythms. From this, a set of qualitative characteristics was derived to guide the design direction, defining how the envisioned experience should feel and function.

Together, these elements form the base of the concept brief—a clear articulation of the vision, metaphor, and experiential qualities that will guide concept development in the next phase, D / Illustration.

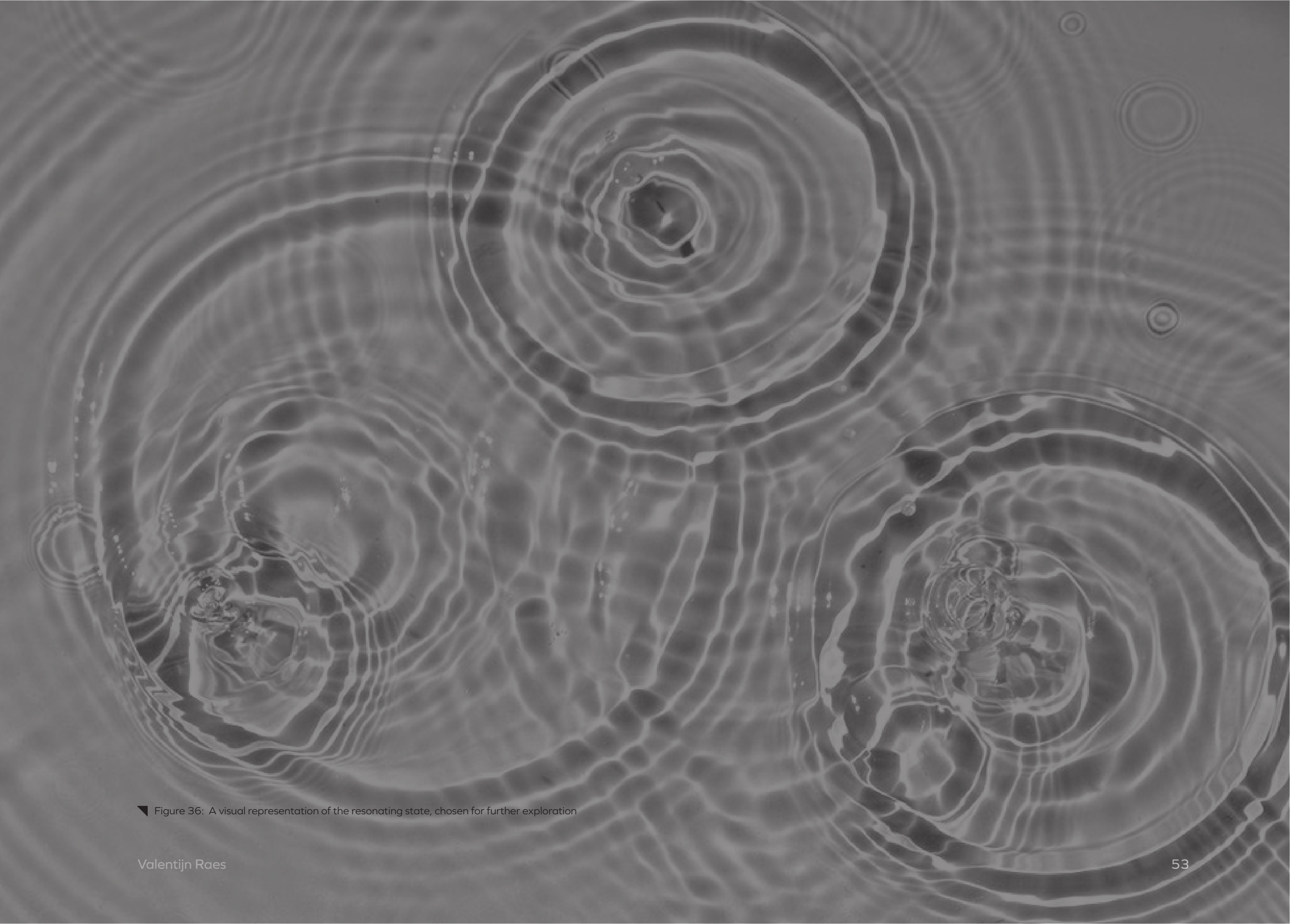


Figure 36: A visual representation of the resonating state, chosen for further exploration

08 A DESIRED FUTURE

8.1 Vision statements

The framework outlined in previous chapters outlines a probable future; the next step involves articulating a response to this future, in line with the values of Mobilize.

For this, a structured working session was conducted to evaluate the twelve previously defined states of mind. Each state was assessed based on its relevance to both the current and aspirational role of Mobilize.

The outcomes of this session were formalised into twelve vision statements. These statements do not prescribe the form or function of the solution; instead, they establish a future positioning and experience ambition — a ‘why’ to be enabled through design (Hekkert & van Dijk, 2011).

e.g. For EXPRESSING my mobility:

“Mobilize, and I want individuals to express their identity through mobility, shaping public space in a way that aligns with social responsibility and ecological consciousness.”

For an overview of all the vision statements, see Appendix D.



Figure 37: Working session held to evaluate framework

8.2 Focus on the world-centric column

Although all states are relevant and merit further exploration, the constraints of time and resources in this project require a focused deep dive into a selected subset. Through discussions with the project supervisors, the third column of the framework—I x ALL—was chosen as the primary focus for design exploration. This decision is grounded in three key criteria: societal value, Mobilize’s competencies, and innovation potential.

I x ME

Mobilize can deliver future value to the first column (I x ME), which aligns with its established strengths. These states centre on individual needs and could be addressed effectively using the existing technological and operational expertise within Mobilize and the wider Renault Group.

I x WE

Mobilize could also deliver future value to the second column (I x WE), which reflects its current trajectory toward shared and platform-based mobility services. Ongoing initiatives like Bipi, Zity, and Glide.io demonstrate Mobilize’s growing interest in collective solutions, although these models are still evolving in terms of profitability and scalability.

I x ALL

Mobilize should deliver future value to the third column (I x ALL)—the chosen focus of this project. This direction not only complements and extends Mobilize’s existing competencies but also aligns with broader systemic goals, such as climate neutrality, regional equity, and long-term resilience. The I x ALL states invite Mobilize to play a more meaningful role in addressing planetary and societal challenges, offering both strategic differentiation and the opportunity to define a bold new positioning in the urban mobility ecosystem.

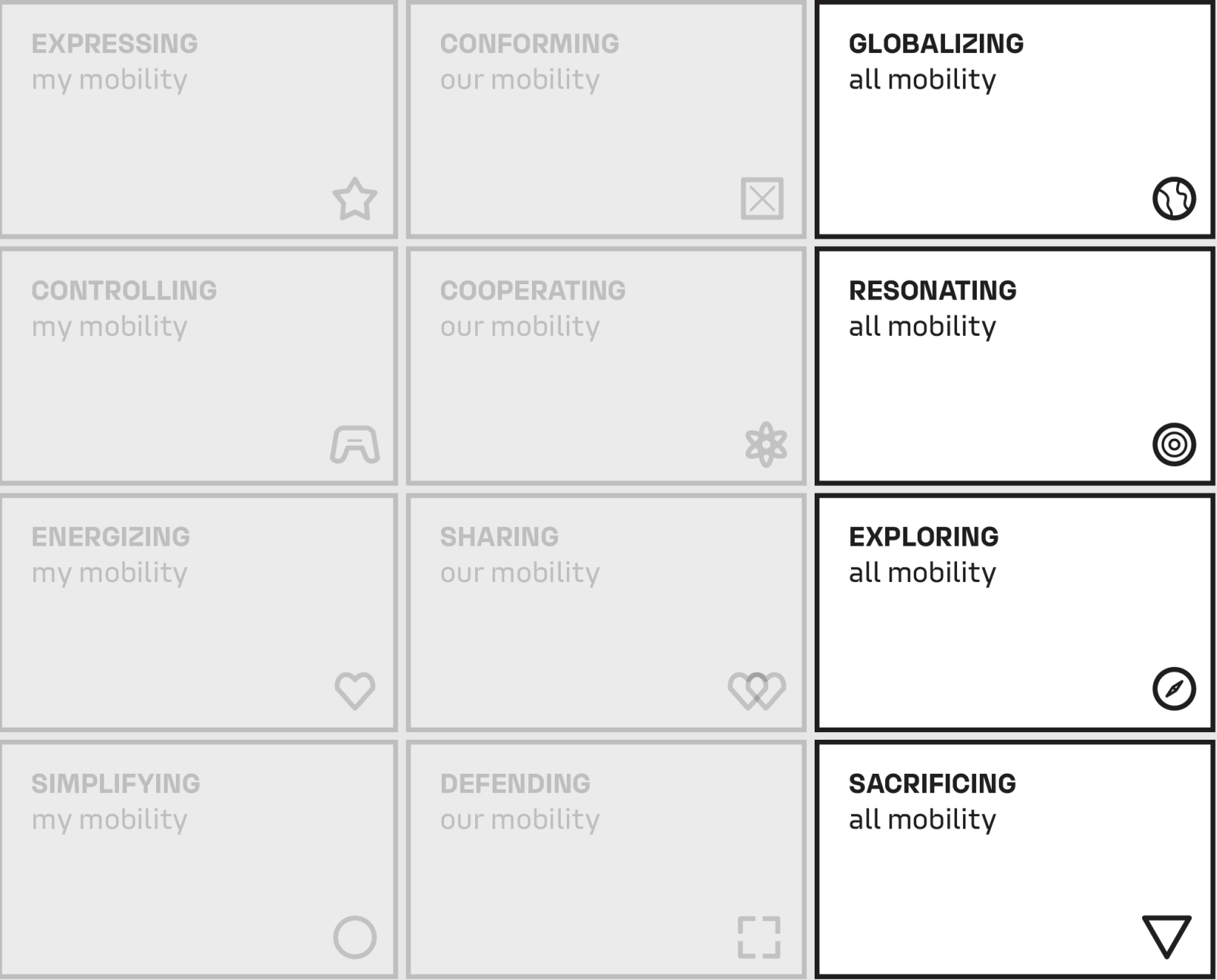


Figure 38: Strategic focus on I x ALL column for further exploration



### 8.3 Four statements

The vision statements for these four states are highlighted, including imaging that resonates with the intended experience.

#### SACRIFICING all mobility

By 2040, the Grand Paris region will offer a wide range of sustainable travel options. However, the abundance of multimodal choices, combined with urban density and strict emission targets, contributes to cognitive overload, stress, and decision fatigue. Rather than empowering users, mobility becomes a constraint that complicates everyday life.

In the domain of varying (sub)urban mobility ecosystems in Grand Paris by 2040,

**Mobilize and I want people to embrace collective mobility constraints as opportunities for mastery, minimalism, and meaningful movement — crafting each journey with intention.**



Figure 39: A visual representation of Mobilize's response to the sacrificing state

#### EXPLORING all mobility

By 2040, urban exploration in Métropole de Grand Paris is at a crossroads. Diverse neighbourhoods offer rich cultural narratives that people want to explore, yet it's mobility often reduces exploration to a passive, one-way transaction. They are missing opportunities for authentic human connection and engagement with the local contexts they are travelling through.

In the domain of (sub)urban mobility ecosystems in Grand Paris by 2040,

**Mobilize and I want people to reimagine everyday spaces, making exploration a reciprocal act of participation, and creating a collective spirit across the Métropole du Grand Paris.**



Figure 40: A visual representation of Mobilize's response to the exploring state



## RESONATING all mobility



By 2040, urban travellers in the Métropole du Grand Paris will struggle with isolated, inefficient journeys that fragment and misalign their energy use and experience of the city. These disconnected travel patterns lead to wasted time, increased costs, congestion, and energy inefficiency, leaving citizens out of sync with the collective urban flow.

In the domain of varying (sub)urban mobility ecosystems in Grand Paris by 2040,

**Mobilize and I want people to become aware of and align their movements with energising collective rhythms — managing their resources more effectively in sync with others.**

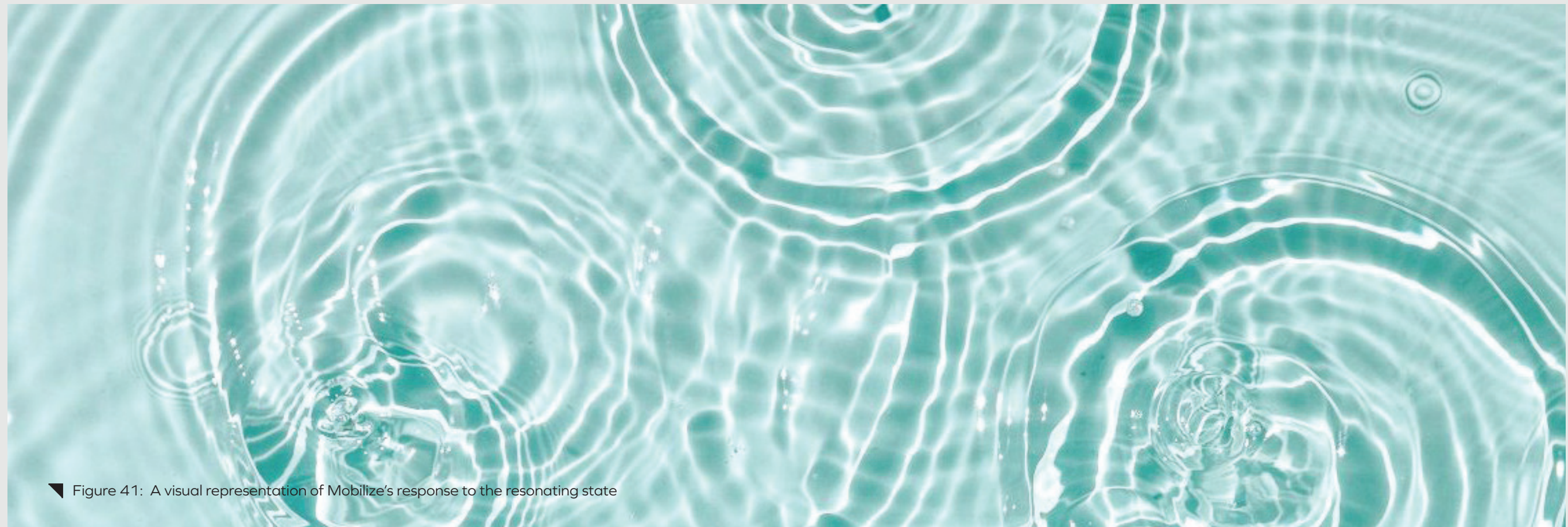


Figure 41: A visual representation of Mobilize's response to the resonating state

## GLOBALIZING all mobility



By 2040, urban travellers are confined by the density of the metropolis and constant digital distractions. This visual confinement and constant urban activity leave individuals feeling detached, isolated, and uncertain about their place within the larger metropolitan fabric. There is an urgent need for transformative experiences that break these confines, offering clarity, perspective, and a deep, authentic connection to the broader metropolitan landscape.

In the domain of (sub)urban mobility ecosystems in Grand Paris by 2040,

**Mobilize, and I want people to recalibrate their perspective through the beauty of reality, grounding their greater sense of belonging and reconnecting with what they are part of.**



Figure 42: A visual representation of Mobilize's response to the globalizing state



### 8.3 Four conceptual paths

To given an early idea of the translation of the vision statements into fuel for ideation, four conceptual paths were developed—each corresponding to one of the four vision statements in focus. These exploratory directions were presented to the supervisory team, providing a substantiated foundation for further decision-making in the project.

#### SACRIFICING 'MASTERING THE CRAFT'

Inspired by the structure of a Japanese bento box, this concept curates a daily or weekly mobility budget—an intentional set of mode and route combinations to manage, customize, or share. Through a minimalist interface, users unlock, donate, or stack trips, progressing through sustainable use. Constrained mobility becomes a collective ritual, responsible, and refined.

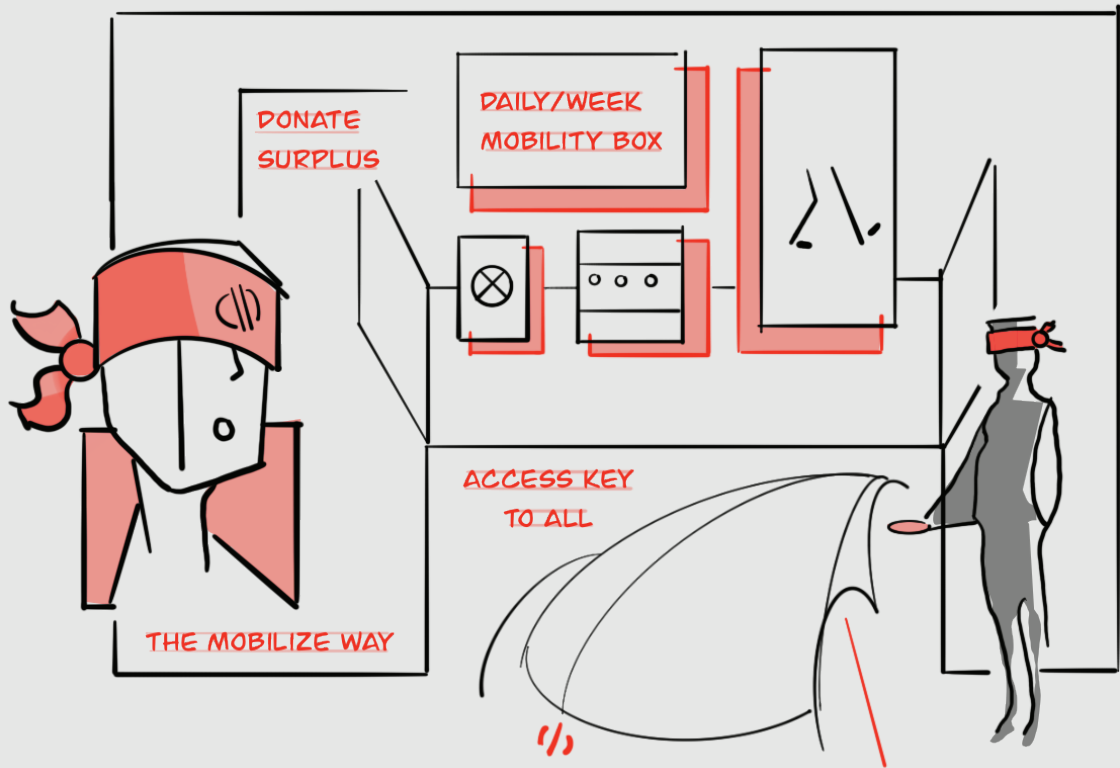


Figure 43: A sketched overview of 'mastering the craft' path

#### EXPLORING 'DANCING TO THE RHYTHM'

An ambient exploration service that transforms travel into participatory urban drifting—guided by themes, rhythms, and local exchange. Users set intentions, not destinations, navigating through dynamic hikes, sensory cues, and responsive markers. Movement becomes a co-created narrative, reconnecting citizens with the layered identity of Grand Paris.

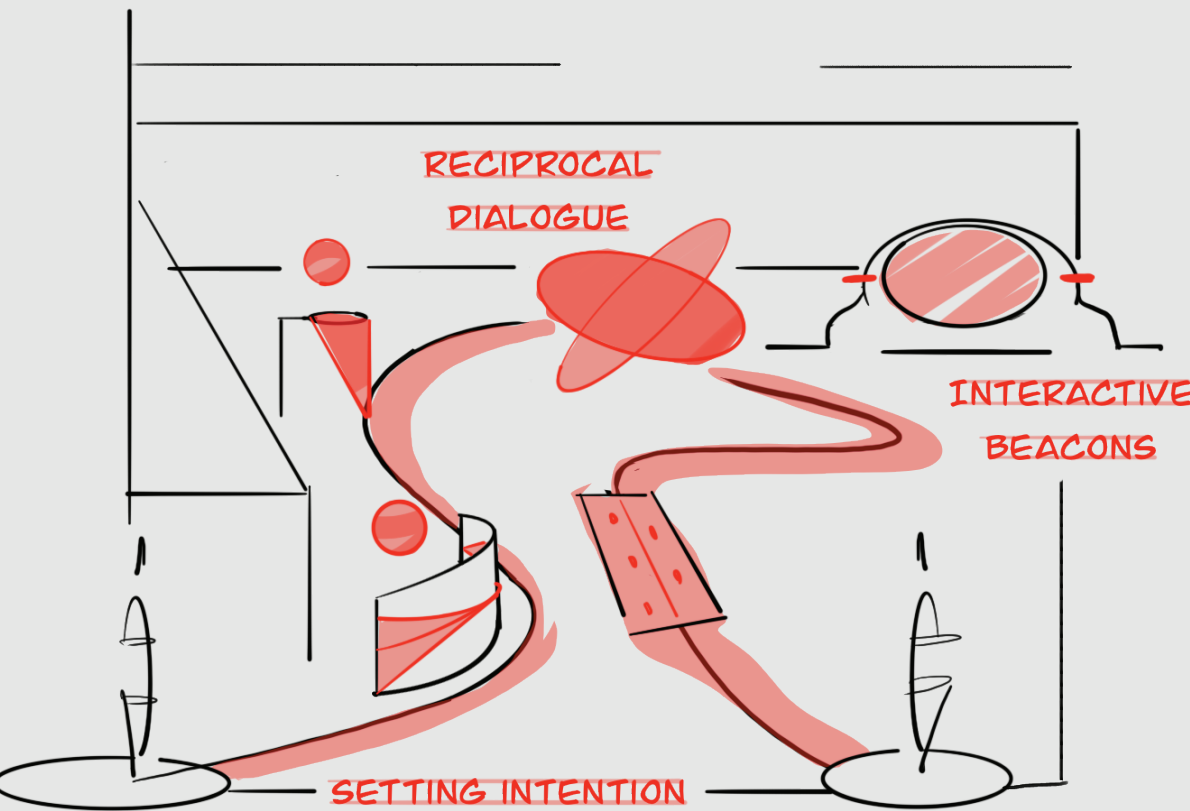


Figure 44: A sketched overview of 'dancing to the rhythm' path

#### RESONATING 'SURFING THE WAVE'

A mobility orchestration system that synchronizes micro-travelers into dynamic waves. Through collective thresholds, sync points, and public moves, individual trips align into rhythmic flows across Grand Paris. Movement becomes a shared resource—coordinated, efficient, and socially resonant.

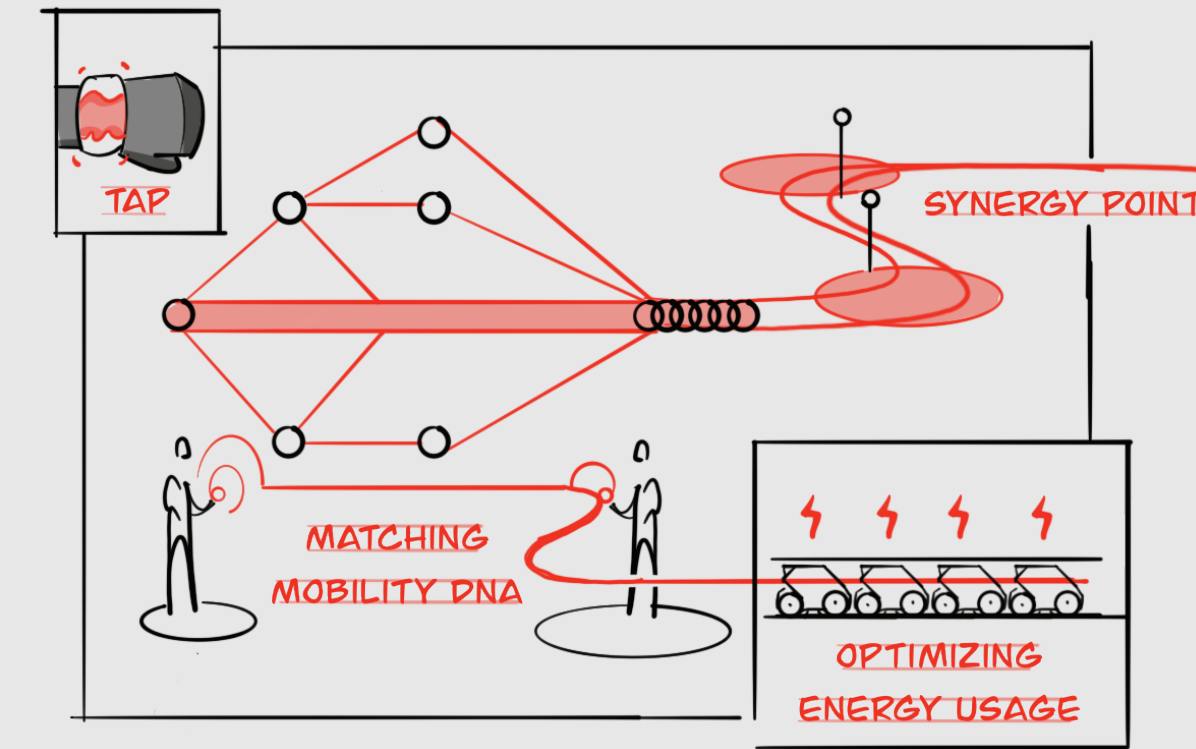


Figure 45: A sketched overview of 'surfing the wave' path

#### GLOBALIZING 'CALIBRATING MINDS AND BODIES'

A restorative mobility layer offering moments of pause within the urban rush. Located in high-traffic nodes, adaptive reflection booths respond to stress signals—inviting users to recalibrate through multi-sensory immersion. Travel becomes grounding, transforming transit into reconnection with place and presence.

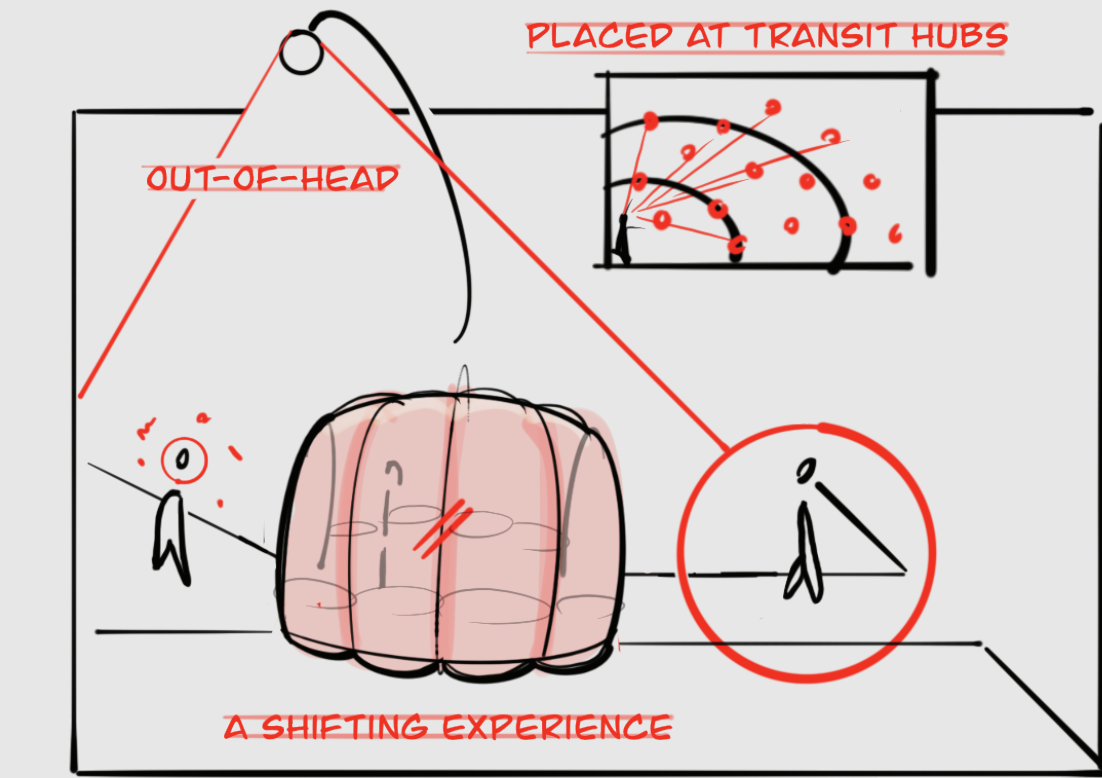


Figure 46: A sketched overview of 'calibrating minds and bodies' path

# 09 THE RESONATING STATE

This chapter selects the 'Resonating' state for concept development, defining user needs, design analogy, and qualitative characteristics. It frames mobility as rhythmic alignment within shared systems, forming the experiential foundation for the next phase D / Illustration.

## 9.1 Focus on resonating state

From discussions with the project supervisors, it became clear that the resonating state and its conceptual path received strong support for further exploration. The following sections detail the specific needs, interaction analogy and derived qualitative characteristics associated with this state.

The resonating state stood out for its ecosystem perspective, which aligns closely with Mobilize's ambition to address mobility as a systemic, interconnected challenge. It also sparked the most curiosity and was seen as holding the greatest potential to translate Mobilize's values of boldness, optimism and collectiveness into a tangible design direction. As such, it offered a compelling starting point for developing a concept that embodies both ambition and feasibility.

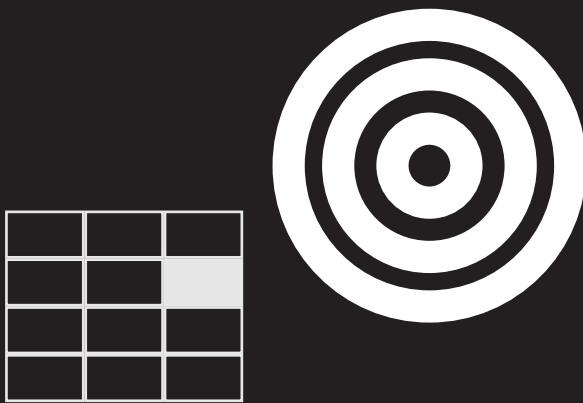


Figure 47: The position of the resonating state in framework

## RESONATING NEEDS

The resonating state reflects a future in which movement is not only about speed, but more about shared rhythm. To enable this, we identify three fundamental mobility needs of users in this state, each derived from the emerging conditions related to the state and defined in Chapter 07.



### RESPONSIBLE AUTONOMY WITHIN A SHARED SYSTEM < (Transcension of freedom)

These users seek a sense of empowered timing, rather than unlimited choice. The ability to say yes or no based on what the moment demands. Their autonomy is no longer measured by constant control, but by the ability to move responsibly within a system of mutual influence.



### CONFIDENT NAVIGATION IN DYNAMIC URBAN FLOWS < (Humanity in an Augmented world)

These users seek less friction and more flow—to move when it makes sense, with confidence and clarity. The goal is not total control, but a light sense of readiness: knowing what's happening, without needing to track every signal.



### ENERGY-CONSCIOUS AND RHYTHM-BASED MOBILITY < (Precious energies)

These users seek ways to move that are sustainable, shared, and intelligently paced, rather than reactive or extractive. As people are becoming more intentional with energy, both their own and society's, they want to move in rhythm, increasing effectiveness.

## 9.2 Beyond the Grand Paris 2040 ambitions

While the instrumental mobility ambitions of Grand Paris 2040 (Chapter 03) provide a strong foundation, a comparison with these user needs reveals important gaps. This underscores the potential added value that Mobilize could bring to the future mobility landscape of the region.



### EXPAND PUBLIC TRANSIT

#### MEETS ACCESSIBILITY, BUT LACKS PARTICIPATORY AGENCY

The expansion of transit infrastructure (e.g., Grand Paris Express) ensures physical access, yet it positions citizens as passengers within a system, not as active participants in its rhythms. It is demand-driven and prescribes how to move, but does not empower people to make situational decisions in sync with collective needs.



### PROMOTE SOFT MOBILITY

#### MEETS INFRASTRUCTURE DENSITY, BUT LACKS COGNITIVE ATTUNEMENT

While investments in cycling corridors and expanded metro lines support seamless movement on paper, they overlook the psychological readiness of navigating layered urban systems. The experience risks being cognitively taxing, particularly in dense or overstimulating settings.



### DECARBONISE ROAD TRANSPORT

#### MEETS ENVIRONMENTAL GOALS, BUT LACKS HUMAN RHYTHM

The ZFE policies and soft mobility campaigns prioritise low-emission travel, but often do so through restrictions. Without attention to pacing and human-scaled timing, these systems may create stress, fatigue, or disengagement, especially when movement feels rushed or out of sync.





Figure 48: Visual representation of 'surfing the wave' analogy

### 9.3 Surfing the wave

As stated, the vision statement previously defined for the resonating state articulates the intended experience ambition:

**Mobilize and I want people to become aware of and align their movements with energising collective rhythms — managing their resources more effectively in sync with others.**

However, it does not yet address 'how' these outcomes can be realised through design. To bridge this gap, an interaction analogy was chosen that corresponds to the intended effect of the vision statement on its users. In doing so, it helps to define the relational qualities between user and product that are necessary to evoke the intended effect (Hekkert & van Dijk, 2011).

For this vision statement, the 'surfing the wave' analogy was used.

### SURFING THE WAVE ANALOGY

*"The patient surfer floats in the water, calm, yet alert, awaiting the perfect wave. Around them, unfamiliar faces share in a quiet anticipation, collectively attuned to the ocean's elemental rhythm. Time moves with the tide, yet the surfer remains fully present, trusting that the right moment will come.*

*Then, on the horizon, it appears. The surfer adjusts their position, sensing the ocean's energy building beneath the board. With practised timing, they commit — catching the wave and riding it smoothly toward the shore. In that moment, everything else fades: the waiting, the crowd, the vastness of the sea. The effort was justified; the perfect wave always is"*

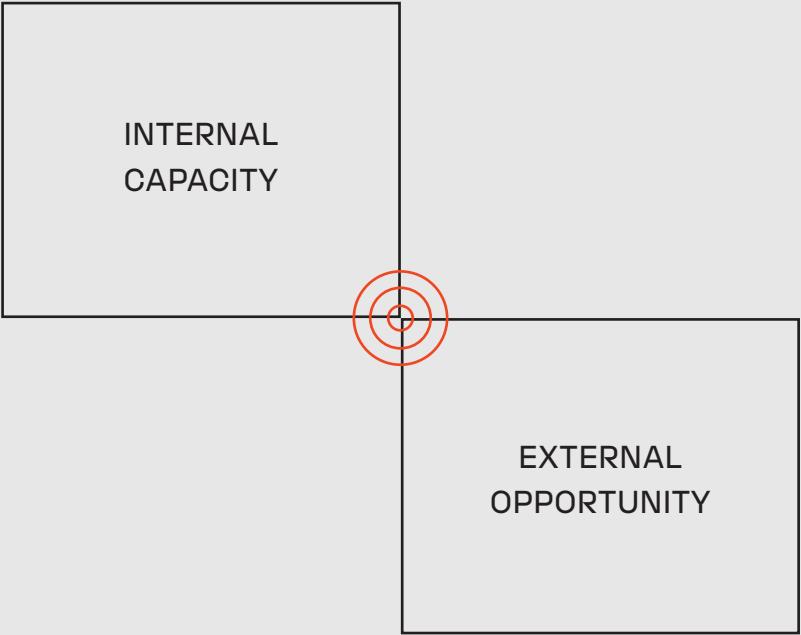


Figure 49: The definition of resonance derived from the analogy

This analogy illustrates 'how' the experiential effect of resonance — acting in synchrony with larger forces — is made possible through the surfer's abilities: a combination of sensitivity, situational awareness, and practised judgment.

The means in this analogy is not only the wave itself, but the surfer's embodied knowledge and readiness to align with external rhythms.

**/ THIS MOMENT OF RESONANCE EMERGES FROM THE INTERPLAY BETWEEN INTERNAL CAPACITY AND EXTERNAL OPPORTUNITY**



#### 9.4 Derived qualitative characteristics

The previously defined analogy served as a conceptual springboard to derive the qualitative characteristics of the envisioned product experience (Hekkert & van Dijk, 2011).

Drawing from the elements embedded in the 'surfing the wave' analogy, five key qualitative characteristics were identified to guide the subsequent conceptualisation process and ensure alignment with the intended experiential effect.

### FIVE QUALITATIVE CHARACTERISTICS



#### TRANSPARANCY

The product helps users become aware of their own role in the mobility ecosystem and their ability to move by showing how they are part of a larger wave of collective movement.



#### TAILORING

The product adapts to personal mobility rhythms and human-sized mobility habits, offering thoughtful suggestions, making it worth the wait.



#### INTUITIVE

The product feels minimal and natural. It encourages action without overwhelming — decisions are easy, light, and empowering.



#### COLLECTIVENESS

The product connects users to collective urban rhythms, making movement feel communal. It supports democratic agreements and collective well-being over personal efficiency.



#### ACTIVATING

The product incentivises and inspires users to shift from passive observation to active



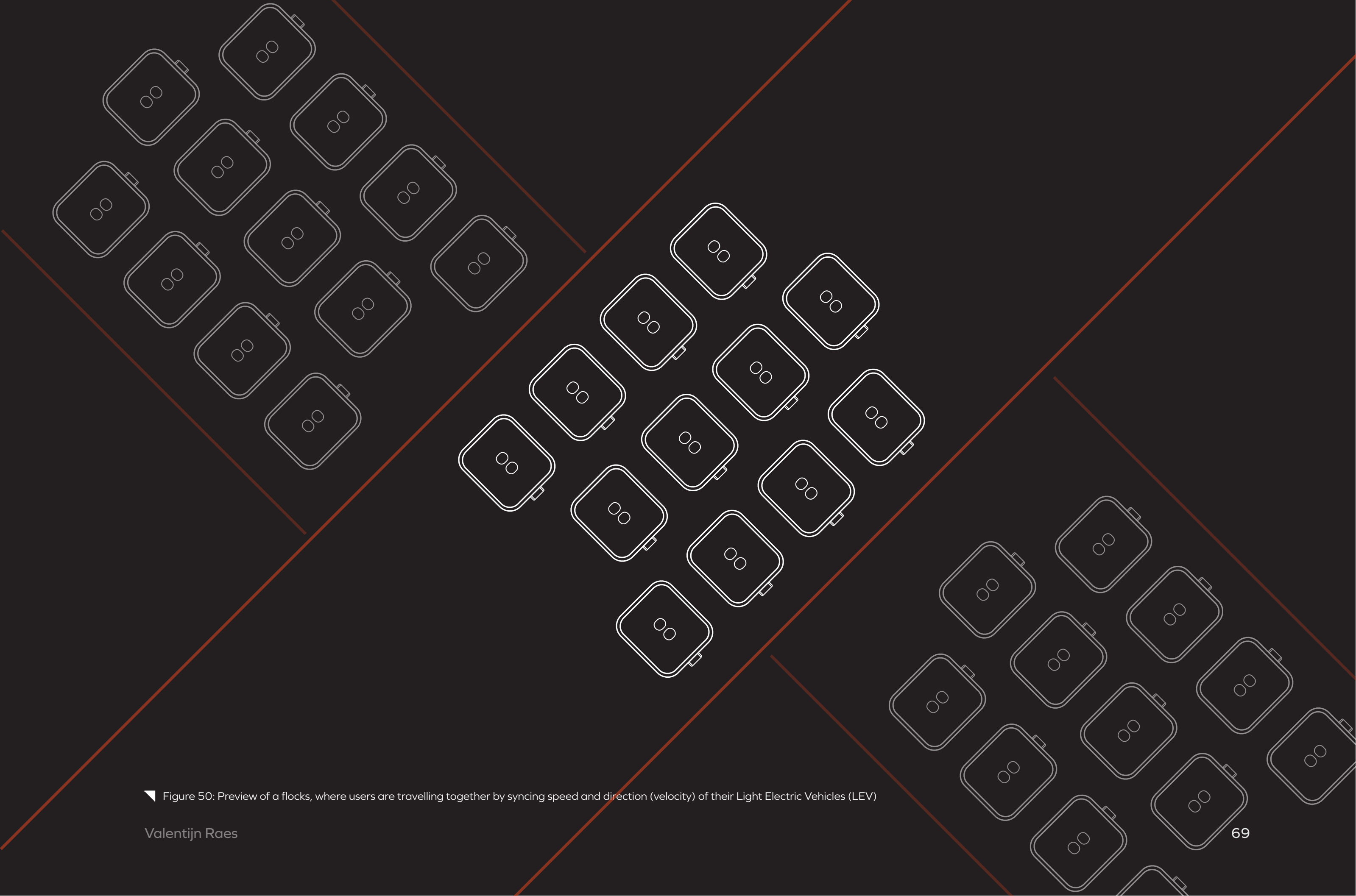
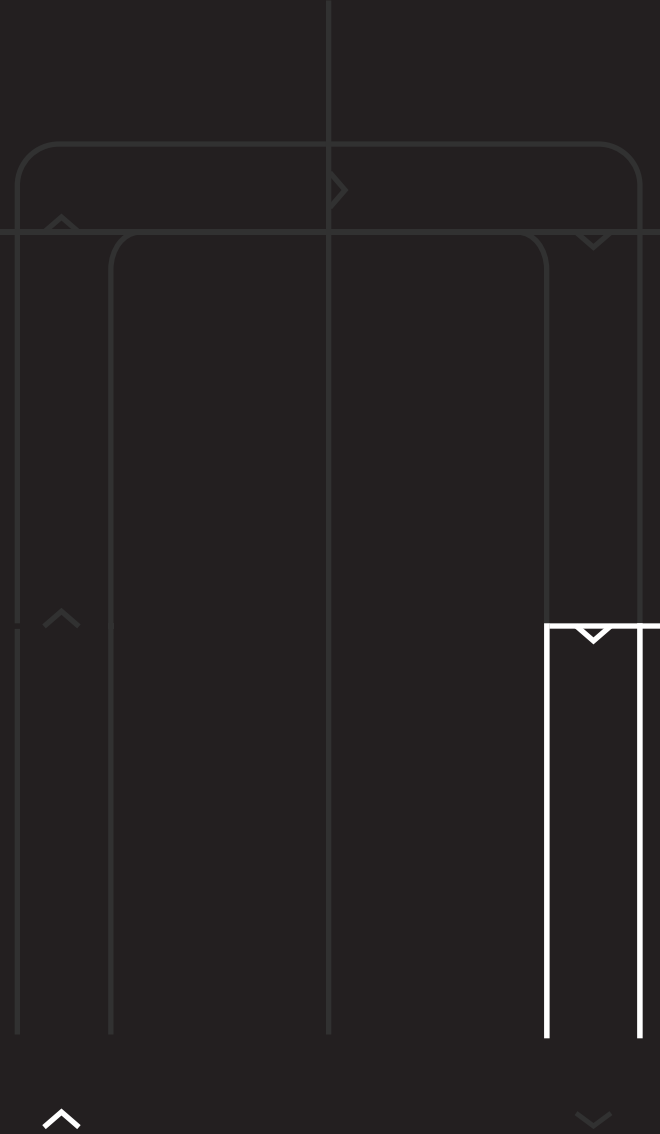
# D / ILLUSTRATION

This phase translates the vision into a tangible concept by developing a Product–Service–System (PSS) that embodies the ‘Resonating’ state of mind. Building on the vision statement and interaction analogy—“surfing the wave”—the concept FLO was created to orchestrate collective LEV mobility in the Grand Paris region by 2040.

Through visualisation, brainwriting sessions, and sketching, FLO was shaped as a systemic response to three user needs: responsible autonomy, confident navigation, and energy-conscious movement. A detailed journey map and blueprint defines how user-facing interactions align with backstage features, while a stakeholder ecosystem map allocates roles across public authorities, Mobilize, and third-party LEV providers.

FLO introduces a new mode of travel—public movements—enabled by shared rhythms and sync points that allow light electric vehicles to move in orchestrated flows guided by the city. These features are structured across product, service, and system levels and are supported by a phased development roadmap aligned with regional milestones toward 2040.

Together, these elements illustrate how Mobilize could begin shaping a new, collective mobility experience today—anchored in resonance, rhythm, and regional relevance.



▼ Figure 50: Preview of a flocks, where users are travelling together by syncing speed and direction (velocity) of their Light Electric Vehicles (LEV)

# 10 CONCEPTUALISATION

This chapter defines the concept brief through a guiding vision, analogy, and five experience qualities. Inspired by biomimicry, it translates natural principles into a Product–Service–System enabling adaptive, synchronised, and continuous movement across Grand Paris.

## 10.1 Concept brief creation

To translate experiential qualities into tangible features, this concept brief establishes the foundation for design. It includes the vision, comprising a guiding statement, interaction analogy, and qualitative characteristics (Hekkert & van Dijk, 2011), as well as contextual alignment with both the Mobilize brand and the Grand Paris region. It results in a guiding question.

### CONCEPT BRIEF

*Delivering the intended experience of:*

**Mobilize and I want people to become aware of and align their movements with energising collective rhythms — managing their resources more effectively in sync with others.**

*as if you were:*

**“Surfing the wave”**

*and includes the qualitative characteristics of:*



TRANSPARANCY



TAILORING



INTUITIVE



COLLECTIVENESS



ACTIVATING

*for the context of Grand Paris 2040:*

**a polycentric metropolis undergoing climate transformation and demographic shifts**

*and delivered by Mobilize, an ecosystem-driven brand:*

**bold, optimistic, and collective by design.**

**> How might we help people ride the urban rhythm — enabling them to move with, rather than against, the pulse of the metropolis?**

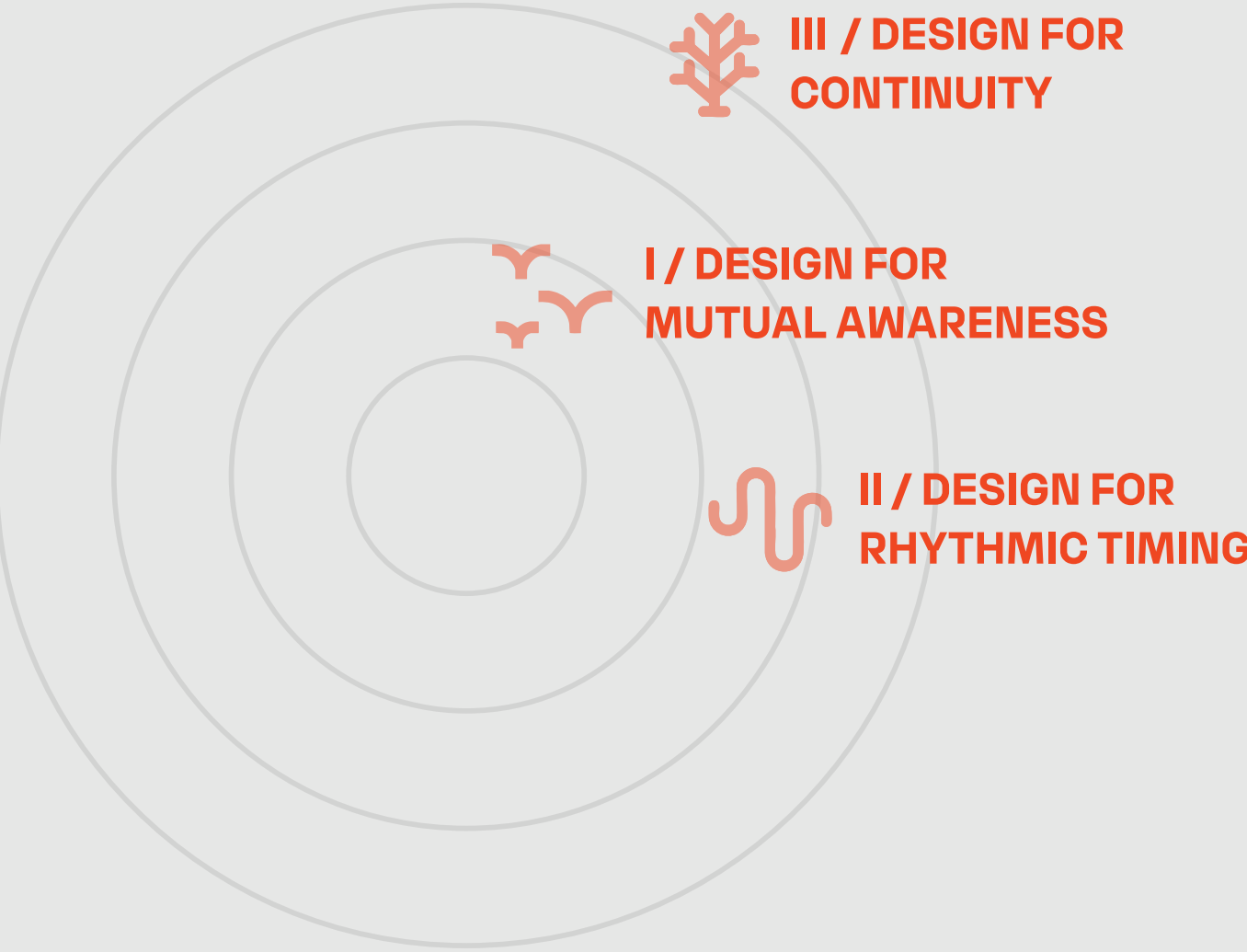


10.2 Biomimicry design principles

In defining the concept, it was chosen to seek inspiration in nature—a practice known as biomimicry and introduced in the Chapter 02. By abstracting key principles from natural phenomena, a design logic was distilled that shapes the final illustration of the concept.

The following three natural principles form the backbone of this concept—each translated into a concrete design logic, which are described in the following pages:

THREE DESIGN PRINCIPLES FOR CONCEPT



SWARM INTELLIGENCE

In nature, flocks of birds, schools of fish, and swarms of insects move in synchrony without central control, a phenomenon known as flocking. These decentralized systems rely on local interactions and mutual responsiveness, allowing the group to react quickly to external stimuli. This behavior enhances safety, conserves energy, and enables collective information gathering (Max Planck Institute of Animal Behavior, n.d.).



Figure 51: Swarm intelligence in flocks of birds

Moving from individual navigation to collective presence.



DESIGN PRINCIPLE I – DESIGN FOR MUTUAL AWARENESS

Design for vulnerable Light Electric Vehicles (LEVs) to continuously sense and respond to each other’s presence. Through local awareness, visual and haptic cues, and adaptive formation patterns, riders are encouraged to self-organize into temporary flocks. These flocks increase visibility, assert collective presence in traffic, and provide mutual protection—transforming individual navigation into a cooperative movement system.



THE WAVE

Waves are rhythmic carriers of energy, not matter. In nature, waves synchronise systems: from the tides regulating marine life to circadian rhythms aligning organisms with day and night. Timing is intrinsic to their efficiency—energy flows best when forms move with the wave, not against it.



Figure 52: Rhythmic wave patterns of the ocean

From static planning to attuned timing.



DESIGN PRINCIPLE II – DESIGN FOR RHYTHMIC TIMING

Design for temporal coordination. The system should help users align their movements with the city’s natural mobility rhythms—emerging from crowd flows, traffic cycles, or environmental signals. Rather than resist delays or congestion, the interface enables riders to depart, adjust, or reroute at the right moment. Movement becomes rhythm-aware: reducing energy consumption, avoiding interruptions, and synchronising with the city’s pulse.

FLOW STRUCTURES

Biological structures evolve to facilitate the movement of flows. These systems branch, channel, and adapt to distribute resources efficiently across space. According to Bejan’s constructal theory (1996), such flow architectures arise from a universal tendency: to reduce resistance and increase access. Over time, systems self-organise into configurations that sustain movement with the least effort and highest reach.



Figure 53: Swarm intelligence in flocks of birds

From static points to continuous movement.



DESIGN PRINCIPLE III – DESIGN FOR CONTINUITY

Design mobility as a living flow network—not a fixed path from A to B. Enable dynamic redistribution through microflows that branch and merge based on density, demand, and direction. The system should adapt in real-time, helping riders navigate seamlessly between high- and low-density zones. Static controls like traffic lights and rigid lanes give way to more flexible, self-organising coordination that prioritises fluidity over form.



### 10.3 Manifestation and ideation

In response to the systemic challenges of the domain, the direction of the design brief, and the 'design by nature' logic, a Product-Service System (PSS) approach was selected for the conceptualization. A PSS allows for the creation of value beyond the product alone by orchestrating interactions across physical, digital, and systemic layers (Tukker & Tischner, 2006).

A selection of ideation sketches is presented on the right. For a broader overview of the ideation sketches and co-creation session, refer to Appendix E and Appendix F.

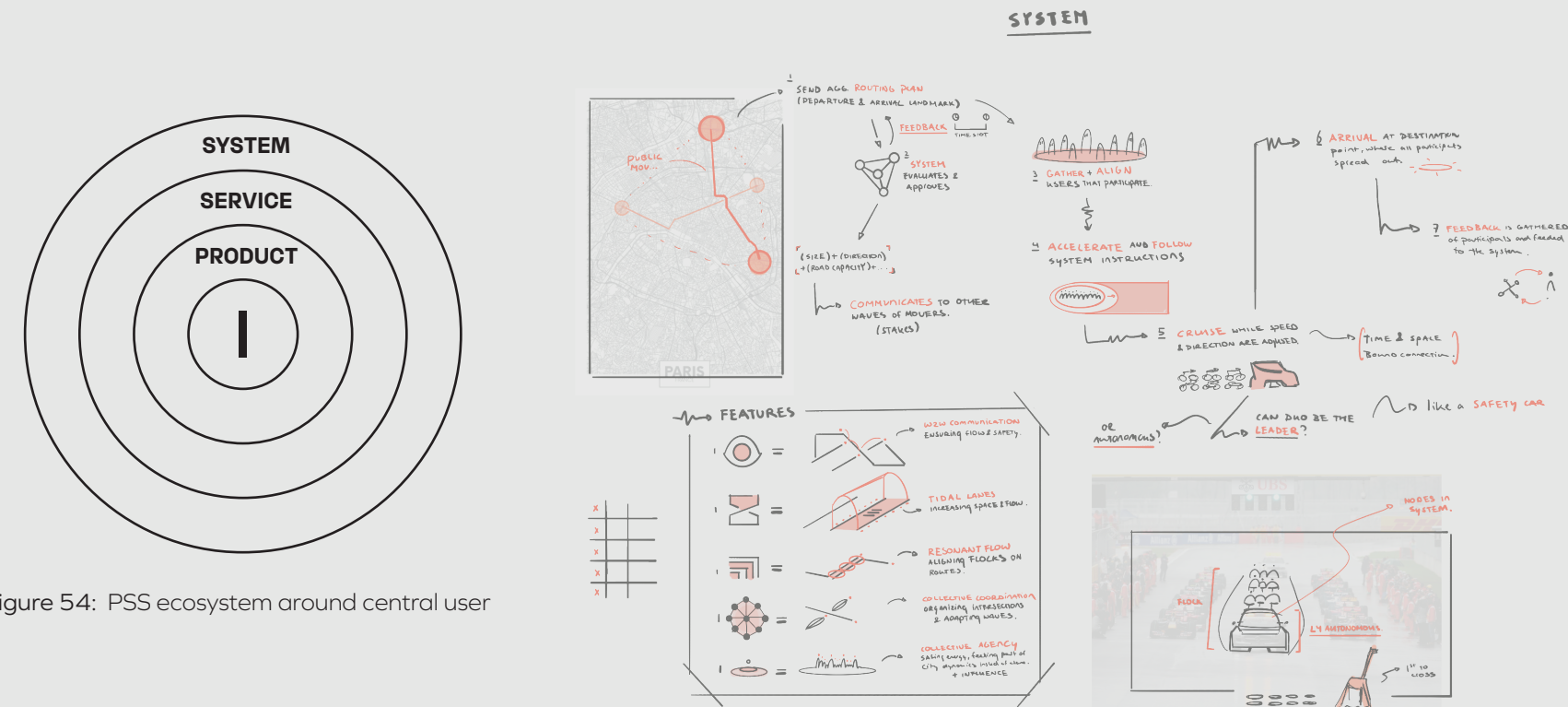


Figure 54: PSS ecosystem around central user

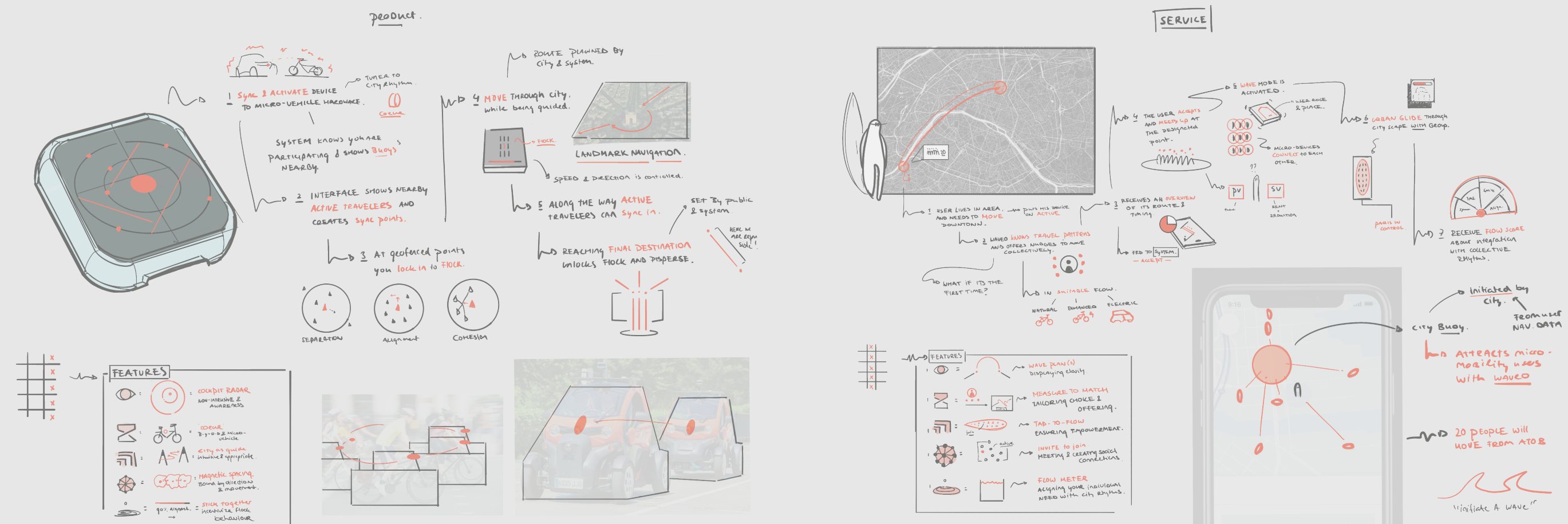


Figure 55: Ideation across three layers of the Product-Service System



Figure 56: A 'flock' of humans traveling together



# 11 FLO CONCEPT

## 11.1 FLO vision

FLO is a product-service system (PSS) that orchestrates public movements, enabling individuals to sync their movements with each other and the collective rhythm of the metropole, optimising the use of city infrastructure and collective energy usage.

This concept aspires to create a new category of movement—something in between individual transport and public transport.

**/ PUBLIC TRANSPORT**, you collectively share the vehicle, and the movement

**/ PRIVATE TRANSPORT**, you privately use the vehicle and the movement

FLO introduces a new intermediary mode between public and private transport, referred to as

### / PUBLIC MOVEMENTS

Herein, you use your vehicle to participate in a shared movement. Much like a surfer riding a wave, this mode establishes a direct dialogue between the internal capacity of the traveller and the external opportunities offered by the cityscape.

This chapter introduces FLO: a Product–Service–System enabling orchestrated public movement through collective LEV waves. Spanning product, service, and system levels, FLO aligns personal autonomy with city-wide rhythm, offering mutual benefits for users and the metropolis.

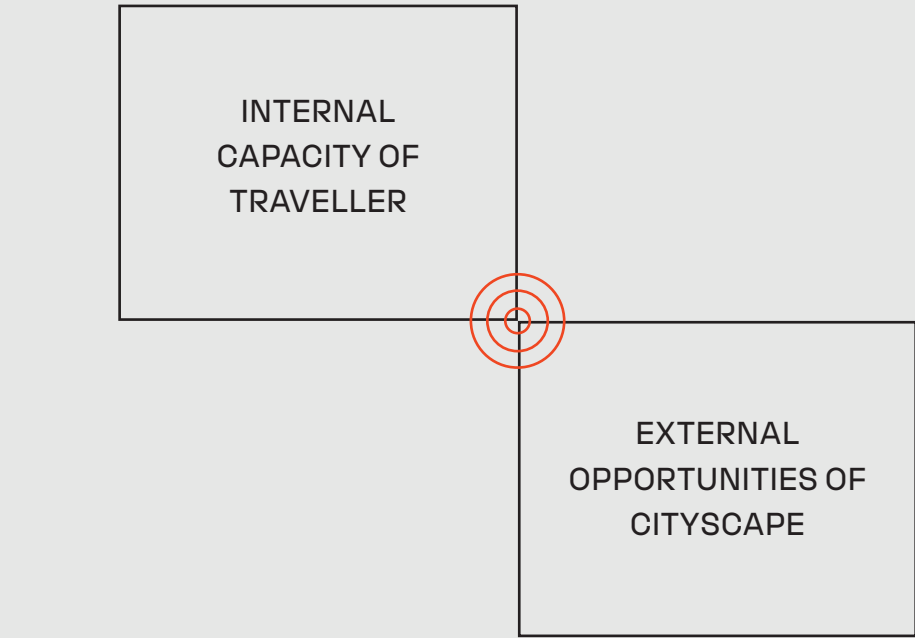


Figure 57: The definition of resonance found in the analogy

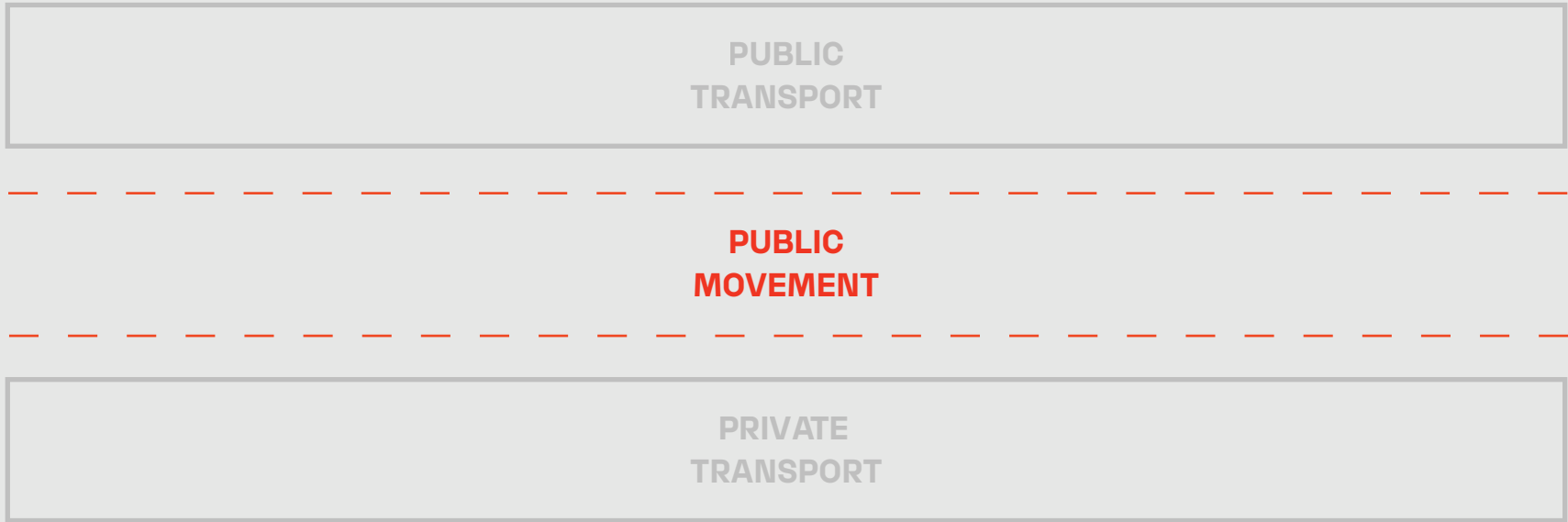
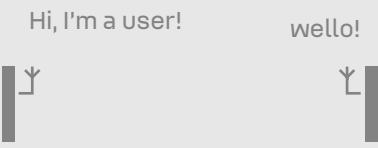


Figure 58: An intermediary mode between public and private transport



## FLOCKS AND WAVES

These consist of a group of users with compatible LEVs (through ownership or rent) that decide to move in a **FLOCK** heading towards a similar direction.

In exchange for this collective intent and coherence, the city offers an optimal **WAVE** between two sync points through adaptive infrastructure managed by a central control system.

The figure shown highlights the interaction between the city offering a wave, and the user participating as a flock.

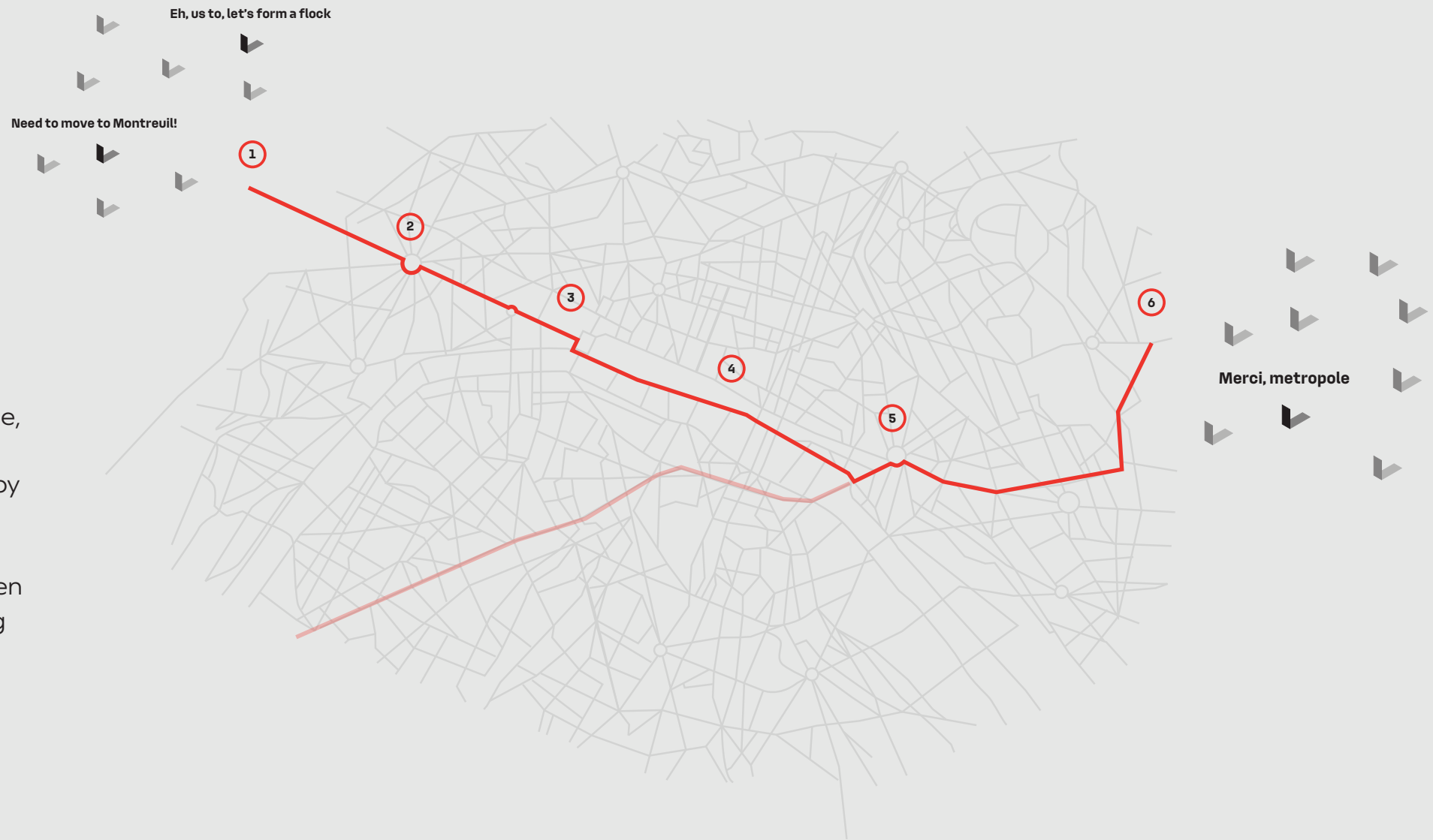


Figure 59: Flock created by user (black) and wave delivered by city (red) highlighted in overview map

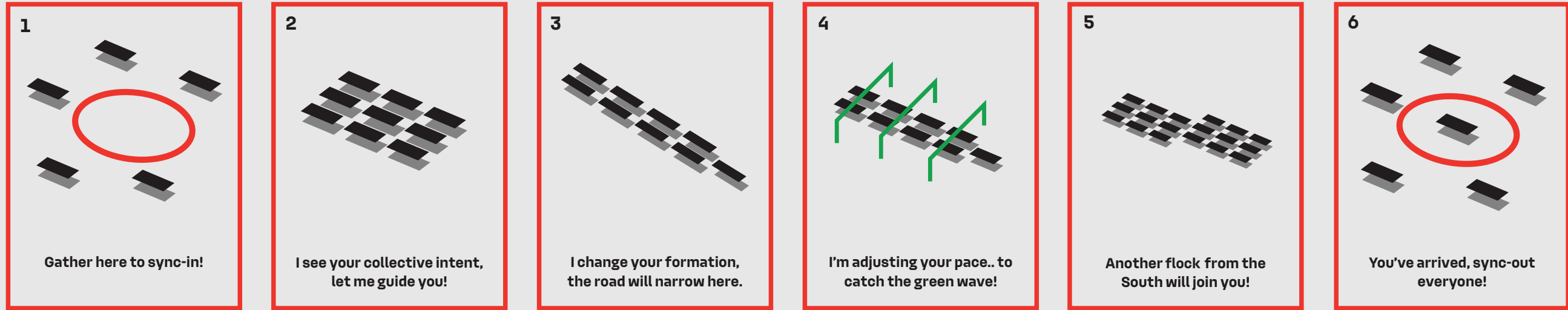


Figure 60: Interaction between city and the user, from a city perspective



11.2 FLO ecosystem

FLO is not just a product concept. It is an ecosystem concept that consists of three nested levels around the traveler (user + LEV). These layers are referred to as product (physical), service (digital) and system (systemic) level (Tukker & Tischner, 2006).

AT PRODUCT LEVEL, FLO SIGNALS MOVEMENT



Individual users signal their intent to move in a shared direction using their FLO device. This enables the formation of flocks—temporary collectives of travellers with compatible destinations and vehicles, that sync their speed and direction (velocity).

*This signals a shared intent to move collectively.*



AT SERVICE LEVEL, FLO CONNECTS MOVEMENT



Flocks are matched with waves—adaptive routes proposed by the system between dedicated sync points. These waves adjust the flock’s velocity to real-time infrastructure capacity and traffic flow, allowing flocks to move fluidly through the city

*This acknowledges the collective intent and offers a ‘wave’.*



AT SYSTEM LEVEL, FLO ORCHESTRATES MOVEMENT



As multiple flocks catch differing coordinated waves, they generate public movements—city-wide patterns of flow managed by a central control system. This orchestration coordinates and aligns these differing public movements with each other continuously.

*This creates a city-wide orchestration between the differing public movements.*

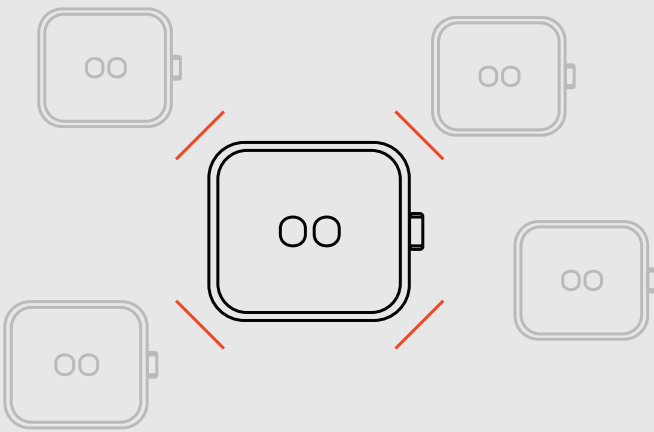


Figure 61: FLO device signalling to other travelers

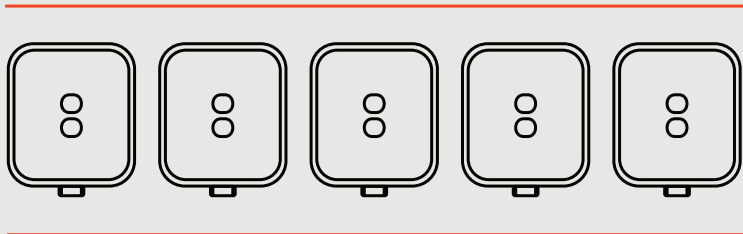


Figure 62: The flock aligns as the city proposes a wave

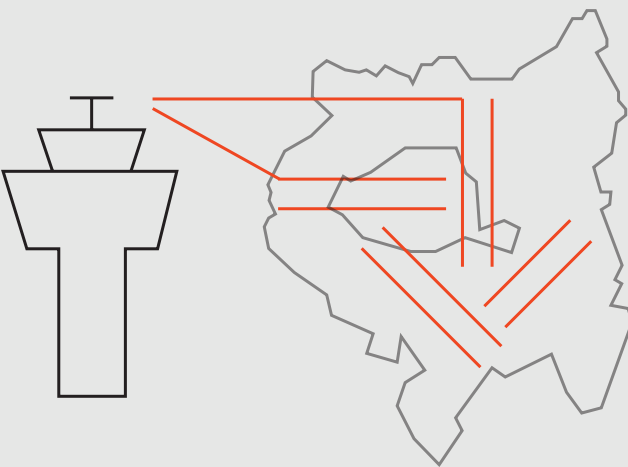


Figure 63: The central system orchestrates the different public movements

11.3 FLO benefits

The FLO concept offers benefits for both the individual and city. For users, it responds directly to the resonant mobility needs outlined in Chapter 09.

For the city, it contributes to the broader regional ambitions presented in Chapter 03.

USER AUTONOMY IN A SHARED SYSTEM



Users remain in control of their movement by choosing when to join or initiate flocks. This supports a sense of empowered timing, allowing individuals to act intentionally while being guided by the city.

SAFETY IN THE COLLECTIVE



Travelling as part of a flock reduces cognitive effort. Rather than navigating alone, users gain confidence through collective guidance and shared direction, creating a sense of coordination in complex environments.

ENERGY EFFECTIVENESS



By syncing with others and joining collective waves, users reduce stop-and-go behaviour and optimise movement. This conserves both personal and systemic energy, reinforcing the intention to move with efficiency and flow.

ADDITIONAL TRANSIT LEVER



The concept introduces public movements as a new, collective layer of mobility that complements fixed infrastructure. By dynamically coordinating LE-mobility flows, the city gains an additional lever to reach carbon neutrality targets—one that directly involves travellers in shaping efficient, low-emission movement patterns.

INCENTIVIZE MOVE TO CLEAN MODES OF TRANSPORT



By organising micro-vehicles into flocks and waves, the concept supports a modal shift to LEVs. It reduces reliance on oversized vehicles, reclaims public space, and helps normalise low-footprint travel behaviours aligned with the region’s active and clean mobility agenda.

EFFECTIVE USE OF CITY INFRASTRUCTURE



FLO enables real-time orchestration of flows across the urban landscape, leveraging user data and behavioural signals to optimise road use. This not only lowers emissions and energy consumption but also allows more intelligent and flexible allocation of infrastructure capacity.



11.4 FLO Journey map

A journey map is presented on the right to illustrate how the FLO system comes to life. This map highlights the five phases, the user experience, actor's actions and interface of the FLO device.

Within each phase, the responsibility for the movement shifts (and therefore the perspective) between the different layers in the PSS: initiated by the user, connected by the service, guided by the system, and back.

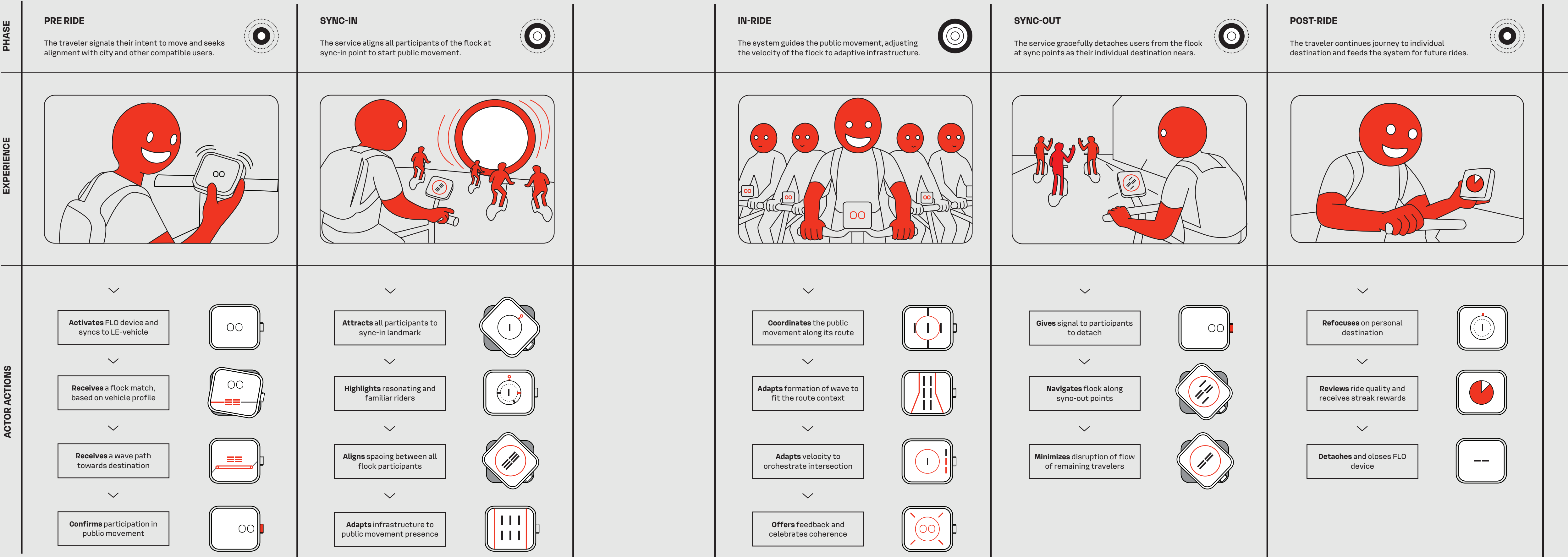


Figure 64: Visualization of five-phase FLO journey, including actor actions and interfaces shown to the user



# 12 TRANSITION PLAN

## 12.1 Ecosystem stakeholders

Realising the FLO concept requires a public–private partnership between the city (Métropole du Grand Paris), Mobilize, and LEV providers (including fleet managers and manufacturing partners). Each stakeholder contributes to one or more levels of the FLO ecosystem—product, service, and system—ensuring interoperability, coordinated mobility, and urban integration.

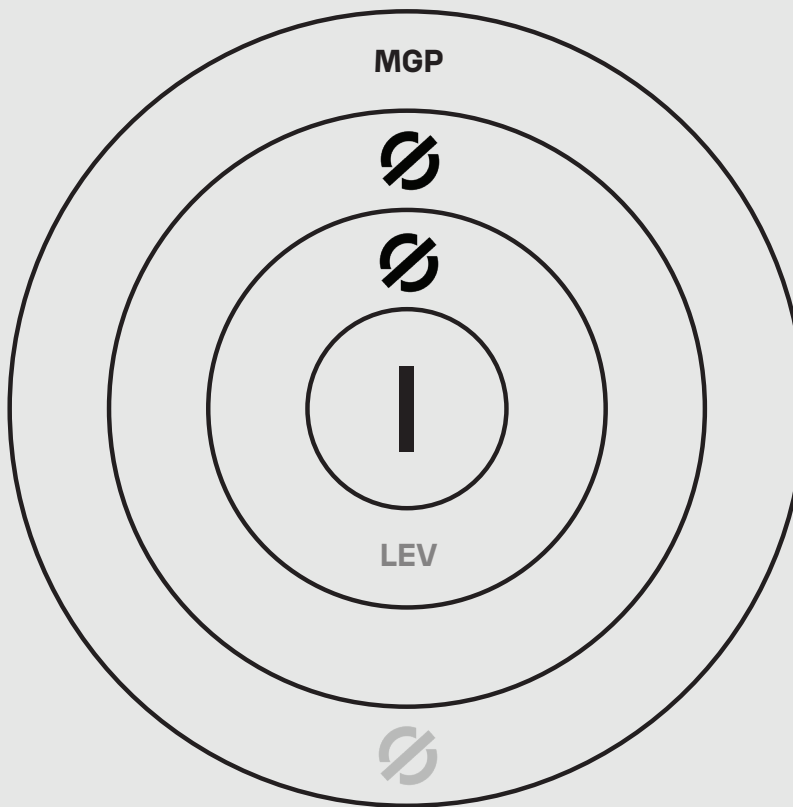


Figure 65: Stakeholders and their roles in each PSS layer around central user

### AT PRODUCT LEVEL



Mobilize delivers FLO devices and compatible hardware within its vehicle portfolio, enabling users to form and join flocks through shared signalling and synchronisation features.

It also licenses and shares flocking technology with other LEV providers, ensuring cross-brand compatibility and expanding participation in public movements.

### AT SERVICE LEVEL



Mobilize develops the digital service layer that aggregates individuals into flocks and matches them to dynamic waves based on real-time demand and directionality.

This includes the design of user experience, integration of sync point logic, and the behavioural incentives that guide participation in public movement patterns.

### AT SYSTEM LEVEL



The city (MGP) governs the systemic layer, managing public movements through adaptive infrastructure and ensuring alignment with broader urban goals (e.g. decarbonization, traffic efficiency, safety).

Mobilize supports this governance with orchestration technology—providing real-time data infrastructure, movement forecasting, and systems interoperability.

## 12.2 Fifteen features for future development

To support the envisioned journey map and align with the five qualitative characteristics defined in Chapter 10, fifteen key features have been identified for the FLO concept. These features translate the intended meaning of the design brief into actionable elements and are distributed across the three layers of the concept—from product to service to system.

A full description of all fifteen features, including substantiation and early technology scouting are in Appendix G.

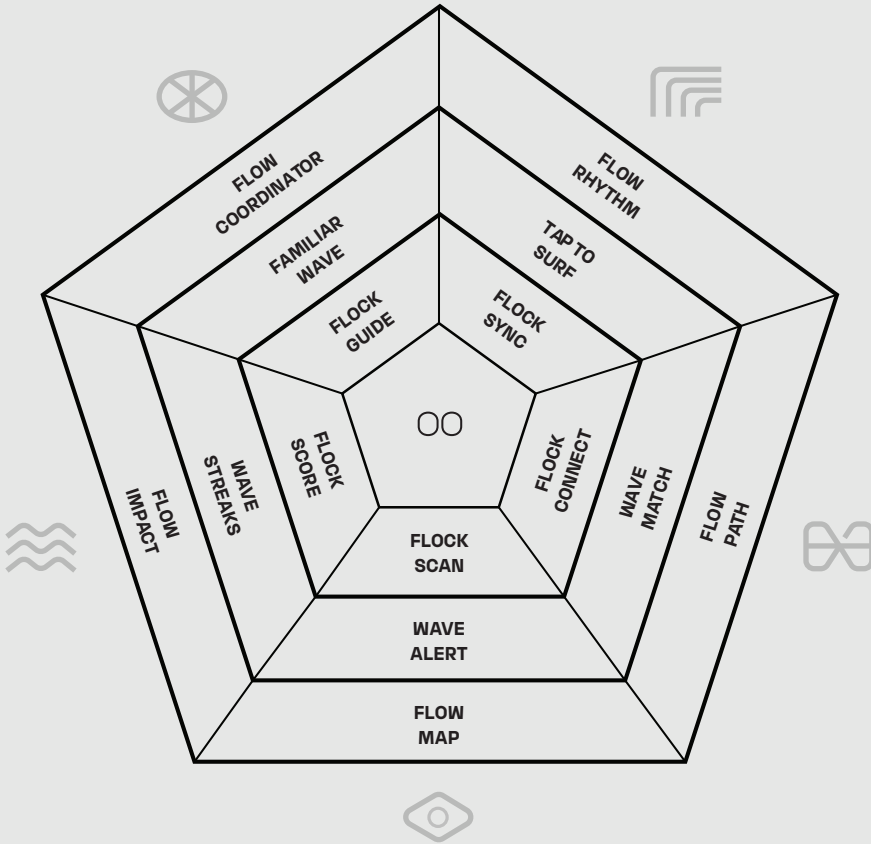


Figure 66: Fifteen features across the three product, service and system layer

### TRANSPARENCY



- » **FLOCK SCAN:** Detects nearby resonating riders and highlights density at the sync point.
- » **WAVE ALERT:** Notifies the user when and where waves are forming.
- » **FLOW MAP:** Visualises live and upcoming public movements across the region.

### TAILORING



- » **FLOCK CONNECT:** Syncs the user's device with their micro-vehicle to activate the session.
- » **WAVE MATCH:** Suggests the optimal wave based on vehicle type and destination.
- » **FLOW PATH:** Adapts the wave's route & infrastructure to fit real-time urban conditions.

### INTUITIVE



- » **FLOCK SYNC:** Makes sync-in and sync-out landmarks in city visible to users.
- » **TAP TO SURF:** Simple interaction to confirm wave participation.
- » **FLOW RHYTHM:** Temporal coordination engine that adjusts velocity to city infrastructure.

### COLLECTIVENESS



- » **FLOCK GUIDE:** Provides spatial and timing cues to align users with their wave.
- » **FAMILIAR WAVE:** Surfaces familiar co-riders based on past shared journeys.
- » **FLOW COORDINATOR:** Coordination engine that manages wave route and collective timing.

### ACTIVATING



- » **FLOCK SCORE:** Real-time feedback on ride performance based on sync and flow adherence.
- » **WAVE STREAKS:** Tracks habitual participation, rewarding users for consistent engagement.
- » **FLOW IMPACT:** Calculates collective benefits and updates city-level mobility stats.



12.3 Features and interplay in journey map

Each feature is activated at specific points within the journey map and contributes to delivering a coherent experience across scales. A chronological overview of these features—based on their sequence throughout the user journey—is provided below to illustrate how the FLO concept unfolds over time.

PRE RIDE

- 1. FLOCK CONNECT
- 2. WAVE MATCH
- 3. WAVE ALERT
- 4. FLOW MAP
- 5. TAP TO FLOW

SYNC-IN

- 6. FLOCK SYNC
- 7. FLOCK SCAN
- 8. FAMILIAR WAVE
- 9. FLOCK GUIDE
- 10. FLOW PATH

IN-RIDE

- 11. FLOW COORDINATOR
- 12. FLOW RHYTHM
- 13. FLOCK SCORE

SYNC-OUT

POST RIDE

- 14. FLOW IMPACT
- 15. WAVE STREAKS

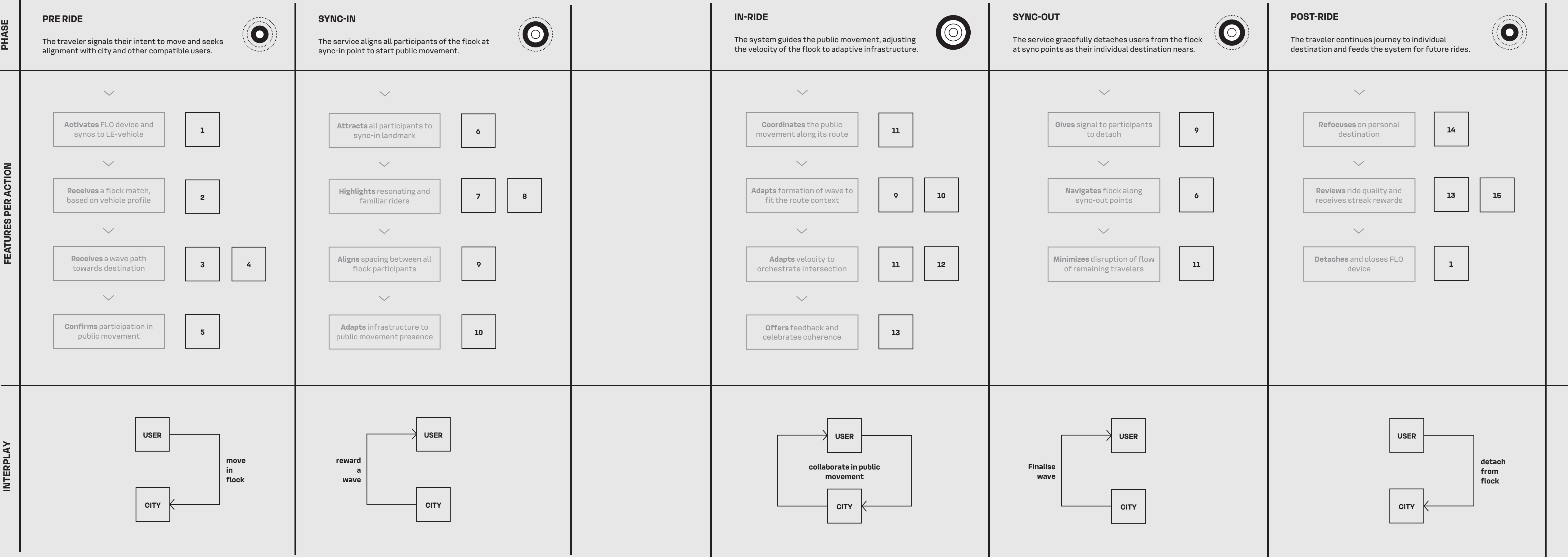
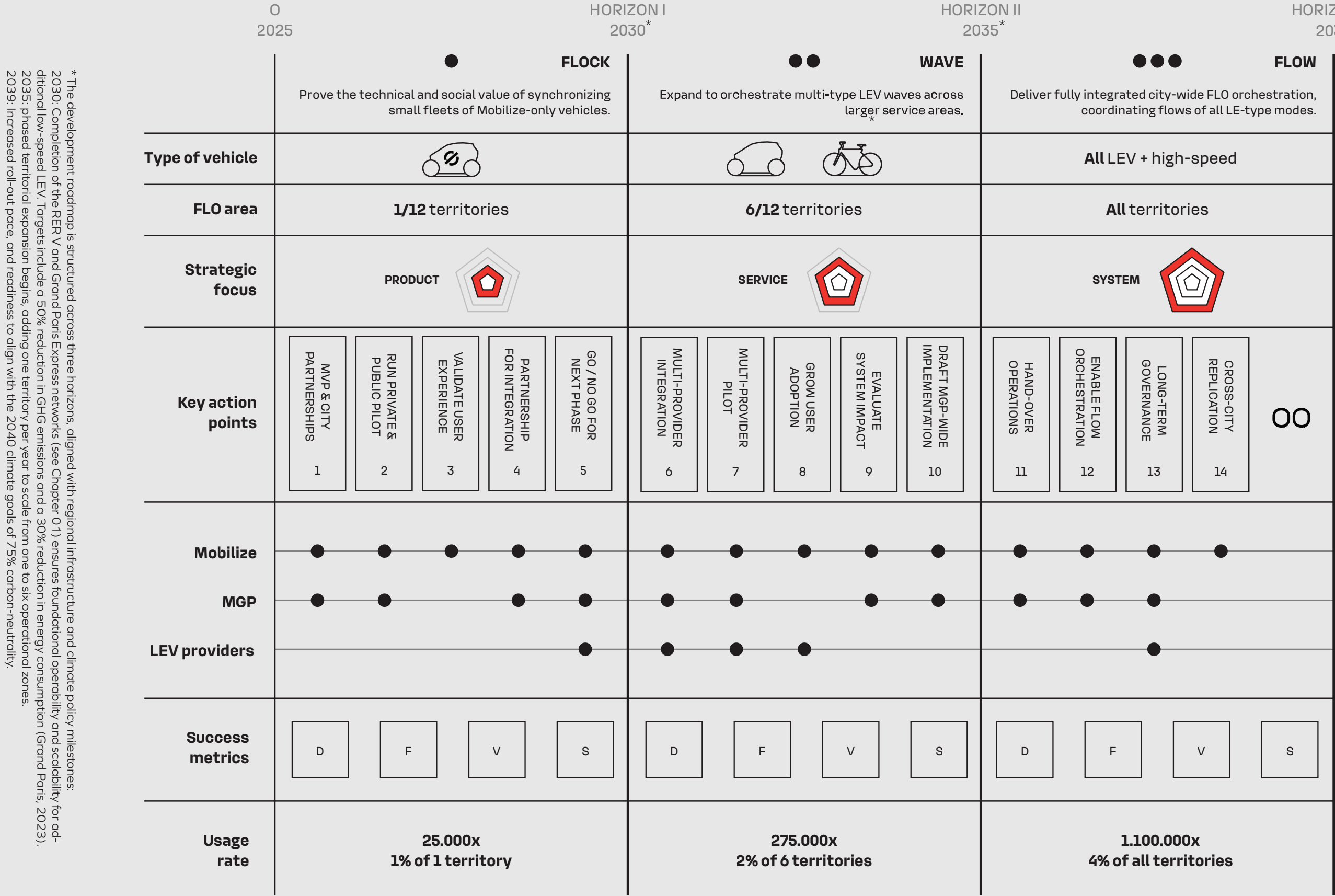


Figure 67: Journey map FLO highlighting features and interplay between user and city at specific journey steps



12.4 Development roadmap



\* The development roadmap is structured across three horizons, aligned with regional infrastructure and climate policy milestones: 2030: Completion of the RER V and Grand Paris Express networks (see Chapter 01) ensures foundational operability and scalability for additional low-speed LEV. Targets include a 50% reduction in GHG emissions and a 30% reduction in energy consumption (Grand Paris, 2023). 2035: Phased territorial expansion begins, adding one territory per year to scale from one to six operational zones. 2039: Increased roll-out pace, and readiness to align with the 2040 climate goals of 75% carbon-neutrality.

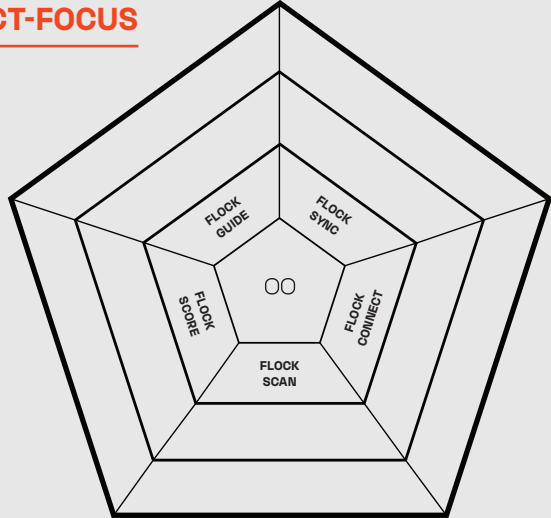
Figure 68: Development roadmap for FLO concept across three horizons; FLOCK, WAVE & FLOW

HORIZON I, 2030

> FLOCK

Mobilize and the Métropole du Grand Paris work together to test FLO in a controlled setting. This horizon focuses on validating the technology and improving the user experience using Mobilize’s vehicles and focusing on one territory scale.

PRODUCT-FOCUS



SUCCESS METRICS

(D)ESIRABILITY

- ≥ 70% of pilot users report improved ride experience.
- Municipalities publicly support further FLO development (partnership continuation), because they see the contribution to their carbon-neutral ambitions and to infrastructure optimisation.

(F)EASIBILITY

- A successful real-world demonstration of flocking technology between two sync-points using only Mobilize vehicles.
- Integration of FLO data streams with the city’s mobility and infrastructure systems (e.g., sync-points, traffic data, adaptive infrastructure).

(V)IABILITY

- Initial multi-party collaboration framework drafted and validated with third-party mobility providers for future scaling.
- Projection on possible business models, resulting in resource commitment for Horizon 2 (budget, team, roadmap go/no-go decision).

(S)USTAINABILITY

- Pilot shows potential to reduce vehicle congestion (measurable result) and optimise infrastructure use in test areas.
- Data collected to estimate environmental benefits (e.g., fewer stop-and-go movements, energy efficiency improvements of individual vehicles).

RESPONSIBILITIES

- Mobilize** leads the technological development of FLO software and integrates it into their vehicles. It is also responsible for user experience design and pilot execution.
- MGP** Municipality (MGP) permits test zones, co-develops the public interventions, such as infrastructure readiness and sync points and policy alignment.
- LEV** LEV providers receive initial update and preparation for integration in the next phase.

Figure 69: Detailed horizon I: FLOCK poster

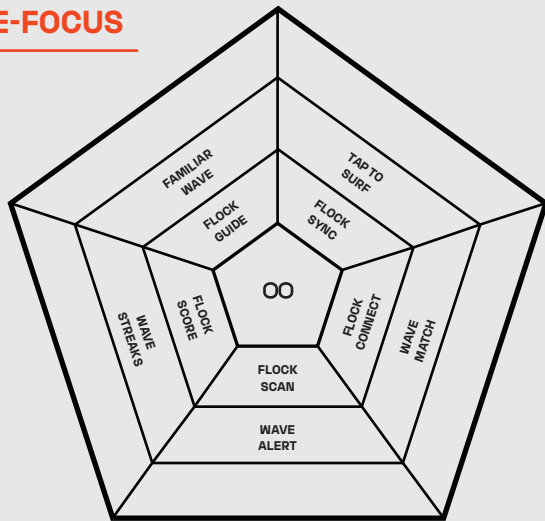


HORIZON II, 2035

> WAVE

Mobilize, the Métropole du Grand Paris, and LEV providers expand FLO to multiple districts. This horizon aims to coordinate different LE-type vehicles from different providers in waves, improving traffic flow and user experience at multiple territorial scales.

SERVICE-FOCUS

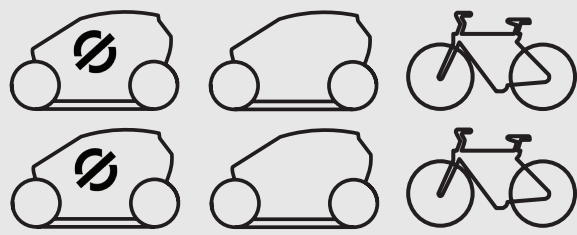


SUCCESS METRICS

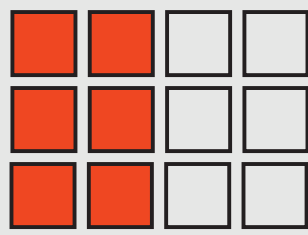
- | (D)ESIRABILITY   | (F)EASIBILITY   | (V)IABILITY  | (S)USTAINABILITY  |
|--|---|--|---|
| <ul style="list-style-type: none"><li>≥ 70% of multi-provider users report improved urban flow experience.</li><li>City publicly commits to expand FLO to all districts by 2040.</li></ul> | <ul style="list-style-type: none"><li>Successful wave formation with multiple providers across multiple districts.</li><li>Real-time coordination of multiple waves with city traffic and infrastructure systems.</li></ul> | <ul style="list-style-type: none"><li>Formalised multi-party governance model with roles, data agreements, and business incentives.</li><li>Positive business case is validated (promising user growth, operational sustainability, partner satisfaction).</li></ul> | <ul style="list-style-type: none"><li>Demonstrated reduction of traffic congestion and energy use in multiple districts.</li><li>System supports low-emission mobility modes and encourages mode shift from cars to LEV mobility.</li></ul> |

Figure 70: Detailed horizon II: WAVE poster

ALL LOW-SPEED (<50 km/h) LEV



6/12 MGP TERRITORIES



USAGE RATE (reach)

275.000

daily movements (2% of 6 territories), based on approx. 27 million of total movements a day in MGP. (Apar, 2021)

KEY ACTION POINTS

- MULTI-PROVIDER INTEGRATION:** Align Mobilize, the Metropole, and external providers on participation conditions, data protocols, and vehicle categories.
- MULTI-PROVIDER PILOT:** Expand testing to multiple districts with real users and multiple LEV providers, supported by new sync points and data infrastructure.
- GROW USER ADOPTION:** Activate city-wide adoption campaigns and onboard additional LEV providers to increase user base and system capacity.
- EVALUATE SYSTEM IMPACT:** Measure impact on traffic flow, energy savings, and user satisfaction. Validate technical scalability and governance effectiveness.
- DRAFT MGP-WIDE IMPLEMENTATION:** Co-create a long-term governance model with the municipality, securing political and ecosystem buy-in for full region-wide deployment in the FLOW phase.

RESPONSIBILITIES

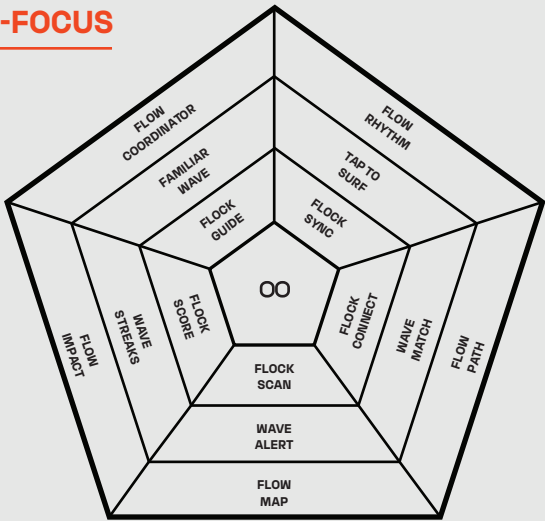
- |  |  |
|--|--|
|  | Mobilize manages ecosystem coordination between different stakeholders, expands the wave logic of the FLO system and oversees pilot execution. |
|  | Municipality (MGP) scales the infrastructure of the system, aligns public policy, and secures city-wide governance.                            |
|  | LEV providers operationalise their vehicles with the system, share data on vehicle usage and enable user access.                               |

HORIZON III, 2039

> FLOW

Mobilize, the Métropole du Grand Paris, and mobility providers implement FLO across the entire region. The FLO system becomes part of the city’s mobility management, helping to coordinate all LEV flows in real-time while supporting wider urban policy goals.

SYSTEM-FOCUS

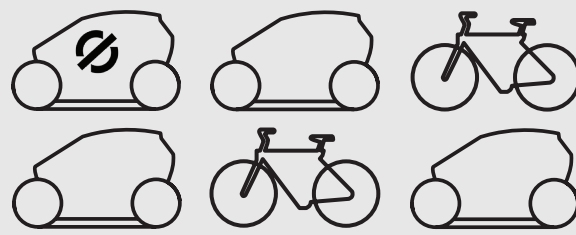


SUCCESS METRICS

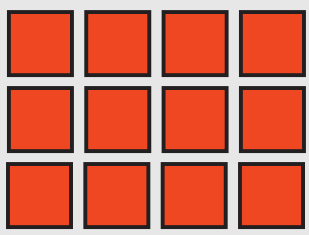
- | (D)ESIRABILITY   | (F)EASIBILITY  | (V)IABILITY  | (S)USTAINABILITY  |
|--|--|--|---|
| <ul style="list-style-type: none"><li>≥ 70% of surveyed users feel the system improves their daily mobility experience. (public trust)</li><li>City endorsement: Métropole du Grand Paris officially integrates FLO into public mobility governance.</li></ul> | <ul style="list-style-type: none"><li>City-wide functional coverage: System operational in 100% of territories, supporting all major LEV modes.</li><li>Real-time flow management: Proven ability to dynamically adjust movement waves based on live data (traffic, demand, energy).</li></ul> | <ul style="list-style-type: none"><li>Permanent governance model established, with clear roles, data agreements, and revenue-sharing mechanisms.</li><li>Expansion readiness: Replicable model validated and first external city partnerships initiated.</li></ul> | <ul style="list-style-type: none"><li>Proven system-wide reduction in emissions, congestion, and energy waste.</li><li>FLO supports the region’s climate-neutrality goals and enables more effective use of public space.</li></ul> |

Figure 71: Detailed horizon III: FLOW poster

ALL SPEED (+50 km/h) LEV



12/12 MGP TERRITORIES



USAGE RATE (reach)

1.100.000

daily movements (4% of 12 territories), based on approx. 27 million of total movements a day in MGP. (Apar, 2021)

KEY ACTION POINTS

- HAND-OVER OPERATIONS:** Expand FLO to all territories (T1-T12) and hand over public movement coordination capabilities to the Métropole du Grand Paris.
- ENABLE FLOW ORCHESTRATION:** Enable the city to manage flows, sync points, and incentives based on real-time urban dynamics and environmental targets. This also includes the formation of high-speed inter-territorial public movements.
- INSTITUTIONALISE LONG-TERM GOVERNANCE:** Finalise legal and operational agreements between Mobilize, the city, and providers to secure ongoing collaboration.
- CROSS-CITY REPLICATION:** Package the FLO model for application in other metropolitan areas, using Grand Paris as a reference.

FLO INITIATED!



RESPONSIBILITIES

- |  |   |
|--|---|
|  | Municipality (MGP) now leads system governance, manages public space and flow orchestration, and aligns the system with wider urban and mobility policies.  |
|  | Mobilize maintains and evolves the FLO orchestration technology, providing city-wide platforms for public movements, supporting cross-city scaling.         |
|  | LEV providers operate diverse vehicle fleets, contribute real-time data to the system, and enable their users to participate in coordinated mobility waves. |



# 00 / CONCLUSION

This final phase reflects on the project’s outcomes and future relevance. It consolidates the conceptual and methodological contributions made across the previous phases, while acknowledging key limitations.

The concept FLO demonstrates how orchestrated LEV mobility can align with both user needs and regional ambitions, offering Mobilize a new role within the Grand Paris ecosystem. Methodologically, the ViP approach—enriched by biomimicry—enabled a structured, future-facing design process grounded in societal change.

Ultimately, the project invites a broader understanding of mobility—one that moves beyond infrastructure and into the realm of shared rhythm, resonance, and meaning.



Figure 72: The TU Delft supervisory team visiting the graduating student (middle) at the Technocentre



# 13 CONCLUSION

## 13.1 Recommendations

Building on the insights generated during this graduation project, the following recommendations are offered to guide future development and strategic implementation by Mobilize. They are structured according to three key areas: methodology, framework application, and FLO concept development.

### / METHODOLOGY:

#### WORKING FROM A HOLISTIC PERSPECTIVE

This project demonstrated the value of working from a holistic perspective—starting not from today’s products or technologies, but from the evolving needs and desires of future users. Rather than claiming one method as the answer, it shows what becomes possible when meaning is placed at the beginning of the design process.

#### START WITH MEANING, NOT THE PRODUCT

Traditionally, the automotive industry begins to design from the product or technology insights. This project aimed to turn that logic around: it started with the why (the raison d’être), translated that into the how, and eventually arrived at the what to design. For Mobilize, this reverse order of thinking could be a valuable addition to its innovation processes, especially when exploring what it could become in the coming decades, rather than what it already is today.

#### LONG-TERM VISION AND PRESENT-DAY RELEVANCE

While the focus of this project was future-oriented, the operational present remains crucial. The recommendation is not to abandon short-term development goals, but to complement them with long-term imagination. A more balanced approach—dreaming forward while building backwards—may help Mobilize better to navigate the uncertainties of transition and their role within it.

#### FOCUS ON THE EXPERIENCE, NOT THE ARTEFACT

Value is no longer created by the product alone. For a service-oriented brand like Mobilize, the product should be seen as a touchpoint within a larger journey. Designing for experience, rather than form alone, opens opportunities to orchestrate value across physical, digital, and systemic layers, as shown in the project.

#### COLLABORATE WITH CITIES AS PARTNERS

As urban populations continue to grow, cities are and will increasingly become key stakeholders in shaping mobility systems. The future framework for the Métropole du Grand Paris (Chapter 07) could serve as a starting point for conversation and collaboration, offering a more human and experiential complement to the inherent instrumental transport ambitions of the Métropole itself. This could support the co-development of solutions that align not only user but also with the public interest.

#### EMBRACE MULTIPLE PERSPECTIVES EARLY ON

During the project, conversations with a diverse range of experts revealed how mobility is perceived differently depending on one’s disciplinary lens. Embracing a multi-disciplinary design approach—one that invites cross-sectoral viewpoints—can help uncover unexpected connections and detect early signals of change that might otherwise go unnoticed.

#### INVEST IN FUTURE-FACING DESIGN CAPACITIES

The current design expertise within Mobilize, focused on vehicles, user interfaces, and services, is a strong foundation. But given the brand’s freedom to operate beyond conventional automotive boundaries, there is an opportunity to expand this with a more systemic, integrative design mindset. Doing so could support the creation of new value streams for Mobilize and the Renault Group.

### / FRAMEWORK APPLICATION

#### CONTINUE DEVELOPING THE FRAMEWORK

This project showed how one of the twelve future mobility states (‘Resonating’) could be translated into a full concept. Eleven others remain, each representing a potential opportunity space for future exploration. The framework is not static; it is a starting point for creative and strategic development.

#### PRIORITISE THE WORLD-CENTRIC STATES

The four world-centric states (I × ALL) are particularly promising. They align with ecosystem-level thinking, resonate with current climate and equity challenges, and are underrepresented in today’s mobility offerings. Mobilize, with its systemic ambitions, is well-positioned to lead in this space.

#### USE THE FRAMEWORK TO SHAPE TECH AGENDAS

If Renault Group aims to become a technological leader, it must also ask what kind of technologies will be meaningful for future societies. Starting from the states of mind defined in the framework could help guide technological development more intentionally. For example, FLO explores a new interpretation of autonomy, where control is temporarily transferred to city systems, rather than being continuously held by the user.

### / FLO CONCEPT DEVELOPMENT

#### USE THE ILLUSTRATION AS A DESIGN BRIEF

The final FLO concept should not be seen as a finished product, but as a brief for further development. It outlines features, experience principles, and interaction ideas that can inspire the Mobilize design team. Most importantly, it proposes a shift in ownership for Mobilize: from owning the product and service to owning the system.

#### TRANSLATE INTO A MINIMUM VIABLE PRODUCT

FLO remains conceptual. To take it further, the next step would be to develop a MVP—possibly in collaboration with partners such as Tecnalia or research labs working on LEV and fleet autonomy. This would enable early-stage testing of flocking mechanics, interaction design, and orchestration features.

#### FURTHER EVALUATE FEASIBILITY, VIABILITY AND DESIRABILITY & SUSTAINABILITY

These four dimensions should be tested through pilots and expert sessions. The concept combines mobility with real-time data orchestration and energy awareness. Further exploration might examine whether energy savings could be turned into direct user incentives—for example, credit for participating in collective movement.

#### DEFINE THE BUSINESS MODEL

The business model behind FLO should be further explored. It likely includes both public and private value streams, such as subsidised coordination services for cities and premium user access to wave-planning tools. Offering discounts on LEV usage in exchange for energy-efficient behaviour by travelling in flocks may also be worth investigating, particularly in line with public transport incentives.



### 13.2 Limitations

While this project offers a vision-driven approach and a conceptual foundation for future mobility development, it also comes with several limitations. These limitations primarily relate to the scope of the work, the level of detail in the concept development, and the methods used to inform and evaluate the outcomes.

#### CONCEPTUAL NATURE OF THE DELIVERABLES

The FLO concept and its supporting framework are intentionally visionary. They serve as a strategic design brief rather than detailed, implementable solutions. While the project outlines a strong experiential direction, concrete development steps—both technical and organisational—remain to be defined. Real-world applications will require further translation and testing of these abstract directions.

#### LIMITED USER INVOLVEMENT AND EVALUATION

This project did not actively involve end-users throughout the research or design phases. Instead, insights were drawn from expert interviews, stakeholder dialogues, and literature. The final concept was not tested with users, and therefore its desirability, usability, and behavioural impact remain unverified. Future work should prioritise co-creation and iterative testing to strengthen human-centred validity.

#### FOCUS ON THE FUTURE, LIMITED ON THE PAST

In line with the methodology, the project focused primarily on exploring future conditions. As a result, analysis of the current state of the domain was intentionally kept brief. While this allowed for a more imaginative and unconstrained outlook, it may also have reduced the depth of understanding of today's user habits, systemic barriers, and operational realities. In future work, a more balanced view—acknowledging the path dependencies of the present—may support smoother transitions from vision to implementation.

#### INTUITIVE ELEMENTS WITHIN THE VIP METHOD

The Vision in Product Design (ViP) method was used as a guiding structure throughout the project. While it supported coherence and conceptual clarity, it also relies heavily on intuitive reasoning. Many synthesis choices—such as clustering, dimension-building, and state selection—were made in dialogue with the supervisory team rather than through empirical validation. This makes the process more interpretive than replicable, and potentially sensitive to designer bias, for the better or worse.

#### DEPTH OF STATE ANALYSIS

The project successfully collected a diverse set of over 199 context factors, providing a rich foundation for constructing future mobility conditions. However, due to time constraints, there was limited opportunity to further analyse the subtleties and tensions between states of mind or to deepen each state's narrative logic. A more iterative synthesis process could have revealed additional connections or emergent qualities across the framework.

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#### BROAD SCOPE AND LIMITED SPECIFICITY

The project maintained a global perspective, using Grand Paris as a representative and relevant case. While this widened the conceptual lens and enabled a systemic framing, it also limited the level of territorial specificity and local grounding in the research. Future iterations could benefit from narrowing the geographic or demographic scope to gain more actionable, context-sensitive insights.

### 13.3 Final conclusion

This project set out to explore what becomes possible when urban mobility design begins with meaning, anchored not in today's limitations, but in tomorrow's potential. Through a structured approach, it delivered both a conceptual framework for understanding future mobility mindsets in the Grand Paris region and a tangible concept illustration in the form of FLO: a Product-Service System that proposes orchestrated public movement as a new mobility layer.

The framework introduces twelve future states of mind, offering a lens through which mobility needs can be understood not as static functions but as evolving mental positions shaped by societal, psychological, and ecological change. By developing one of these states into a conceptual direction, this project shows how Mobilize can connect systemic ambitions with individual experience, bringing together the macro and the micro, the city and the citizen.

FLO is not a finished solution. It is an opening—a call to see movement as something more than transport, and to reimagine the role of the brand in shaping collective rhythms. As a conceptual artefact, it does not dictate next steps but suggests a possible trajectory: one that aligns with Mobilize's values of boldness, optimism, and collectiveness, while also opening space for experimentation and new partnerships that go beyond the initial concept.

Beyond the Grand Paris region, the project offers a transferable logic. Cities like London, Barcelona, or Milan—facing similar tensions between density and dispersion, innovation and inclusion—may benefit from similar design approaches that start with people, places, and purpose.

Ultimately, this thesis illustrates that design for future mobility is not just about adding new beautiful objects, but about sensing new meanings. And sometimes, to catch the right wave, you need to wait, observe, and then move, together.



# 14 PERSONAL REFLECTION

Looking back on this journey, I find myself reflecting on the personal ambitions I set at the outset and how they evolved along the way:

## Articulate a personal design vision within a professional and creative setting

At times, I struggled to explain what I was doing, especially in a context where people are typically identified as either interior, exterior, or CMF designers. That uncertainty led to moments of doubt about my place as a designer. But over time, it became a strength. It allowed me to define design not as something purely visual, but as a holistic way of thinking. That distinction gave me confidence in my role and belief in the relevance of the project in the automotive context.

I believe I stayed true to the project’s intent and managed to present my results clearly to the supervisory team. Outside that core team, however, the project was sometimes harder to communicate. I spent considerable energy trying to keep everyone involved, which at times felt like a superficial ambition in itself. Eventually, I decided to shift my focus from frequent updates to the broader team toward the core of the project: synthesising insights and developing concept directions. That choice gave the project the depth it needed. In hindsight, though, involving more sparring partners along the way might have helped, especially during moments when I felt stuck or needed a fresh perspective.

## Gain deeper insight into the mobility industry to inform future career direction

Five years ago, I stepped into the IDE building at TU Delft with the dream of one day working in a design studio at a major automotive company. That dream came true. Although, I didn’t design a single car (though I may have sketched a few). I explored mobility at its core from a systems and strategy perspective.

This experience showed me that my strength lies not in designing the car itself, but in the questions that shape its existence. My interest lies in defining meaning, direction, and the frameworks that guide future design. I believe there is value in that role. Whether the automotive industry sees it the same way is a question I take with me into what comes next.

## Apply and test the Vision in Product Design (ViP) method in a real-world context

The ViP method suited me well. From context factor generation to framework building, it felt like a natural rhythm that guided me from research to vision to design in a structured yet creative way. Rather than drifting through ideation or getting stuck in surface-level trends, the method helped me form a grounded and meaningful outcome.

The method showed clear value in constructing a rich context and deriving meaningful design directions. However, translating that meaning into concrete business opportunities was more challenging. While the approach resonated well with my supervisory team at Mobilize, it was sometimes difficult for others in the studio to fully grasp its intent or outcomes.

The result, though conceptual, sparked real interest within Mobilize. Several times, it was mentioned that this approach could serve as a ‘Mobilize landmark’ in the years ahead. That affirmation made me feel the work mattered, both for the company and for myself.

## Embrace the learning experience of working and living in Paris to build professional confidence

It’s hard to summarise how much I’ve learned over these past five months. What started as a mountain to climb, without much gear, turned into a journey of building confidence, piece by piece. I learned how to substantiate decisions, to communicate vision with clarity, and to hold my ground even when things got difficult and complex.

Living in Paris added another layer entirely. While long commutes made weekday exhibitions rare, weekends brought the city to life. It is a place I’ll return to and may consider as my second home for the future.

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