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How to speed up investment into mobility innovation in Europe

Draft for Finnish Ministry of Transport and Communication

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Aspectu

Executive Summary

Mobility is facing a tsunami and EU is still sunbathing

- **We are transitioning from the era of cars to the era of mobility.**
  - Industry faces disruptions like electrification, AI, automated vehicles, drones, and super-apps.
  - People are ready to adapt to new mobility solutions with good experience.
  - Creating a global consumer platform in mobility demands big investments.
- **EU has the potential to lead in mobility innovation but lacks bold actions.**
  - Harmonized mobile data roaming enables seamless connectivity.
  - Europe's public transport network is the world's best.
  - Thriving ecosystem of mobility services like car sharing, e-scooters, and ride-hailing.
  - Driven by clean policies and interoperability initiatives like Gaia-X.
- **With all this EU produces no global category leaders that could provide industry leadership in coming decades.**
  - Lack of bold investments in early, category defining stage.
  - European automotive industry is currently not in shape to become leaders of mobility.
  - Scattered pilots do not scale fast enough.
  - EU's fragmented regulations and public sector dominance hinder innovation.
  - Lack of gravity points that move the industry.
- **Taking leadership demands bold visible actions.**
  - Harmonize market regulations and encourage scalable business models.
  - Enhance regulatory clarity and support interoperability and innovation.
  - Reform public procurement practices and develop model markets.
  - Foster cross-sector collaboration.
  - Need for strong market players to utilize coming standards.

Executive Summary

Bold actions to take leadership

1. **Co-invest to create gravity points in the ecosystem**
   - Invest into 3-5 large-scale new companies
     - 1 billion euro each
     - maximum of 20 % of total investment.
   - Done to create globally relevant tech leaders and lead the next era of sustainable integrated mobility.
   - Focus on consumers and multimodal.
   - Generates real use for AI and automation in mobility.
   - Needed to overcome industry inertia and scaling challenges.
2. **Mobility as a Feature (MaaF)**
   - Integrate mobility services into non-mobility sectors like retail, insurance, and events.
   - Create seamless user experiences across industries.
   - Two options for action.
     1. Incentivize and enforce embedding of mobility to other sectors with Italian model.
     2. Create a service provider out of existing public players
3. **Big market trials for disruptive technologies**
   - Creates investable markets for automated vehicles and drones in EU.
   - Launch 2-4 market areas for a true market pilot
     - Public transport and publicly funded trips fully or partially replaced with AV's or drones.
     - Use funds to buy trips from qualified service providers
     - Allow vehicles to be used for other purposes
4. **Create retail markets for trips**
   - Vital for creating scalable and investable market for multimodal services.
   - Define clearly fair, reasonable and non-discriminatory contracts between including minimum commission.
   - Create EU-wide technical standards for data exchange for full integrations.
   - Define clear responsibility for enforcement and create permanent 'MaaS Office' to ensure adoption.

Setting the Scene

EU has what it takes, except for actions

From the era of car to the era of mobility

Mobility is facing a tsunami and EU is still sunbathing

- Electrification is not the only disruption that mobility is facing.
- Artificial intelligence, automated vehicles, drones and super-apps will change the scene even more dramatically.
- For people this means more choices to fulfil their **need for freedom of mobility.**
- EU stands now with 11-man defense hoping it would all just go away.
- EU has the best elements to become the example of future mobility that works for people, society and business.
- Taking leadership calls for bold actions.
- How our cities look like in near future is determined by how our freedom of mobility is produced. Without actions it will be dominated by few tech giants that determine how our citizens move around.
- Resilience of transport market is poor due to big legacy.


Demand exists but the industry is not providing services

Economic growth + Sustainability

20% of a household's budget is transportation

76% of that is the cost of owning and using a car

96% of time the car sits unused

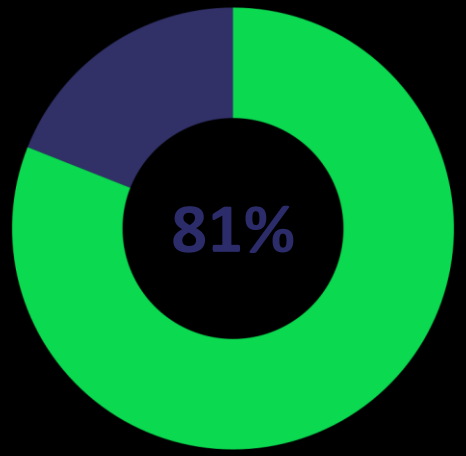
40% of carbon emissions are from traffic by 2030

38% would give up their car if they only could

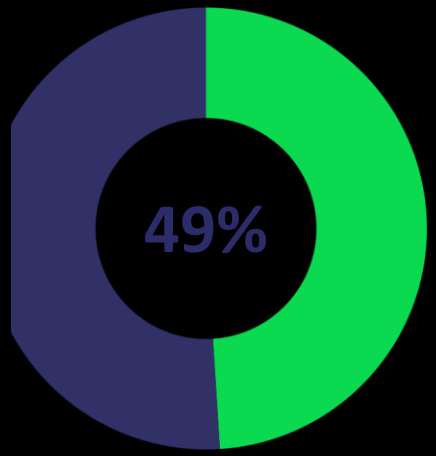
70 million cars off European roads

Sources: LeasePlan, World Bank, World Health Organisation, Inrix, European Commission, Eurostat, Frost & Sullivan, Kantar

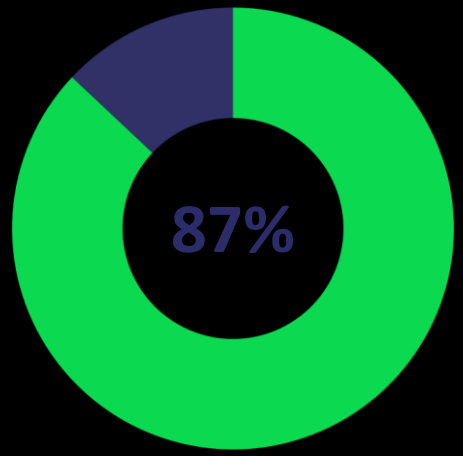
People are ready and adjusting to the mobility evolution - but they need tools



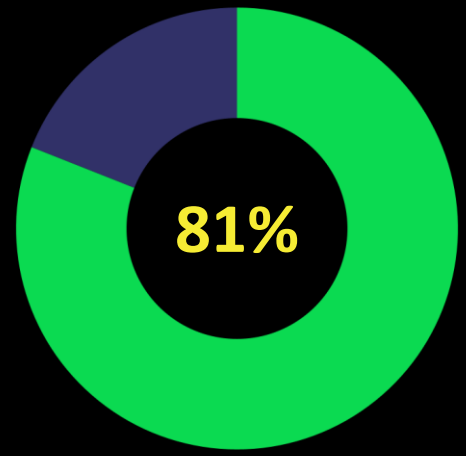
By 2030, I will take **significantly fewer business trips** compared to 2019



By 2030, I will **sacrifice vehicle ownership** to reduce my environmental footprint



By 2030, I will commute less frequently (e.g. to work) compared to 2019



By 2030, I will prefer to **use one single app/platform** for ordering and billing ALL my mobility-related services (e.g. car, bus, train, plane)

BearingPoint Mobility 2030, Survey 2022

Private investment in mobility state of play – why EU is ideal leader for mobility transition

- **Seamless Connectivity Across Borders**
  Thanks to Europe's harmonized mobile data roaming, travellers and commuters can stay connected no matter where they are. This is the backbone of smart mobility solutions, enabling real-time updates, route optimization, and fully integrated transport systems.
- **Strong European Automotive Sector**
  Europe is home to some of the world's leading automotive manufacturers, known for their innovation, quality, and sustainability. This sector's strength provides a solid foundation for advancing mobility solutions and integrating cutting-edge technologies into the mobility ecosystem.
- **The World's Best Public Transport Network**
  Europe boasts the densest, most reliable public transport infrastructure in the world. From metros to high-speed trains, this network is the perfect foundation for building advanced, sustainable mobility ecosystems.
- **A Thriving Ecosystem of Services**
  Car sharing, e-scooters, ride-hailing, and micro-mobility solutions are already part of daily life across the EU. These services can be unified into dynamic, multimodal systems that work better together.
- **Tech-Savvy, Forward-Thinking Consumers**
  European consumers are ahead of the curve. They embrace technology and are comfortable using multiple modes of transportation. This openness creates the perfect environment to test and scale innovative solutions.
- **Leaders in Technology and Sustainability**
  The EU is a powerhouse of technological development and a global leader in renewable energy, smart systems, and AI. These strengths align perfectly with the urgent need for cleaner, and smarter transportation.
- **A Market of Well-Earning Consumers**
  Europe's affluent population is ready to invest in premium, eco-friendly mobility solutions. This makes the region an attractive testing ground for companies aiming to launch high-quality sustainable services.
- **Driven by clean Policies**
  With its bold climate goals and policies pushing the clean transition, the EU is not just encouraging change—it's driving it. Funding, regulations, and incentives are paving the way for an era of clean, connected transportation.
- **Interoperability Through Gaia-X**
  The EU is advancing towards seamless data sharing and system interoperability with initiatives like Gaia-X. By enabling cross-sector collaboration and standardized data frameworks, Gaia-X is laying the foundation for a more cohesive, scalable, and efficient mobility ecosystem.

Private investment in mobility state of play – blockers in EU

- 🚧 **Fragmented Internal Market**
  The EU's internal market is a patchwork of rules and standards, creating roadblocks for companies trying to scale their mobility innovations across borders.
- 🏛️ **Public Sector Dominance**
  With publicly-owned giants dominating transportation markets, private companies face tough odds breaking in, stifling competition and innovation.
- **Lack of private sector BtoC** service providers in multimodal services.
- 🐢 **Slow Lane for Automotive Innovation**
  Europe's traditional car industry is stuck in the slow lane, struggling to keep up with cutting-edge technologies and leaving an economic gap in its wake.
- 🔬 **Scattered Pilots, No Big Wins**
  The mobility sector is full of small-scale experiments that fizzle out before creating game-changing, scalable solutions.
- ❓ **Regulatory Uncertainty**
  Blurred lines in who's responsible for what leave investors guessing, discouraging them from diving into new mobility projects.
- 🔗 **Tech That Doesn't Talk**
  A lack of interoperability in mobility technologies means systems can't connect, stalling the growth of seamless, scalable solutions.
- 📉 **Public Procurement Pitfalls**
  Outdated procurement rules are holding back innovation, creating barriers to building smarter, cleaner transportation systems across the EU.

How EU can set a global example in mobility innovation

- **Harmonize EU Market Regulations**: Develop unified standards and policies to reduce fragmentation and provide a predictable investment environment.
- **Encourage Scalable Business Models**: Create incentives and frameworks that allow startups and companies to scale effectively. Let companies grow fast.
- **Enhance Regulatory Clarity**: Clearly define stakeholder responsibilities and obligations to reduce uncertainty.
- **Support Interoperability and Innovation**: Foster technology-neutral solutions and improve the interoperability of systems and business models.
- **Reform Public Procurement Practices**: Align and modernize procurement rules to better support innovation and market renewal.
- **Develop Model Markets**: Establish example markets, like Finland, to test and demonstrate successful innovations that can be scaled across the EU.
- **Foster Cross-Sector Collaboration**: Encourage cooperation between public and private sectors to balance roles and create a competitive yet collaborative environment.

We all know this. But what are the actions leading to goals?

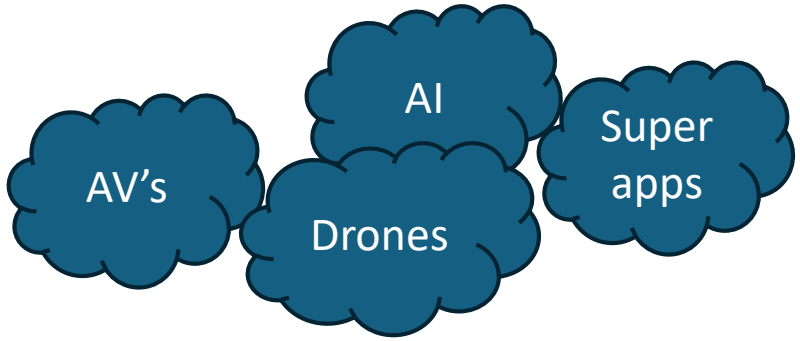
Inertia that shows in underserving people

Changing user behavior

<u>Winning companies in the market</u>

- Lack of risk capital
- EU funding spread thin to small non-scalable projects

New Disruptive Technologies



<u>Market conditions</u>

- Fragmented and unpredictable regulation
- Incentives missing

Infrastructure for Interoperability

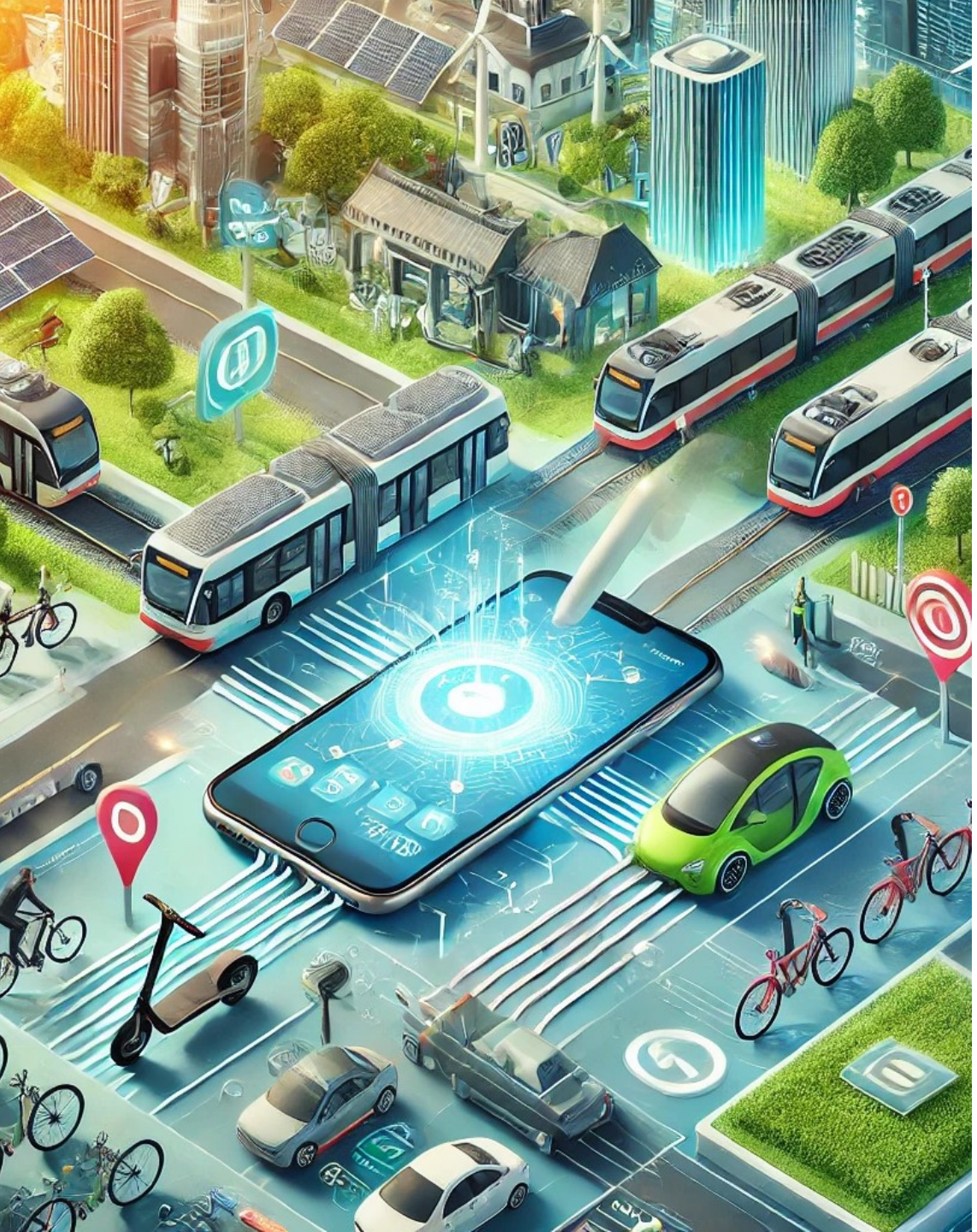
- Interoperability starting to function with Gaia-X
- Standards for interoperability are progressing to enable markets and avoid monopolistic markets.
- There is a lack of strong market players to utilise coming standards.

Examples of of policies around the world

- General
  - MaaS had to be restarted after Covid. Much of the good work is still unproven.
- The pilot project model
  - Malmö, Berlin, Holland, LA, Japan, UK etc.
  - Quick and dirty project by public entity with poor designs and weak offering. No investment in marketing and no business plan.
  - Will get some insight on technical capabilities but no sustainable service markets.
  - No real data of markets and customers due to the project nature.
  - Mostly just delays and harms MaaS development.
- Finland model
  - Legislation first to allow markets to evolve.
  - All transportation service providers are obligated to have an API for aggregators and to make a FRAND (Fair, Reasonable and Non-Discriminatory) contract with them.
  - No incentive program was made, and the law was not enforced properly. The impact is thus hard to judge.
- Antwerp model
  - City welcomes all transportation service providers but forces them to prove they are integrated to a minimum of 2 MaaS operators.
  - Some very small incentives in place.
  - So far, the most successful model that has brought a competitive landscape to a relatively small market and even with Brussels being a closed market.
  - After Covid private investment has been tough which has limited the offering since MaaS is still in investment phase everywhere. Lack of expansion is a big issue.
- **Turin /Milan/Rome model**
  - **Allocation of ‘vouchers’ to the end users to incentivize private investment to MaaS.**
  - **A beauty contest to participate.**
  - **Has triggered more investment already than what will be paid as incentives.**
  - **Will be expanded further in Italy.**
  - **Combines user interest, policy goals and private investment.**

Bold actions to take leadership

Big ecosystem changes need government leadership



Ideas for concrete steps

1. **Opportunities for public-private co-investment,** including EU level large-scale industrial investments and considering the role of potential state-owned enterprises or organizations in early-stage risk sharing and start-up.
2. **Integration of mobility services into society (Mobility as a Feature).**
3. **Utilizing various incentives and regulatory changes in the development of the mobility service market.**
4. **Create retail markets of trips**

3. Create gravity points to mobility

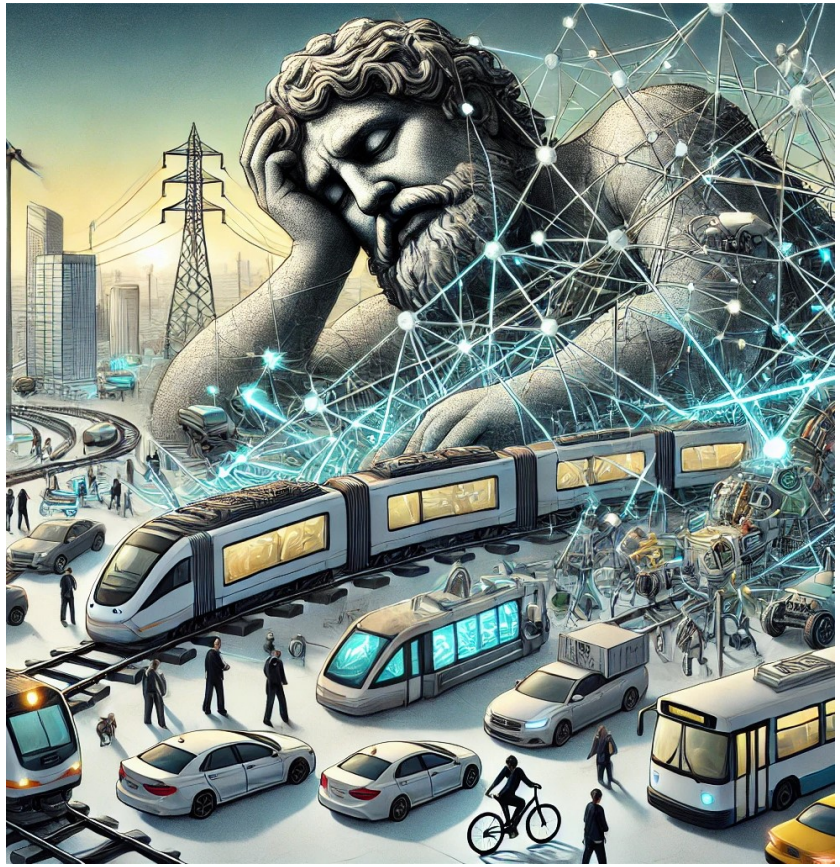
Car manufacturers are national companies, what about mobility?

Mobility ‘factories’ are also very costly.

What if we would have strong European players combining public and private ownership?

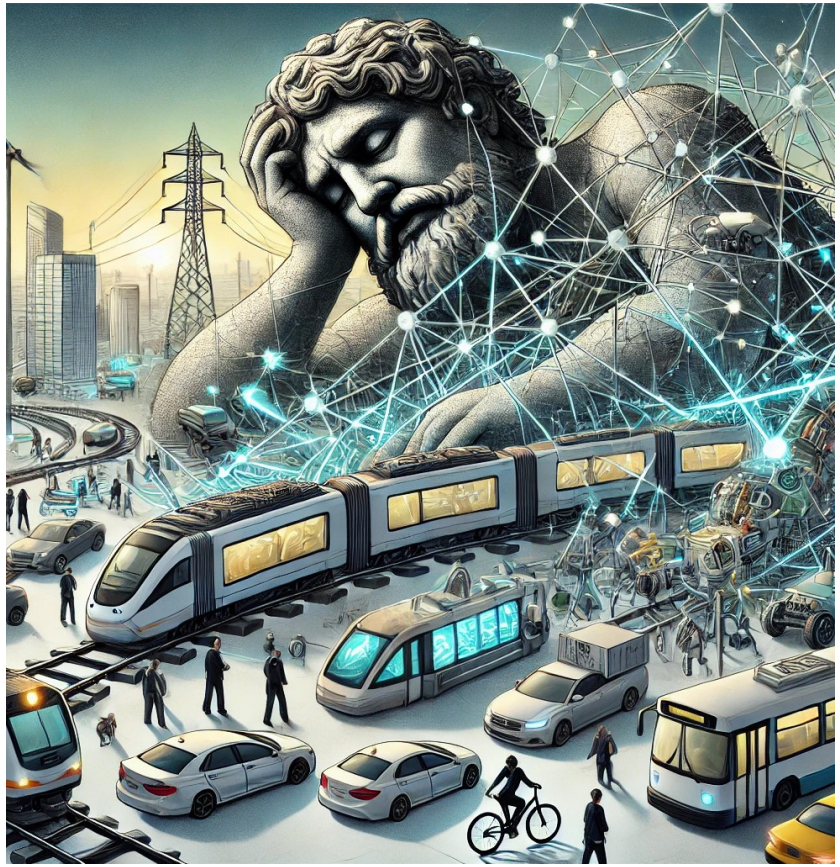
3. Co-invest to create gravity points in the ecosystem - Intro 1

- **The Mobility Ecosystem: A Sleeping Giant in Need of Disruption**
- The mobility ecosystem is the second-largest industry globally, consuming approximately **20% of household expenditures**.
- Despite its size, it remains heavily **regulated** and fragmented, with each transportation mode operating under distinct business and revenue models.
- In Europe, fragmented regulations have created **significant risks for private investment**, discouraging large-scale innovation.
- Consequently, the European mobility landscape has primarily focused on **defence and incremental improvements**, lacking bold, game-changing visions.



3. Co-invest to create gravity points in the ecosystem - Intro 2

- While the ecosystem hosts **numerous small, innovative companies**, it suffers from the absence of strong **gravity points**—central players or platforms—to drive systemic disruption. True mobility transformation demands **substantial capital** to overcome industry inertia and scaling challenges.
- To break through this **investment barrier**, public-sector leadership must take a more **active role**, mirroring successes seen with **Airbus** in aviation or government-backed automotive industries.
- There is a lot of **sleeping capital** waiting to enter mobility.
- A strategic public-private partnership could unlock the potential for Europe to lead the next era of sustainable and integrated mobility.



Speed up scaling: Co-invest to create gravity points in the ecosystem

1. **Use EIB for targeted investment in consumer facing mobility**
2. Leverage EU or national funding schemes to **establish 3 large-scale companies** with a clear strategy to deliver sustainable and viable mobility solutions for consumers.
3. **Announce a joint investment commitment of 1 billion euro each which should equal maximum of 20 % of total investment.**
4. With a suitable group of private investors this will **demonstrate strong public-private partnership** and confidence in the vision.
5. Investment should brin European **competitive global platforms** with strong presence in AI and automation.
6. **Deploy regulatory measures** to facilitate market entry for innovative mobility services, including:
   - Ensuring fair access to existing transport infrastructure and services,
   - Tax reforms to promote sustainable employee mobility options,
   - Simplified access for new transport services and technologies, and
   - Strategic investments in infrastructure, such as mobility hubs, to improve connectivity and accessibility.
7. **Publish a compelling EU or national vision** that champions freedom of mobility, positioning the region as the global leader in sustainable and innovative transportation solutions for the coming decades.

Steps for creating gravity points by co-investing

1

Step 1: Publish the intention to invest 1 billion euro into maximum 3 mobility companies

- **Public ownership max. 20 %.**
- **Consumer services.**
- **Multimodal services.**
- **Not manufacturing cars.**
- **Global scaling potential.**
- **Technology leadership.**

2

Step 2: Establish European mobility services leaders

- **Engage actively with potential private investors.**
- **Publish EU-intentions for industrial leadership.**
- **Choose best proposals for co-investment**
- **Opening markets needs to happen simultaneously.**

3

Step 3: Pave the way for success

- **Create open and competitive markets in EU in order to benefit from home markets.**
- **Assess the necessary strategic ownership.**
- **Actively look for global market regulation to open markets.**

Actions on EU-level Co-investment

- **This proposal is meant for EU-level** whilst it is most likely that big players end up being competitive national champions like in automotive.
- **Start with bold investment proposal** and start market discussions only then.
- **Do not overly restrict the vision of the new companies.** Main strategy could be embedding mobility or selling cars you never own or more.
- **Communicate excessively.** Investments follow trends and trends are created in media.

Regulation issues for creating gravity points

- **Lack of retail market for trips.**
- Can R&D program funding turn into equity?
- National regulations on reselling of especially public transport.
- Tax regulations on employee benefit of mobility
- Tax regulation on VAT of combined mobility services.

1. The new paradigm for mobility:

Make mobility seamless part of all other sectors, Mobility as a Feature (MaaF)

Mobility as a Feature

- **What is MaaF?**
  Mobility as a Feature (MaaF) is a concept that integrates mobility services into non-mobility sectors like retail, insurance, events, and more, creating seamless user experiences across industries.
  (https://www.tandfonline.com/doi/full/10.1080/01441647.2022.2159122)
- **Shift from Multi-Modal to Multi-Service Perspective**:
  MaaF moves beyond the traditional multi-modal perspective (focusing on modes of transport) to embrace a multi-service perspective, embedding mobility where people naturally need it.
- **Potential for Sector-Specific Approaches:**
  Given mobility's pervasive influence, there is potential for developing tailored, sector-specific MaaF solutions that address unique industry needs and user preferences.
- **Inspired by Embedded Services in Other Sectors**
  Much like how finance and insurance sectors have successfully adopted embedded services, MaaF leverages mobility's universality to create tailored, sector-specific solutions for various industries.
- **Challenges and Considerations:**
  Implementing MaaF requires addressing challenges such as regulatory frameworks, technological interoperability, and stakeholder collaboration to ensure successful integration and scalability.

User cases

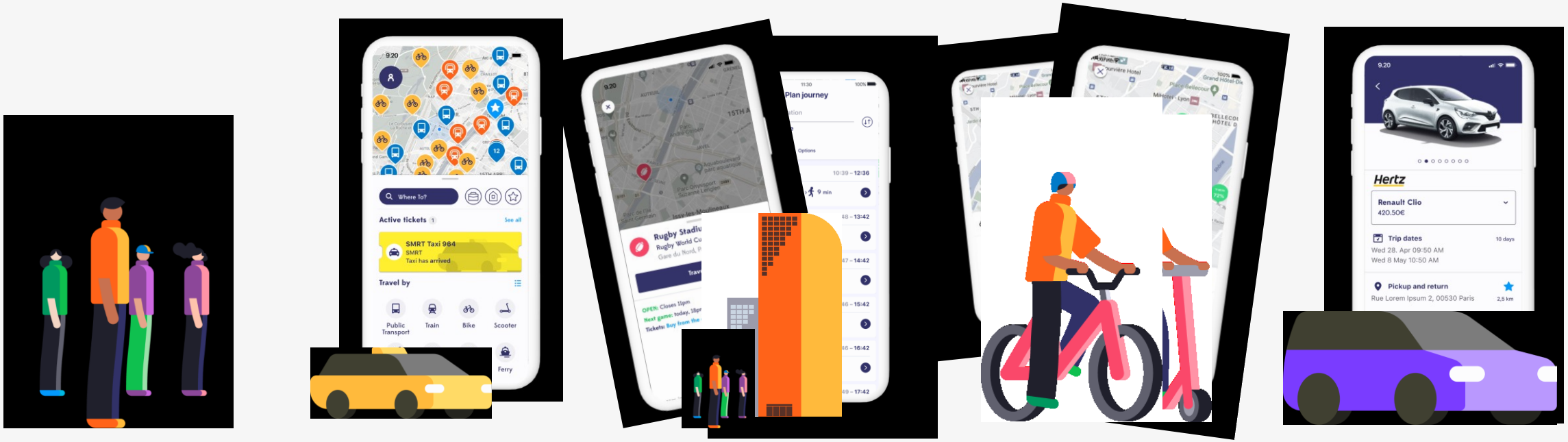
Mobility as a Feature

Mobility in Rugby World Cup - International Visitor

150 € /package

400 € /premium package

As a rugby fan and tourist, Peter can get smoothly from the airport to the hotel and continue to the stadium. Premium package can include car rentals



1. Subscribe to a package

Peter signs in to the mobile app and finds the package most suitable for his needs

2. Taxi to hotel

After landing in Paris, Peter and his friends take a taxi from the airport to hotel

3. Plan the journey to the game

At the hotel, Peter plans his trip to the rugby stadium for today's game

4. E-bike or scooter to stadium

Friend group decided to get to the stadium by bike - enjoying the city on the way

5. Car rental for the games in other cities

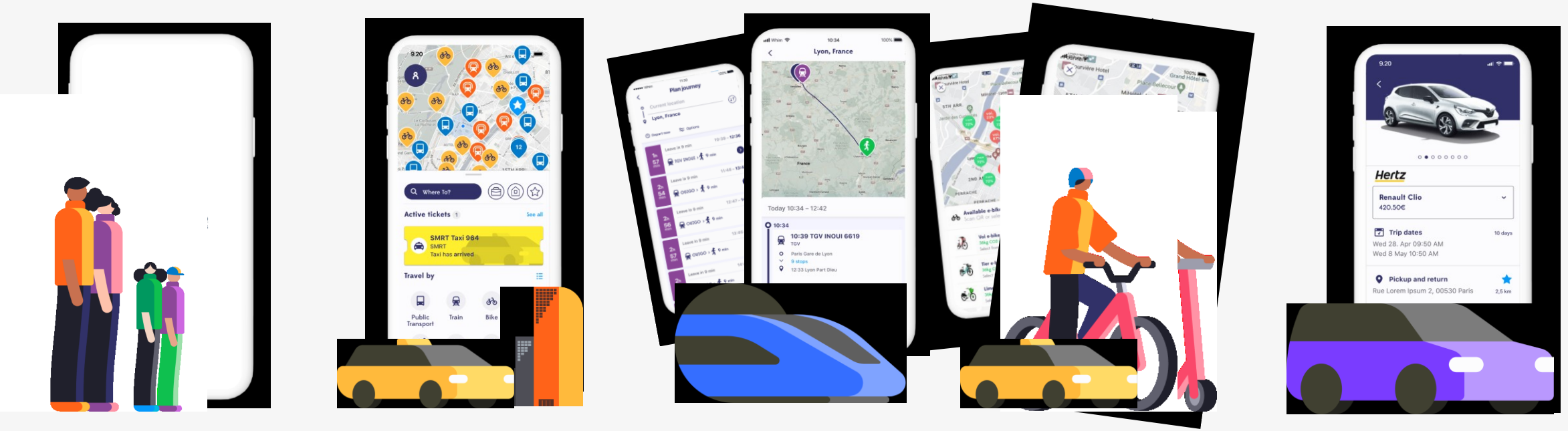
Over the next few days, the friend group is attending the games in a couple of different cities. Hence, renting a car becomes handy

Note: micro-mobility will not be available in certain RWC host cities

Mobility for Disneyland Tourists

105 € /package

As tourists, Jack and his family are able to get smoothly from the airport to the hotel, visit Disneyland, experience the city of Paris and other places in France



1. Sign up

One of the key reasons to come to Paris is Disneyland, therefore Jack has signed up for the app, which has also mobility services

2. Taxi to hotel

From the airport, they are able to get a taxi to the hotel with the same mobile app

3. Train to Disneyland and back

Jack and his family take the train for all their Disneyland journeys

4. Taxi, e-scooter, and e-bike to move around Paris

For getting to places in Paris, they use often micro mobility and during the nights a taxi

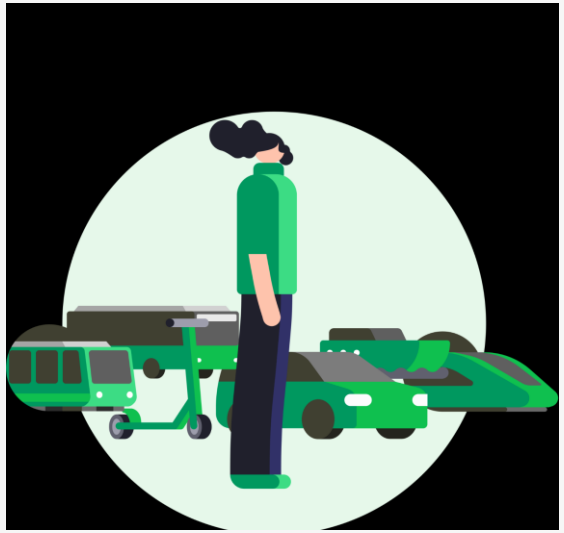
5. Car rental for the other tourist trips

For visiting other attractions outside of Paris, (e.g. vineyards, Loire Valley), they rent a car for a few days

Mobility instead of leasing:

Freedom subscription is better than your company car

Freedom of all-inclusive mobility with a monthly carbon budget (50kg CO2) encourages to keep the carbon footprint in a sustainable level.



1. Move within the carbon budget

Use all the available modes of transport within the monthly carbon budget.

2. Gain rewards of saved CO2

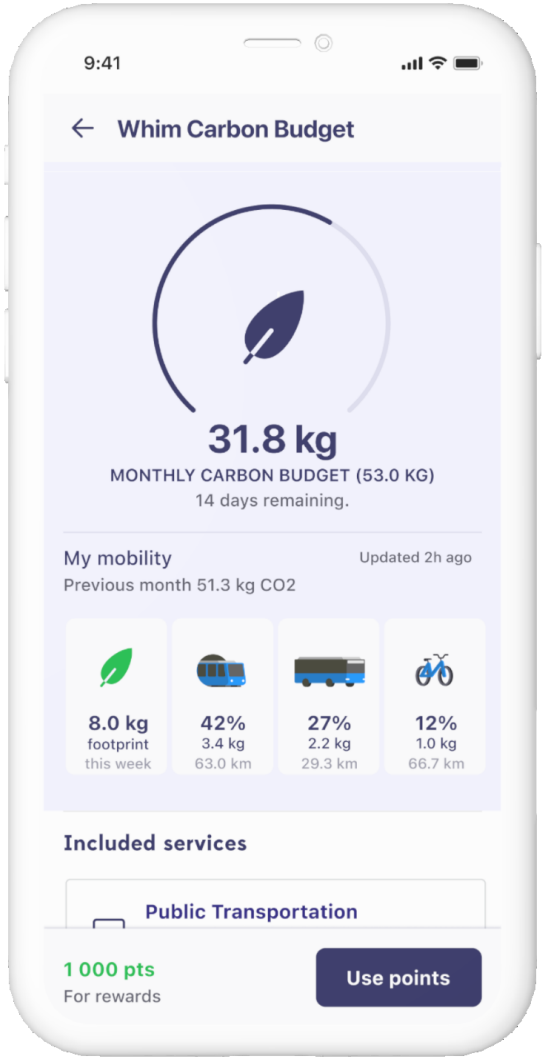
Get upgrade reward points of each saved kg. Exceeding the carbon budget costs 20 CHF / additional kg.

Get assisted

Assistant in all journeys just one click away

Insured journeys

Unified insurance coverage over all modes



Case Study Italy: The economics of courtesy cars

This?

Or all this?

Average car replacement days	≈ 8
Average cost per rental day in 2022 [EUR]	≈ 26-28
Replacements from big cities in Italy	25-30%

Average replacement duration is linked to average coverage from contract, which usually is 7 days or above

Vat excluded

Percentage of car replacement demand that can be substituted with MaaS vouchers

Source: Roland Berger

Strictly Private and Confidential

MaaF takes on the challenge of clean and digital transition in mobility

- Car is still dominant, because it is integrated to all sectors – we have parking in all shopping centers, companies give cars to employees, insurance evolves around car, and you rent an apartment with parking.
- All other modes are only partial solutions and thus not integrated in other businesses.
- Mobility solutions have had hard time getting over the critical mass to become profitable. User acquisition is often 70 % of investment.
- MaaF can be a faster and more cost-effective way of market entry.

Mobility as a Feature - setting the goal

- **Integrating Mobility Across Society**
- **Current Issue**: Mobility is car-centric, poorly integrated elsewhere, and fragmented.
  - Businesses validate parking but neglect mobility services.
  - A solution must cover **all modes** and regions—not just one city or transport option.
- **Opportunity**: Embed mobility services into sectors, like Klarna did with **embedded finance**.
  - Mobility can be a low-hanging fruit for **sustainability goals**.
- **Key Challenges**:
  - Highly fragmented regulation across modes, cities, and countries.
  - High investment risk due to lack of scalability and integration.
  - No suppliers in the market that could offer embedded solutions.
- **Solutions Needed**:
  - **Easy & fair access** to all transport services.
  - **Public commitment** to drive market evolution.
- **Goal**: Create scalable, integrated "**Mobility as a Feature**" solutions at an **EU-wide level**.

Mobility as a Feature First Areas

Sustainable Travel Options

- Both employees and employers want to encourage more sustainable commuting solutions
- Traditional car leasing to be progressively replaced by MaaS being made available on a wider scale

Employee Benefits / Mobility Budgets

- Provide employees with the freedom to choose a means of transport that suits their individual needs
- Need to also partner indirectly with employee benefit providers and travel expense management platforms

Infrastructure / Mobility Operators

- Private players with close links to local authorities can play a key role in pushing forward a MaaS agenda
- Large local tenders increasingly include the need for a MaaS component

"Property MaaS"

- Provide subscription plans to building residents by combining various modes into a single package
- "Lifestyle as a Service" vision to meet the needs of residents while optimising available real estate usage

"Event MaaS"

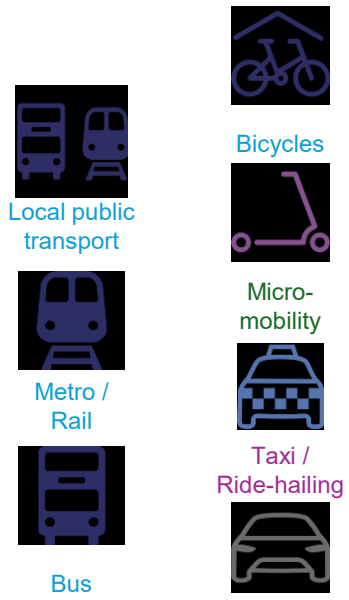
- Initially dedicated to a major recognised event for local users and attendees (e.g. sport competition)
- Specific event greatly facilitates market entry with local authorities and TSPs, before full roll-out as 2nd step

Insurance Cooperation

- Change in mobility paradigm from insuring usage to insuring individuals (under one single set of terms)
- Insurance firms looking at protecting legacy business while attracting younger audience with new products

MaaF business model

Transportation
Service Providers



All integrations and clearing

Non-transport
Service Providers

- Embedded 'how to get there' inside non-transport services
- Mobility as added revenue
- Mobility bringing more engagement
- Using mobility as part of loyalty program

Service contract

- *Sector specific services*
- *Earning logic per sector (fee, revenue share, engagement)*

MaaF Providers

- Enable adding mobility to other sectors
- Acts as service provider
- Passenger responsibliities
- Integrations
- User experience
- Clearing

Mobility embedded

- *Validated mobility instead of parking*
- *Alternative to leasing*
- *New services for publicly funded trips*
- *Mobility together with rent*
- *Getting around hotel with all modes as extra*

Consumer

Provides the mobility

- *Mobility offering*
- *Customer care*
- *Billing*

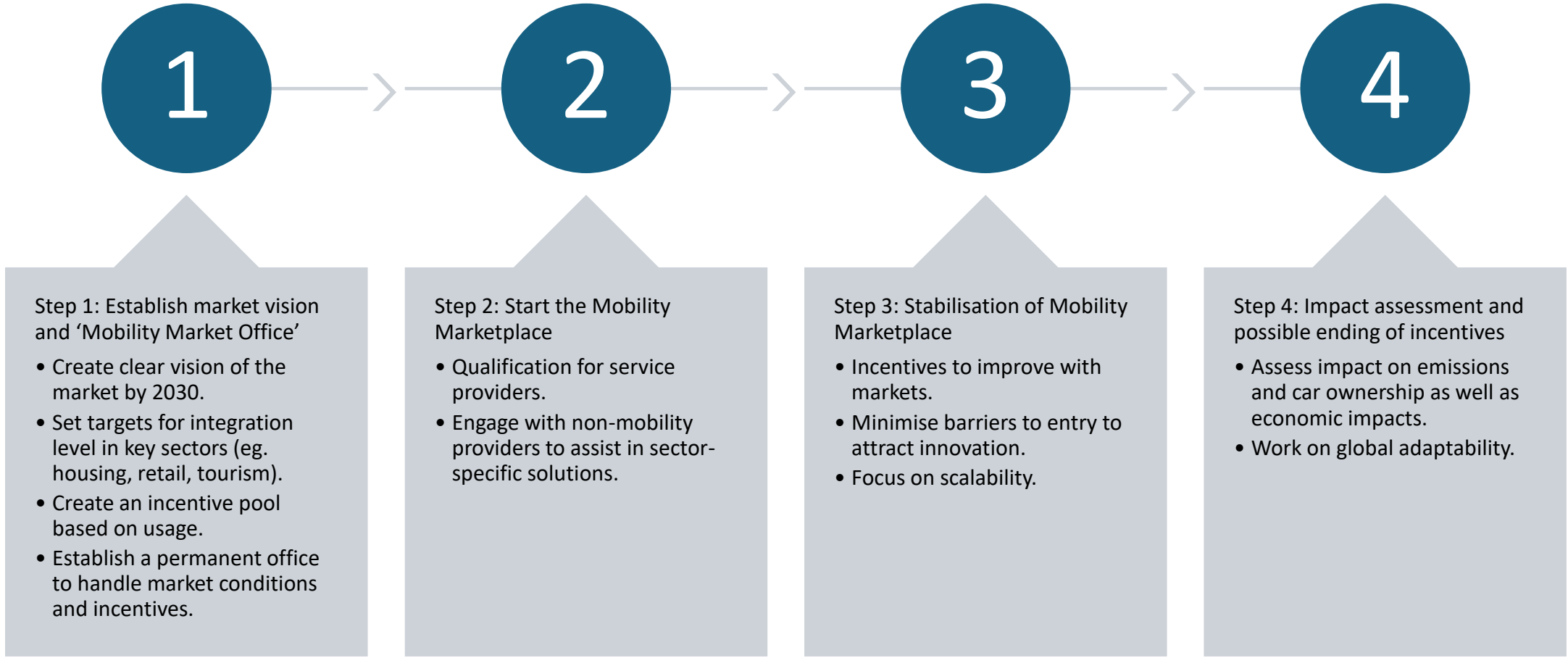
Mobility as a Feature proposal

- Option 1: Incentivize and enforce (Italian/ Australian model as basis)
- Option 2: Create a service provider out of existing public players (Fintraffic)

Option 1. Incentivize and enforce embedding of mobility to other sectors

- **Create a 'MaaS Office'**: Set up a permanent authority to manage incentive programs, oversee progress, and act as a central contact point for the ecosystem.
- **Embed mobility into key sectors**: Incentivize integration of mobility solutions in industries like retail, housing, events, and tourism.
- **Set bold targets**: Define measurable goals for integrated mobility adoption within selected sectors.
- **Establish an incentive pool**: Create financial incentives to attract and encourage private investments in mobility solutions.
- **Enforce fair access to transport services**: Implement minimum service contracts, conduct regular API checks, and ensure compliance with open-access regulations.

Steps for market creation with incentives



Option 2: Create a service provider out of existing public players

- **Transform publicly owned companies such as Fintraffic or transport operators into leading mobility as a feature champions** by leveraging their existing infrastructure and expertise.
- **Create a competitive landscape** that enables scaling opportunities, like the telecom industry's evolution. This requires restructuring monopolistic systems to foster innovation and competition.
- **Ensure sufficient access to capital** for these operators, allowing them to invest in technological transformation and service expansion.
- **Redefine public transport markets** by enabling integration from local city networks to national and international levels, creating seamless mobility ecosystems.

Steps for market creation with a publicly owned company

Step 1: Establish a vision for the mobility company

- Not directly to consumers.
- Integrates all transport services and handles clearing.
- Potentially developing user interface to be embedded into non-mobility sectors.
- **Mobility company can only function with functioning retail markets for trips.**

Step 2: Fund the company

- Capital is needed to develop solutions and create enough critical mass from non-mobility sector.
- Development is only viable with international scaling in mind.
- Assess the need for public purchasing agreements to fulfill public sector needs (healthcare etc.)

Step 3: Look for private investors to scale

- Assess the necessary strategic ownership.
- Mobility markets may be local, but services need local markets to stay competitive.

Actions on EU-level Mobility as a Feature

- **Develop a comprehensive market vision** where mobility seamlessly integrates across all sectors.
- **Ensure a unified retail market** for trips that includes all modes of transport.
- **Leverage and incentivize consumer-based tendering**, allowing user incentives to determine market winners.
- **Prioritize market trials over pilot projects** to drive real-world adoption and scalability.

Regulation issues for MaaF

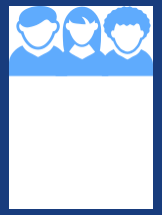
- **There is no retail market of trips in EU.**
- Integrations have gotten easier and digital wallet (as well as EMV) help in technical.
- Biggest issue lies on contracts – today especially public transport monopolies give retailers impossible conditions. There is a need for **clear rules for a 'FRAND**'-contract.
- Some regulation is also poorly enforced.

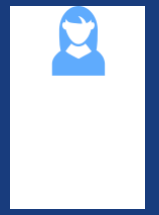
2. Public procurement to big market trials - Intro

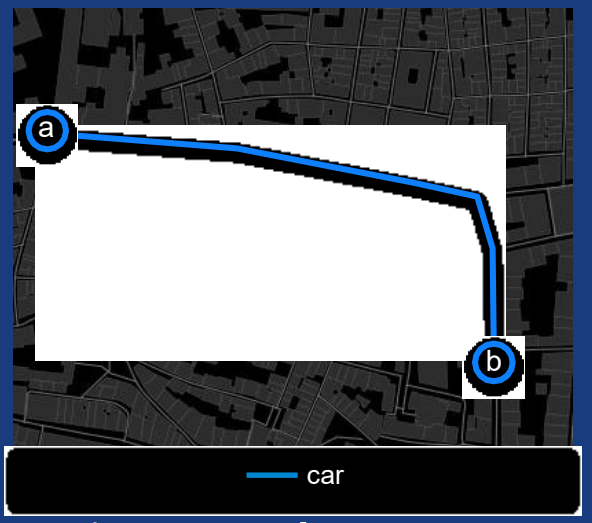
- Disruptive technologies like automated vehicles (AV), drones, micromobility and on-demand services are used on the side or as technical trials. With that approach the real impacts are vague and often non-existent.
- Instead of isolated technical trials make a **market trial** for AV's and other disruptive technologies to be used as a **substitute for existing services**.
- **Redirecting** some of the **money** for public transport and infrastructure and appointing it to 1-3 sites to create a credible market trial would open investments and show the real potential of upcoming innovations.

This will happen with current development of AV's

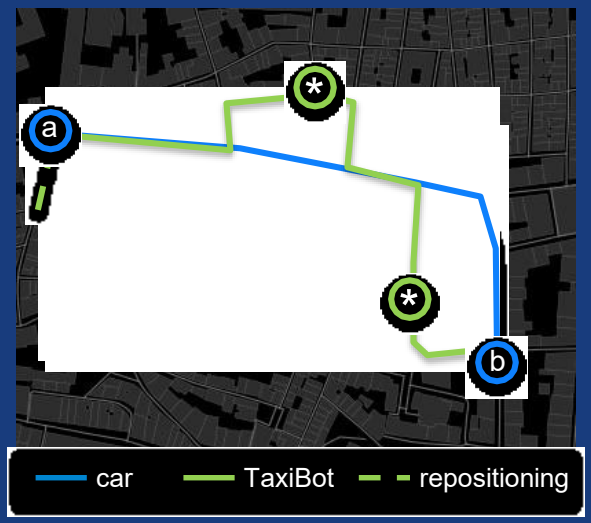
ITF: Urban Mobility: System Upgrade





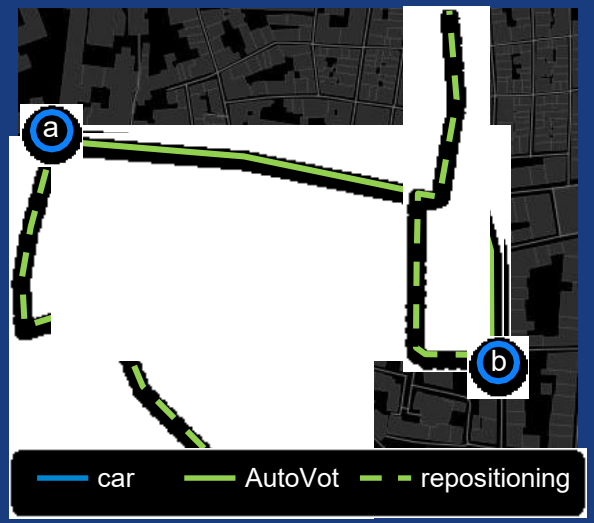


TaxiBots and AutoVots will travel more than today's cars



+25%

more kilometres travelled due to bus replacement, pick-ups, drop-offs and re-positioning



+103%

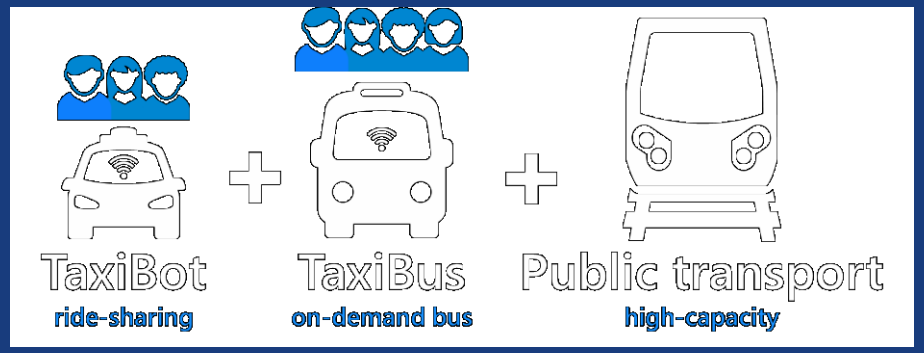
more kilometres travelled due to bus replacement, re-positioning

This could also happen if markets work differently

-15%

vehicle kilometres

Scenario: 24 hours



Public procurement to market trials - Proposal

- Create few but big enough market trials to gain critical mass to attract investment.
- Make it truly future reliant so that new innovations are not just add-ons but are truly tried in practice.
- Choose an area where public transport (outside of rail), social transport will be organized with a combination of automated vehicles of different types (taxi, on-demand, routed bus), drones and potentially other suitable cutting-edge innovation.
- Suitable areas could be mid-size cities or large suburban areas with feeder traffic.

Public Procurement Steps

1

Launch a search for 2-4 areas willing to create a true market pilot

- Needs to reorganize public transport and publicly funded trips (hospital, school and other).
- Incentivize the change with added pool of funding in the beginning.
- Launch a tender to choose a pool of transport providers that fit service and technology criteria.
- Public money is used to subsidize directly trips.

2

Iterate and expand

- Plan expansion plan and criteria of success early to create investment appetite. Without scaling opportunity, there is no private investment.
- Reorganize incentives actively to steer towards policy goals and start lowering them as soon as possible.

Actions on EU-level Big market trials

- **Choose 2-5 areas to concentrate efforts** and finance those areas so that real impact can be assessed.
- **Have proactive discussions** with potential investors and actors to provide services in the area.
- **Communicate a vision of the wanted user case** and engage with users from beginning.
- **Design for scale** and communicate the timeframe for scaling the markets.

Regulation issues for Market trials

- Public money for transport comes from different sources with low level of coordination.
- Tendering for user incentive with new technology is a new area
- Creating market areas there is possibly a need to create legislation specific to trial area to allow innovations (especially public transport monopoly)

4. Create retail markets for trips
Intro

- Today companies basing their business on combining multiple modes cannot function due to lack of supply.
- Worst mode to integrate is city public transport with city-specific policies and non-existing retail markets.
- In mobility data is still seen as a product for people.
- What people want is to be transported, use of data is for the service provider.
- This means having data without the actual trip (including hailing, booking and paying) has very limited value.
- To create multimodal services for the end user, retail market of trips needs to be created.
- We have underlying technology structures but we’re lacking hungry companies wanting data.
- **Without functioning retail markets for trips there is no clean and digital transition.**

How to create functioning multimodal markets in EU?

- Enablers
  - Interoperability
  - Unified and stable markets
  - Legislation
  - Incentives
- Companies (someone needs to want interoperability)
  - Investment in BtoC
  - Anchor companies

What needs to happen to enable retail markets

- Technical
  - Standard interfaces.
  - National data quality assurance (continuous checking of API quality).
- Legal
  - Definition of FRAND and status of retailer (especially against monopolies).
  - User rights in aggregated services.
  - Potentially national minimum contract.
  - Checking of potential barriers like ticket resell restrictions.
- Commercial
  - Initiating markets with tax and other incentives.
  - Market for lowering emission in similar way as compensation.

Steps for creating retail markets for trips

Step 1: Set the rules

- Technical standards.
- Clear definition of fair, reasonable and non-discriminatory including minimum commission.
- Define clear responsibility for enforcement.

Step 2: Actively enforce to enable markets

- Sticks and carrots in active use.
- Engage actively with integrators to see gaps.
- Make sure all public purchasing promotes use of all modes.

Step 3: Global engagement to promote similar markets globally

- Actively promote global market creation to enable scaling.
- Define markets for lowering impacts using example of compensation.

Actions on EU-level Retail market for trips

- This action is **a fundamental enabler** for all other proposals.
- While initiatives can begin at the national level, **scalability is essential** to attract large-scale private investment.
- **Mobility must be "double integrated":** seamless solutions within the sector and integration with all other essential services.
- The telecom industry provides a strong precedent for success.
- A dedicated, permanent office may be necessary to ensure continuity, stability, and commitment.

Examples

MaaS4Italy in Turin

- **Open to all** Turin's citizens, aiming to reach 5.000 users;
- **Open market**, with 6 MaaS Operators involved;
- **Mobility Service Providers** of Turin fully integrated;
- **Public incentives** for users with welcome bonus and cashback to boost behavioural change;
- **Long time horizon**: from July 2023 to March 2026

We want to build **customer loyalty,** define **new sustainable policies** favouring **greener mobility options.**

TECNOLOGIE
TELEMATICHE
TRASPORTI
TRAFFICO
TORINO

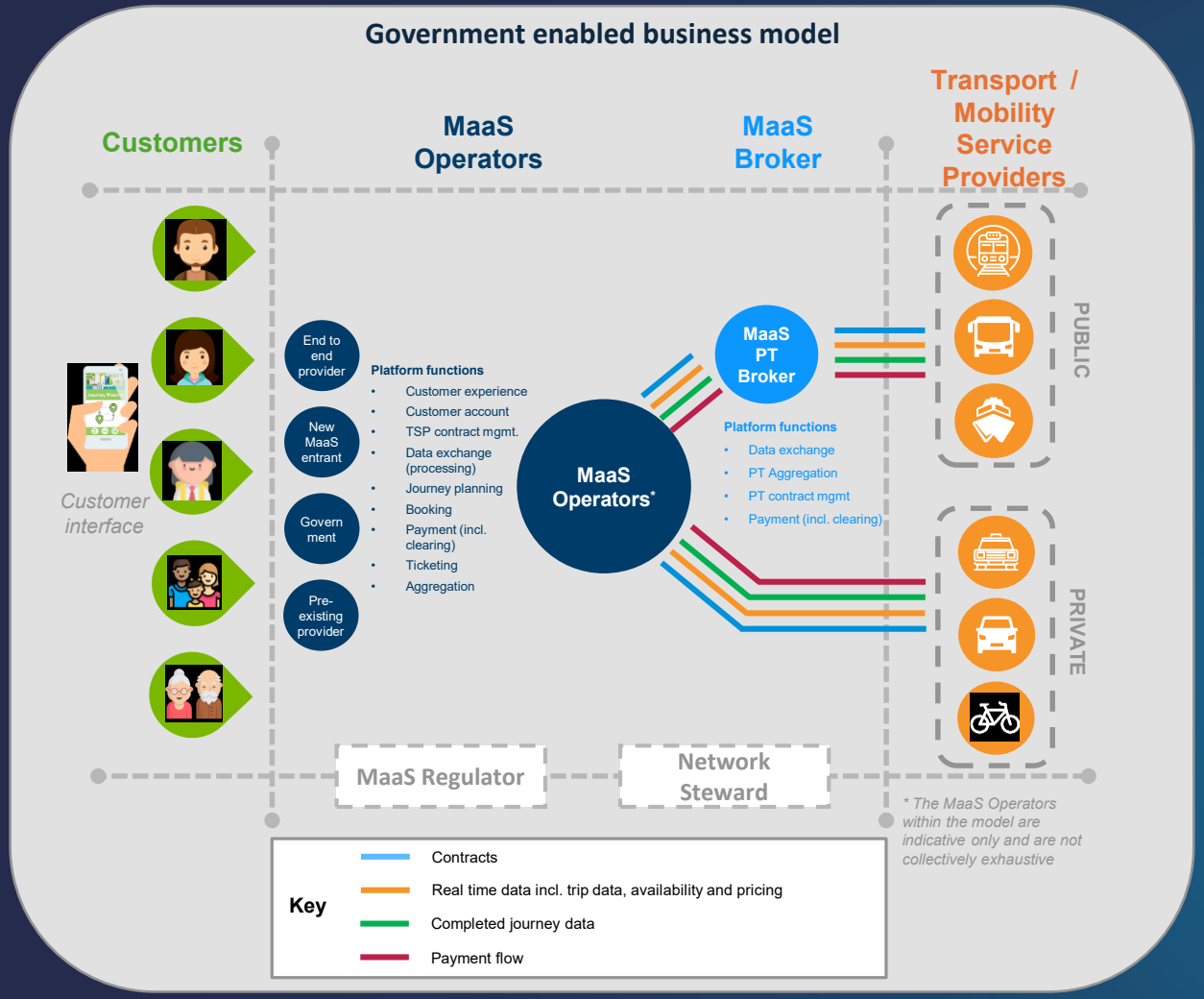
CLIMA BOROUGH

Enabling MaaS to make the difference

PUBLIC AUTHORITIES		PRIVATE MARKET PLAYERS
Set the **rules** for a dynamic (local) market		Play following the (local) **rules**
Ease **cooperation** among MaaS market players'		**Cooperate** to create and offer valuable MaaS services to users
Orchestrate **sustainable mobility policies** supported by MaaS		Align MaaS services with local **public policies**
Allocate **mobility budget** to incentivize behavioral change		Deliver **public incentives** to MaaS customers
Data sharing (personal and mobility data) with MaaS players		**Data sharing** (personal and mobility data) with Public authorities

TMR Model

A preferred Mobility as a Service (MaaS) business model was developed in 2019 as part of a strategic options assessment. It sees both private and public organisations operating in a collaborative manner in competing roles in an open MaaS ecosystem. Each organisation contributes to a shared vision of improved mobility for Queensland.



Key concepts for the government enabled business model

- An open and shared ecosystem, allowing MaaS operators to provide multi-modal mobility services through accredited TSP's.
- Government regulated and governed ecosystem.
- TMR acting as the PT broker, network steward and planner for the ecosystem.
- Government to act as a MO (Translink) and provide services for identified gaps (i.e., market failure in rural areas and floor services).

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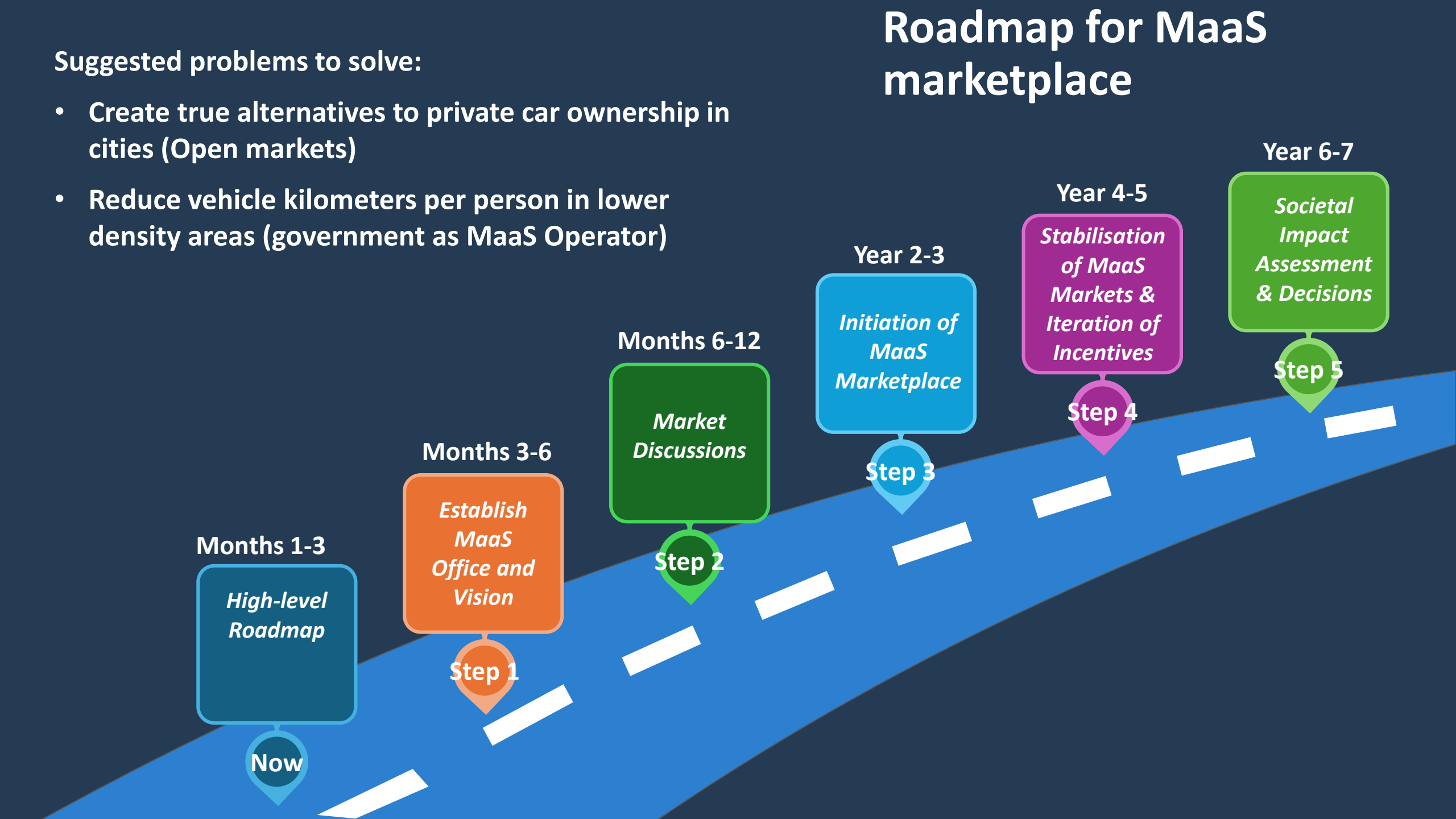
Not Government Policy

Roadmap for MaaS marketplace

Suggested problems to solve:

- **Create true alternatives to private car ownership in cities (Open markets)**
- **Reduce vehicle kilometers per person in lower density areas (government as MaaS Operator)**



Orchestration Steps

Step 2: Market Discussions

- Initiate discussions on market incentives.
- Start first incentive pool in the Gold Coast trial.
- Identify funding sources for MaaS Incentives.
- Establish rules for APIs and data sharing.
- Create standard contracts for TSPs.
- Prepare RFI to define problems without technicalities.

Step 4: Stabilisation of MaaS Markets and Iteration of Incentives

- Continuous iteration of market incentives.
- Minimise barriers to entry to attract innovation.
- Expand MaaS services across Queensland through network of offices.
- Draw on established models for government MaaS to fill service gaps, e.g. redirect incentives.

Step 1: Establish Queensland MaaS Office and Vision

- Set an inspiring vision for the Queensland MaaS marketplace by 2030.
- Define KPIs and create an incentive scheme for the first 2 years.
- Establish a permanent MaaS office to handle incentives, licensing, data handling, and market rules.

Step 3: Initiation of MaaS Marketplace

- Initial qualification rounds for incentive pool.
- Engage with local non-mobility potential investors / service providers (e.g. mining and insurance).
- Issue first tender for public MaaS.
- Create personal mobility accounts to enable multi-modal subsidies direct to users.

Step 5: Societal Impact Assessment and Decisions on Further Actions

- Assess impact on car ownership, CO2 reduction, businesses and job creation, and Queensland brand.
- Scale and consolidate MaaS regulations and management.

Additional material

Levels of mobility services and other additional potential drivers for competitiveness in mobility

Sustainable market model benefits all aspects


WHAT WOULD IT TAKE FOR YOU
TO GIVE UP YOUR CAR?

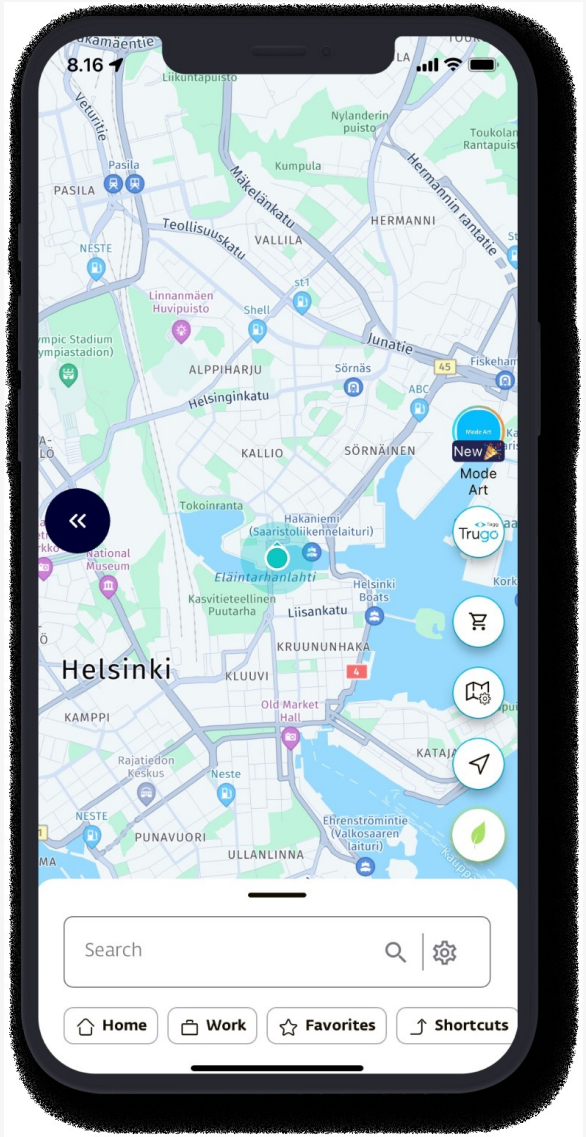
Level 1. Transport information

Navigator

E.G. location, maps, scheduling, routes

Mature field and easy to embed already.

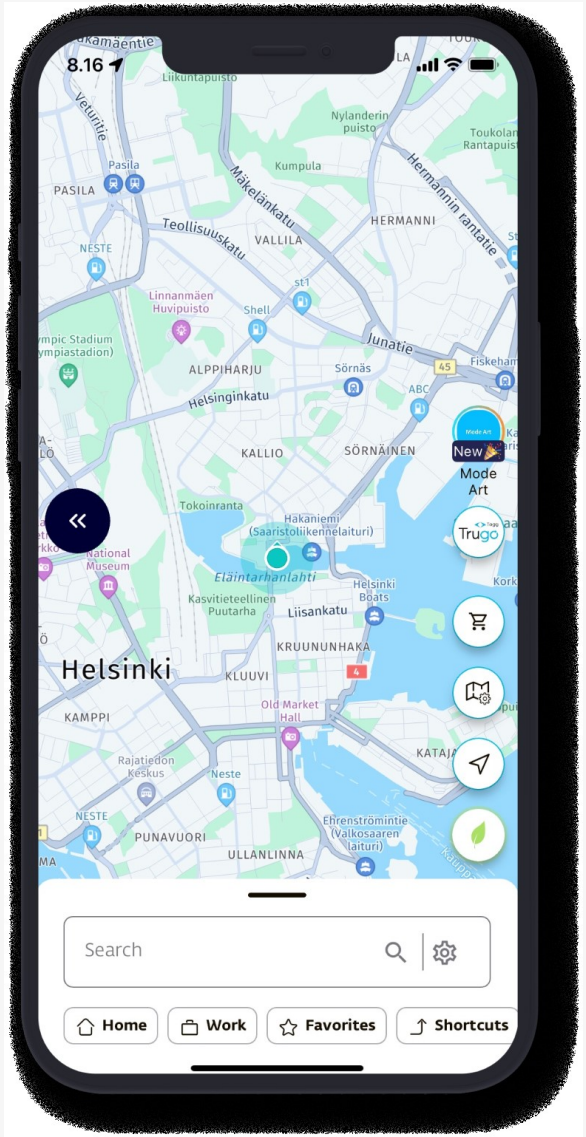
Extending and improving these continuously sets a solid foundation.

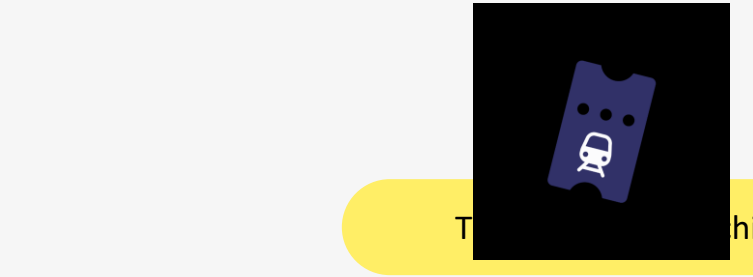


Level 2. Booking mobility services

E.G. integration of purchasing tickets, making bookings

- **enabling multiple modes of transport services**
- **creating flows for making bookings and purchasing tickets**
- **integrating transport service providers (TSPs)**





T hine

MaaS GLOBAL

Level 3. Multimodal service offering / subscriptions

Mobili erator

Utilizing the different transport mode integrations by bundling them together to cover the most of the mobility needs.

Creating meaningful and value adding subscriptions for strategic use cases (e.g. traveling, business & family)

Offering use case examples

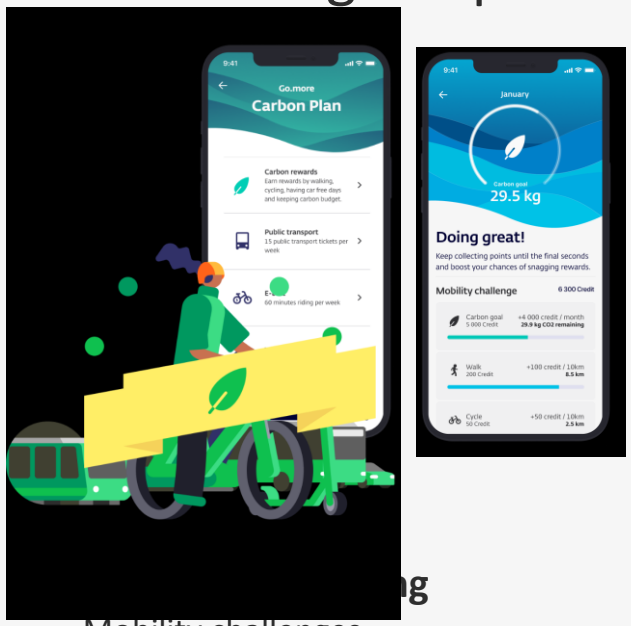
Travel pass | Employee benefit | Family plan

Strictly Private and Confidential

Level 4. Personalized service for sustainable mobility

Mobility lifestyle service

Seamlessly tailored mix of mobility related solutions incentivizing the positive impact for sustainability.



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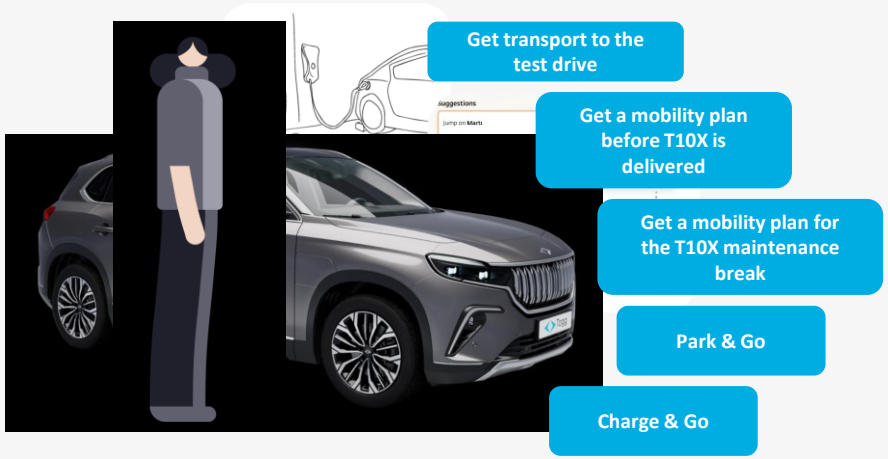
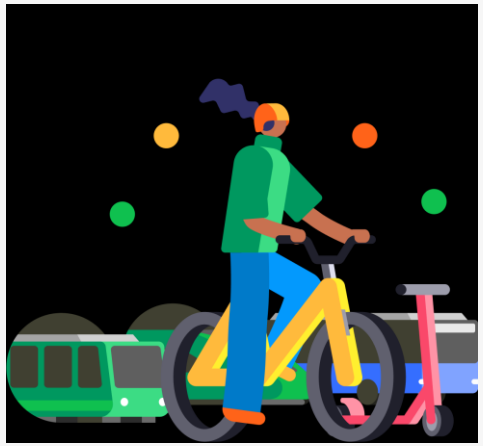
- Mobility challenges
- A “Carbon reward” plan which rewards subscribers of sustainable choices



B. Embedding mobility to all other services makes it even more versatile

- adding mobility as part of your car lease
- embedded mobility options for big events like soccer
- courtesy car alternatives for insurance
- family mobility plan with rental



C. Other personalized services

Preferences, features and services e.g. for insurance, safety, accessibility, wellbeing, family, business, comfort, budget, scheduling

Strictly Private and Confidential

Other potential actions with impact that came up during discussions

- Take co2-savings to procurement as an alternative currency especially in transport infrastructure.
  - Pay up to 10 % for more improved savings and sanction in the same way.
- Create markets for drones by creating a ”highway network of the sky” and by making a big order.