Governance, Authorities and Innovation

June 2026 · Webinar Summary

UPPER CLUB

Contents

How can public transport authorities design and implement innovative mobility services within complex governance environments?

On 25 June 2026, UITP hosted the webinar "Governance, Authorities and Innovation" as part of the UPPER project's "UPPER Club" initiative. The session brought together UITP members, international operators, authorities, city municipalities, academics and specialists in strategic transport planning.

The webinar consisted of two sessions examining the conditions that enable or hinder public transport authorities (PTAs) when developing and implementing innovative mobility solutions. It provided insights into local contexts, governance challenges and practical approaches to introducing innovation within public transport systems.

Coordinated by UITP, UPPER consists of 41 partners. The project aims to increase public transport ridership and passenger satisfaction in ten European cities and regions. The participating cities and regions are implementing 78 measures that prioritise public transport and sustainable mobility.

The UPPER Club is a peer-exchange initiative connecting UPPER cities with selected UITP members through structured discussions. It enables cities to share their progress and challenges during the 2025–2026 implementation phase while gathering peer feedback, practical insights and possible approaches to replication beyond the project.

The webinar included the following presentations:

- **Digital ticketing: a check-in/check-out system** presented by Rui Martins, Transportes Urbanos de Braga (TUB)
- **The reorganisation of Auckland's bus network** presented by Pete Moth, Auckland Transport (AT)
- **Unified Transport Model of Budapest** presented by Miklós Gábor Bánfi, Budapesti Közlekedési Központ (BKK)
- **Seoul's Climate Card** presented by Chaeyeon Lee, Seoul Metropolitan Government (SMG)
- **The largest European e-moped & e-motorcycle sharing system in Barcelona Metropolis** presented by Mariona Conill de Azpiazu, Àrea Metropolitana de Barcelona (AMB)
- **WayFinding GO: inclusive pedestrian navigation through complex interfaces** presented by Pedro Machado, Transportes Metropolitanos de Lisboa (TML)
- **Modernisation and expansion of the Bucharest-Ilfov Traffic Management System** presented by Geanina Suditu, Asociația de Dezvoltare Intercomunitară pentru Transport Public București – Ilfov (TPBI)
- **Mobility Wallet** presented by Avital Shavit, Los Angeles (LA) Metro

TUB

Digital ticketing: a check-in/check-out system

Braga has had a public transport company since 1982, although the city's mobility history extends back to the 19th century. Transportes Urbanos de Braga (TUB) now operates 181 vehicles across more than 60 routes and approximately 2,000 stops. It serves a city of around 213,000 residents, connecting the historic centre with the surrounding parishes.

Braga City Council wholly owns TUB. Operations, engineering, maintenance, auditing and information technology are all managed within the organisation. This structure provides short and direct decision-making processes, a clear public mandate and an in-house team with end-to-end responsibility for its products. It also allows TUB to treat research and development as part of its core work rather than as a service purchased externally.

© TUB

A ticket in your pocket

Until recently, passengers travelling with TUB needed either a physical pass or a paper ticket, which had to be topped up in person at a point of sale. The validation and fare systems supporting these products relied on infrastructure approaching 20 years of age.

This created particular difficulties for occasional passengers and visitors. Even for a single journey, they first had to find somewhere to buy a ticket.

TUB's solution was to allow passengers to travel using the mobile phone already in their pocket without replacing the underlying systems. The result is an account-based, pay-as-you-go ticket integrated into the **TUBmobile app**.

Passengers check in when they board and check out when they leave. They are charged only for the journey taken. The phone acts as the ticket, removing the need for a physical card or paper ticket. Passengers scan a QR code at the vehicle door and show the live validation to the driver. Fares are calculated automatically by zone, and passengers making a transfer pay only the difference in price.

© TUB

Enabling conditions

The main technical challenge was connecting new technology to infrastructure approaching two decades of age. TUB addressed this by using open standards instead of replacing the entire system. The mobile phone acts as the ticket, while the existing back-office system continues to process the journey and fare information.

Regional coordination presented a further challenge. Four cities, each with its own operator, needed to cooperate. One city first had to demonstrate that the approach could work before the others were prepared to follow.

Four factors supported the project:

1. **Public ownership and direct decision-making**: TUB is a municipal company with a clear mandate to innovate.
2. **Strong in-house technical expertise**: engineering and IT teams that build, manage and improve the product internally.
3. **Open standards**: interoperable interfaces allow established and modern systems to operate together.
4. **Existing customer adoption**: the TUBmobile app had already been installed on more than 23,000 phones before the new ticketing system was launched.

Results and lessons

The system was launched in December 2025 and recorded more than 21,000 digital validations during its first six months. No new hardware had to be installed on the street or inside vehicles.

TUB's experience highlights three considerations for other authorities:

- Build on open standards so that established and modern infrastructure can operate together without requiring costly replacement.
- Extend systems that already work rather than replacing them outright, reducing risk, cost and delivery time.
- Maintain internal ownership of both the application and the technical expertise needed to develop it.

Guided discussion | Highlights

What role did governance and political leadership play in delivering this innovation?

The project was driven primarily by users' needs rather than by political direction. Public and political support increased over time as confidence in the solution grew. Governance depended on clearly defined responsibilities, trust between the organisations involved and continuous delivery.

How does TUB manage forgotten check-outs, fare evasion and accessibility for users without advanced digital skills?

The system was extensively tested before its launch. Passengers who forget to check out are automatically checked out after a defined period. Incorrect fares can then be reviewed and refunded through the back-office system. Global Positioning System data and internet connectivity also help reduce fraud. Older passengers have adopted the application successfully, supported by its simple design and the availability of direct customer assistance.

What do you see as main future risks?

TUB identified its dependence on the Apple and Google platforms as a continuing risk. Compliance with the requirements of these platforms, together with European regulations, forms part of the organisation's risk-management approach. TUB therefore regards the platform providers not only as technology suppliers but also as partners in maintaining service quality.

AT

The reorganisation of Auckland's bus network

Stretching approximately 150km from north to south and shaped by peninsulas, harbours and islands, Auckland is New Zealand's largest urban area, with 1.8 million residents, roughly a third of the country's population.

© AT

The public transport network operates on a comparable scale. It includes approximately 1,400 buses, of which 126 are double-deckers and around 400 are zero-emission vehicles. Four electrified rail lines (the Eastern, Southern, Western and Onehunga lines) are operated using a fleet of 95 three-car electric multiple units. The network also includes 12 ferry routes served by 29 vessels, two of which are electric. Buses account for 81% of public transport patronage, while trains account for 16% and ferries for 3%.

Changes to Auckland's public transport network are governed by the Regional Public Transport Plan (RPTP). The redesign presented in this case study originated in the 2013 RPTP and was implemented progressively over six years. Each stage was supported by extensive public consultation.

Turning a commuter network into a connected one

Before the redesign, Auckland's bus network primarily supported peak-hour journeys into the city centre. The new network was designed to serve a much broader range of journeys throughout the day.

It was based on three principles:

1. High-frequency services
2. Simpler and more consistent routes
3. Better connections between services

Rather than relying on a large number of direct but infrequent routes, the redesigned network uses a connected hub-and-spoke structure. Passengers may need to transfer between services, but higher frequencies reduce waiting times and provide access to a greater range of destinations.

Enabling conditions

Several conditions had to be established before the new network could operate effectively. Auckland's single zonal fare structure means that passengers pay according to the number of zones crossed rather than the transport mode used. This fare integration made transfers between services more practical.

The electrification of the rail network created high-frequency radial corridors to which the bus network could connect. Wider infrastructure investment provided the physical foundations needed for the hub-and-spoke model.

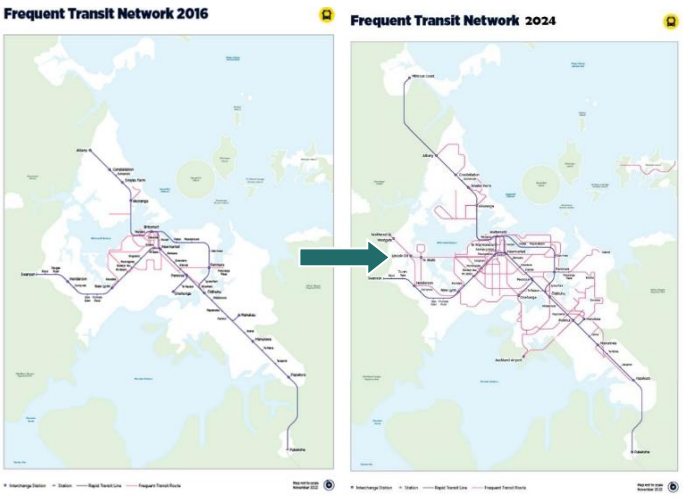
Contract reform moved bus operations from a deregulated market to a regulated model. This gave Auckland Transport the authority to plan a single, coherent network rather than combining services designed independently by different operators.

Sustained public engagement was also important. Residents were kept informed throughout the process, and support increased as passengers experienced the new network in operation.

Results and lessons

The number of frequent routes increased from seven to 28 by 2018 and to 45 by 2026. This made high-frequency services available across a much larger part of the region.

Annual patronage increased from approximately 70 million to around 100 million journeys before the COVID-19 pandemic. This was achieved through an increase of around 30% in service kilometres but only 7% in operating costs.



© AT

Transfers also became a more common part of public transport journeys, increasing from one in 12 journeys to one in six. This reflected the shift towards a connected network in which passengers could combine frequent services.

Auckland Transport did not implement the redesign across the entire region at once. It used six staged, area-by-area rollouts. This allowed each stage to be tested and adjusted before implementation continued elsewhere.

Guided discussion | Highlights

What role did governance and political leadership play in delivering this innovation?

The initial target for the programme was established by the Mayor. Its long-term success, however, depended less on a single political mandate than on sustained community engagement. Local councillors and Members of Parliament became strong advocates as the programme progressed. This helped maintain political continuity even when leadership changed.

How were transfers and interchange quality addressed following the network redesign?

Transfers generated considerable concern during public consultation. Passengers generally became more accepting once frequent services were introduced, as shorter waiting times reduced the inconvenience of changing vehicles. The quality of interchanges nevertheless remains uneven across Auckland. Investment continues in wayfinding, lighting, accessibility, waiting environments and pedestrian connections between services.

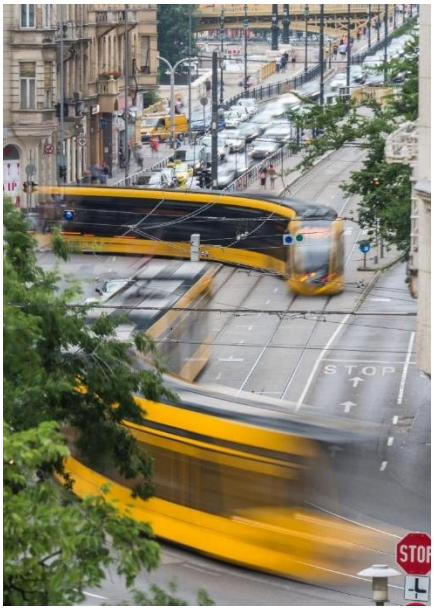
What do you see as main future risks?

Auckland is restructuring its transport governance arrangements, including plans to establish a new organisation focused on public transport. Managing this transition while maintaining service continuity will be important.

BKK

Unified Transport Model of Budapest

Budapest is Hungary's capital and its economic, cultural and educational centre, home to 1.7 million people (17% of the national population), with a further 800,000 living across the roughly 80 towns and villages of its wider metropolitan region. The 525 km² city sits split by the Danube into Buda and Pest, governed jointly by the Municipality of Budapest and 23 district municipalities.



© BKK

Budapest's transport system includes more than 2,300 vehicles, which carry around 3.3 million trips each day. The network covers approximately 4,500 kilometres of road and 3,300 kilometres of public transport routes and serves 4,600 stops. The fleet includes 1,200 buses, 320 trams, 110 trolleybuses and 75 metro trainsets. The MOL Bubi bike-sharing scheme provides a further 2,260 bicycles.

BKK's services carry more than 1.5 billion passengers annually. Tram routes 4 and 6, among the most frequent in Europe, record between 330,000 and 350,000 passenger journeys on a typical weekday.

BKK as an integrated mobility manager

Budapesti Közlekedési Központ (BKK), the Centre for Budapest Transport, was established in 2010 and is wholly owned by the Municipality of Budapest. Its 1,600 employees work across public transport planning and management, cycling and pedestrian policy and strategic mobility planning.

BKK's responsibilities include procuring services from operators, preparing timetables, running the BudapestGO journey planner, regulating road traffic and shared mobility, shaping public space and leading research and public consultation. These activities contribute to a common objective: making Budapest a more liveable and sustainable city.

Modelling as the basis for every decision

BKK uses transport modelling to guide planning and investment decisions. Major projects begin with data collection, analysis and modelling. This represents a move away from manual traffic counts towards automated data collection and analysis supported by artificial intelligence. Close to 300 modelling scenarios have been developed to assess transport projects and compare alternatives. The work is led by a dedicated modelling team with its

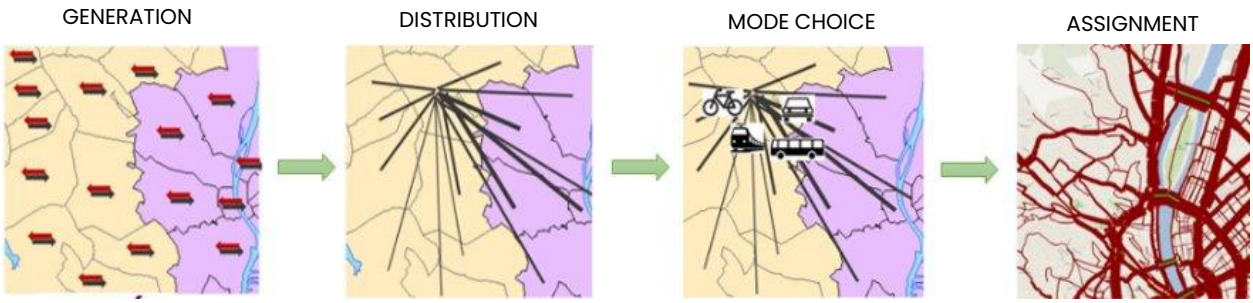
own strategy and computing resources. For a decade, BKK did not have dedicated internal data-processing capacity. Analysis was divided across individual projects and external providers. This changed in 2025, when traffic modellers, data scientists and analysts joined the organisation directly. Modelling is now integrated into BKK's decision-making processes.

Previously, different consultancies used different models for different projects, which made their findings difficult to compare. BKK therefore developed a single Unified Transport Model that all consultants are now required to use. The common model allows alternatives to be tested more quickly, provides greater flexibility when project requirements change and reduces reliance on external contractors.

The model can be adapted to questions ranging from citywide forecasts to the operation of individual junctions. Most strategic planning uses a standard four-step approach:

1. Estimating how many journeys start or end in each area
2. Identifying where those journeys go
3. Estimating which modes passengers use
4. Assigning the journeys to particular routes

The model can assess proposals ranging from a bus-route extension to a multi-billion-euro rail tunnel beneath the River Danube. A single scenario generally takes between half a day and two days to run—quickly enough to support the rapid testing of new proposals.



© BKK

Enabling conditions

The model was originally based on a household survey last fully updated in 2019, shortly before the COVID-19 pandemic significantly changed travel behaviour.

For several years, the model continued to forecast travel patterns based on pre-pandemic conditions. Differences between its forecasts and observed traffic gradually increased. A recalibration attempted in 2023, known as SV07, did not achieve the required level of accuracy and was not published for operational use.

The UPPER project provided a framework for addressing this problem. It supported a new household travel survey covering 12,000 households, more than 25,000 people and

approximately 60,000 recorded journeys. The results were incorporated into EFM 3.0, launched in 2024. The new demand model covers Budapest and the surrounding metropolitan area and uses a more detailed tour-based structure. It includes 36 travel chains, 21 new residential zones, improved treatment of park-and-ride journeys, airport and tourist travel and projections for 2034 and 2050.

Results and lessons

The rebuilt model now forecasts passenger demand to within approximately 10% of observed levels. This gives BKK a more reliable basis for major investment decisions.

BKK's experience demonstrates the importance of maintaining high-quality data, updating models regularly and developing modelling expertise inside the organisation. Internal capability allows evidence to be incorporated directly into planning rather than provided intermittently through external assignments.

Guided discussion | Highlights

How can smaller cities implement similar innovations?

Transport modelling requires substantial initial investment and ongoing maintenance. Smaller cities are therefore unlikely to develop comparable capabilities immediately. European funding can help offset development and operating costs. BKK has also offered support to municipalities interested in building their own modelling capability.

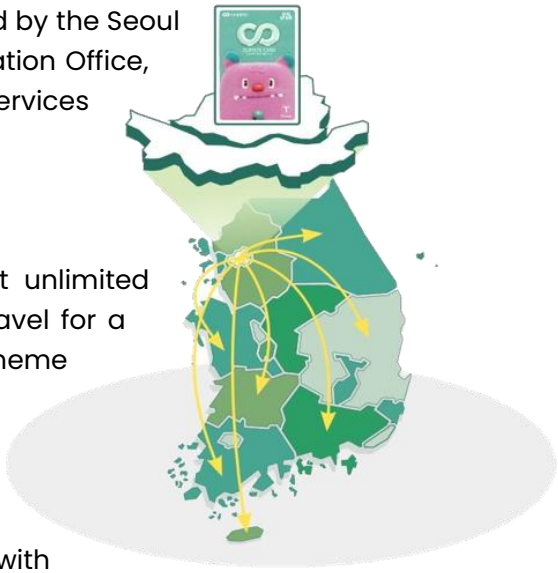
How can financial sustainability be maintained?

Maintaining modelling expertise internally can be more cost-effective than repeatedly commissioning external consultants. European funding has supported both the technical infrastructure and the continuing development of the model.

SMG

Seoul's Climate Card

Transport policy across Seoul's 9.3 million residents is managed by the Seoul Metropolitan Government, primarily through its City Transportation Office, which covers buses, the metro, taxis and newer mobility services alike.



© SMG

Korea's first unlimited pass

Launched in January 2024, the Climate Card is Korea's first unlimited public transport pass. It provides unlimited bus and metro travel for a fixed monthly fee, with access to the city's public bicycle scheme available as an optional addition. Seven neighbouring municipalities have joined the scheme. It also offers short-term passes for visitors and discounted prices for young adults. Around 720,000 people use the card each day. It has been particularly widely adopted by younger residents, with people in their twenties accounting for around 61% of users.

The card also includes additional services and benefits. A route-search function in the Kakao Map application identifies the services on which the card is accepted. Cardholders can also receive discounted entry to attractions including the Korean National Ballet, the Seoul Gas Balloon tour, the Seoul Science Center and Seoul Grand Park.

Enabling conditions

The Climate Card was introduced without requiring an entirely new technical infrastructure. It operates through Seoul's integrated ticketing and fare system, introduced in 2004. This system had already:

- Harmonised fares across buses and the metro
- Enabled free and discounted transfers
- Recorded journeys using smart cards
- Automated the allocation of fare revenue between operators

The system had also been extended progressively across the wider metropolitan region. Seoul was therefore able to introduce a new fare policy on a network that was already integrated. This sequencing was central to implementation. Because passenger data, transfer calculations and revenue sharing were already automated, the city could concentrate on designing the new fare product rather than rebuilding its underlying systems.

Cities without this foundation should prioritise integrated ticketing, automated fare collection and a central settlement system before introducing an unlimited pass. Once these systems are in place, the fare product itself is comparatively straightforward to deliver.

Results and lessons

Cardholders make an average of 2.26 additional public transport journeys each week, while daily ridership in the areas covered by the scheme has increased by 4%.

Users save an estimated KRW 30,000 to KRW 37,000 per month. The card is also projected to reduce greenhouse-gas emissions by approximately 30,000 tonnes annually.

The Climate Card's implementation has informed the development of Korea's national K-Pass programme, illustrating how an established city system can contribute evidence to wider policy development.

Guided discussion | Highlights

How can smaller cities implement similar innovations?

Unlimited-travel products should be introduced only after integrated fares, automated fare collection and centralised settlement systems have been established. Without this foundation, smaller cities may find it difficult to expand the scheme or allocate revenue effectively. Cooperation between local and national government is also important when successful city-level initiatives are extended more widely.

How can financial sustainability be maintained?

Transfers in Seoul have been free since 2004. The Climate Card extends the same integrated-fare principle by providing unlimited travel for a fixed monthly price. Financial responsibility is shared between the participating local governments. Revenue is allocated centrally through the T-Money platform.

AMB

The largest European e-moped & e-motorcycle sharing system in Barcelona Metropolis

Àrea Metropolitana de Barcelona (AMB) coordinates mobility across Barcelona and its surrounding municipalities. This case study examines how AMB introduced a common metropolitan framework for shared electric mopeds and motorcycles after the rapid growth of these services began to create pressure on public space.

Shared e-moped and e-motorcycle services had expanded without coordination across municipal boundaries. The free-floating operating model contributed to pavement obstruction, competition for parking space and concerns about rider behaviour and road safety.

Barcelona now has Europe's largest fleet of shared e-mopeds and e-motorcycles. The scale and cross-boundary nature of the service made separate municipal responses increasingly impractical. Regulation had previously been the responsibility of each municipality. As a result, eight different regulatory systems could have applied across neighbouring areas. Barcelona and seven neighbouring municipalities therefore delegated responsibility to AMB, allowing one framework to cover the entire participating area.

Why a single rulebook was needed

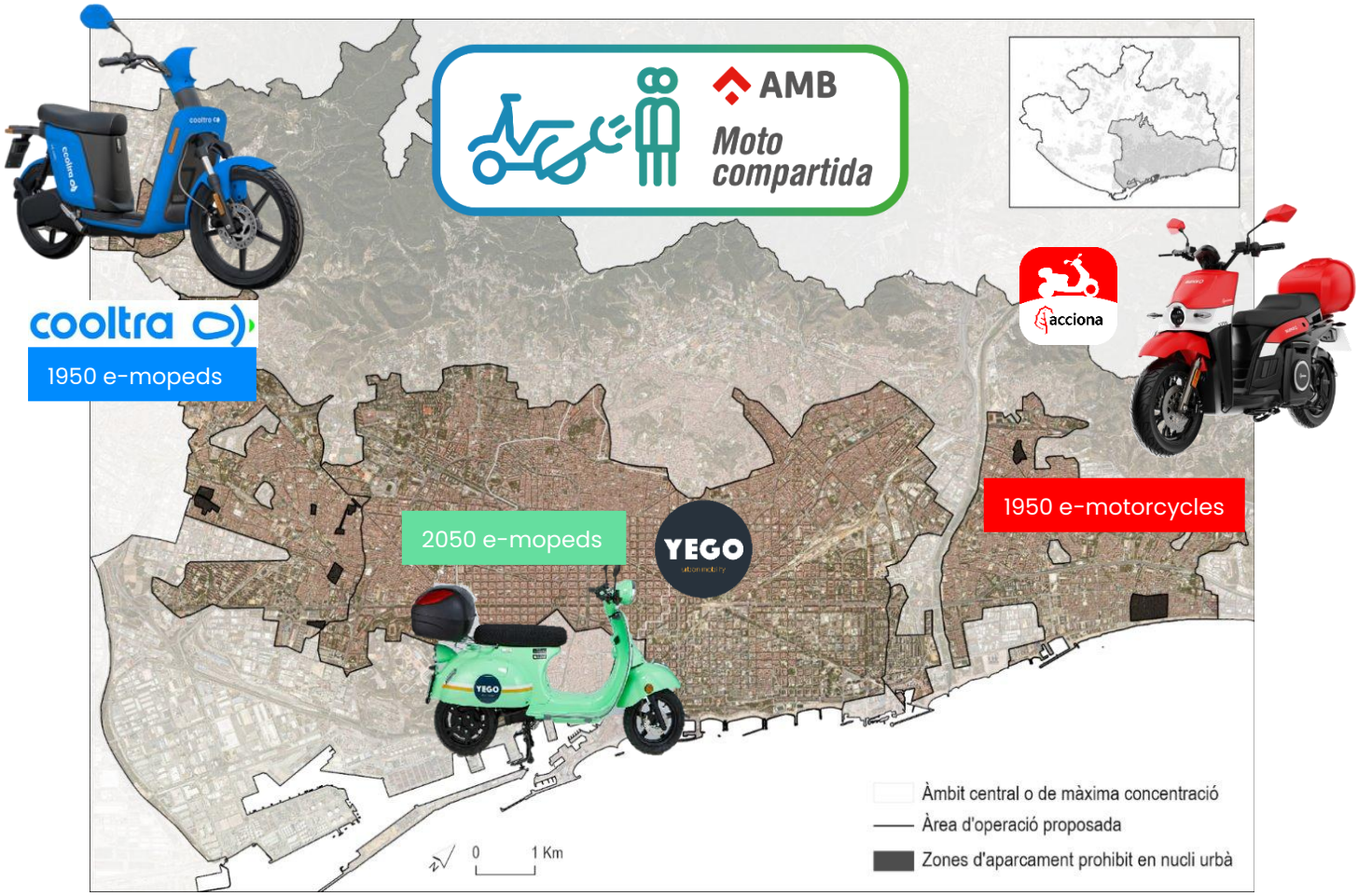
AMB developed the regulatory framework through an extended co-creation process involving municipalities, operators, mobility stakeholders and academic experts.

Five principles guided the process:

1. **Protect public space**: Shared vehicles should operate without creating conflict with pedestrians and cyclists.
2. **Prioritise vulnerable road users**: Regulation should place the safety and needs of the most vulnerable users first.
3. **Maintain cooperation**: Operators and municipalities should work together throughout implementation.
4. **Plan for the long term**: Real-time data should support the management of public space and future policy development.

5. **Support multimodal choice**: Residents should be able to select the most appropriate transport mode for each journey (the information of the availability of these licensed services is available in the Public Mobility MaaS App (AMBMobilitat)).

Operators receive temporary licences to use public space. Each licence has an initial two-year term, followed by the possibility of two one-year extensions. In return, operators must provide AMB with continuous location and journey data, comply with standard traffic, parking and road-safety rules and follow a dedicated road-safety code of practice. The framework is supported by a sanctions system. Each vehicle carries metropolitan identification, and operators pay an annual management fee for every vehicle.



© AMB

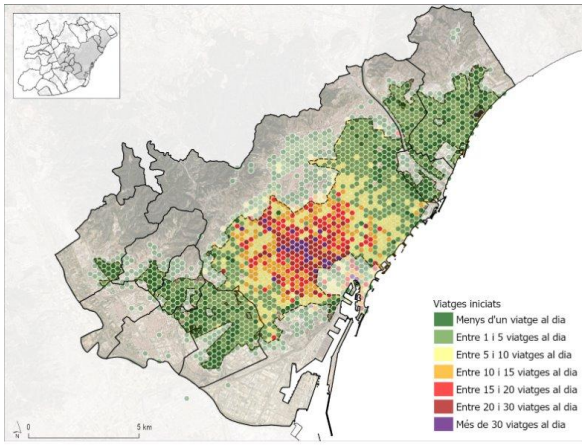
Enabling conditions

The framework sets an overall limit of 15,000 electric vehicles. The first licensing round made provision for up to 10,000 vehicles. 5,950 vehicles are currently in service across eight municipalities. They are operated by three companies and are all electric. AMB monitors the entire fleet through its own real-time dashboards. These dashboards support compliance monitoring and contribute data to the region's wider integrated-mobility system. The

metropolitan approach was possible because AMB had already built strong working relationships with the municipalities. Those relationships gave local authorities confidence that a coordinated system would be more effective than separate local regulations.

Results and lessons

SSince operations began in late 2024, the fleet has clocked over 6 million trips, more than 9,000 a day, at an average of two-plus trips per vehicle daily. The typical rider is male, aged 25 to 45. Beyond the raw usage figures, the framework has spread vehicles more evenly across participating municipalities, and accessibility has improved well beyond central Barcelona.



© AMB

The typical user is male and between 25 and 45 years old. The metropolitan framework has distributed vehicles more evenly across the participating municipalities and improved access to the service outside central Barcelona.

Several features of the approach are relevant to other cities:

- Consulting operators and municipalities before drafting the rules improved the practicality of the framework and strengthened support for its introduction.
- Minimum tender requirements covering financial viability, experience and carbon performance provided a common quality threshold.
- Geographic distribution requirements prevented operators from concentrating vehicles only in the areas with the highest demand.
- Continuing coordination through technical follow-up committees has helped address operational problems including vandalism, battery theft, inappropriate parking and vehicle removals.

A year in, the framework's flexibility has allowed demand and fleet numbers to develop progressively while maintaining confidence among municipalities, operators and the public.

Guided discussion | Highlights

How did your organisation deliver innovation beyond its formal responsibilities?

AMB built on established working relationships with the municipalities. Mobility is planned and experienced at a metropolitan rather than solely municipal level, and the municipalities recognised the benefits of a coordinated approach. They therefore agreed to delegate their regulatory responsibilities to AMB. Continuous dialogue with both municipalities and operators helped build confidence as the framework was developed.

How can authorities build effective partnerships with external organisations?

Effective partnerships depend on trust developed through sustained cooperation. Formal co-creation processes can reinforce that trust by involving municipalities, operators and other stakeholders before regulation is introduced. This creates shared ownership and allows practical concerns to be addressed during design rather than after implementation.

What advice would you give authorities implementing innovation?

Stakeholders should be involved throughout the process. Developing solutions collaboratively is more effective than preparing them in isolation and presenting them only after the main decisions have already been taken.

TML

WayFinding GO: inclusive pedestrian navigation through complex interfaces

Transportes Metropolitanos de Lisboa (TML) is the transport authority for the Lisbon metropolitan area. It was established five years ago to act on behalf of 18 municipalities covering approximately 3,000 square kilometres and a population of around 3.35 million. TML manages the bus network Carris Metropolitana, that provides approximately 21,000 services and covers 280,000 kilometres each day. Around 1,700 buses serve more than 12,600 stops and carry approximately 770,000 passenger journeys daily.

© TML

Accessibility is included through PMMUS - Lisbon Metropolitan Area's Sustainable Urban Mobility Plan, led by TML, rather than being treated as an isolated pilot activity. Its work includes partnerships with public bodies and organisations representing disabled people, wheelchair-accessible Navegante and Carris Metropolitana shops, accessible buses, high-contrast stops and ticket machines. Projects developed through UPPER include an Accessibility and Transport Plan for People with Disabilities, Technical Guides for Accessibility in Interfaces and Stops, and an educational Serious Game.

Navigating Lisbon's most complex station

WayFinding GO addresses a specific part of this accessibility challenge: enabling blind and partially sighted passengers to navigate large and complex transport interchanges independently. The pilot, developed by TML with the expert help of SERTEC, is centred on Gare do Oriente, Lisbon's largest and most complex station. It aims to provide an accessible route between the bus terminal and the metro without requiring passengers to rely on another person for guidance.

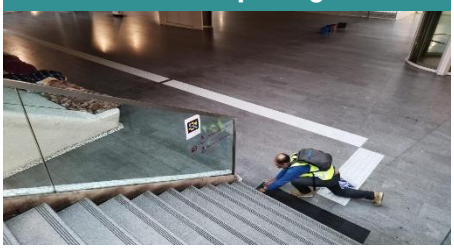
The project acknowledges the standard wayfinding process people follow when navigating in complex environments, consisting of four stages:

- Understanding the passenger's location in relation to the destination
- Selecting an appropriate route
- Confirming progress while following that route
- Recognising arrival at the destination

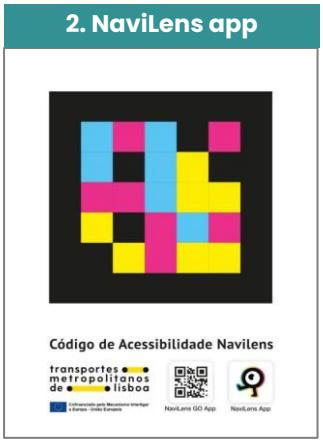
Each stage becomes more difficult in a complex interchange for a passenger who is blind or has low vision. WayFinding GO combines five complementary tools to help blind and almost blind people navigate at Gare do Oriente interface, rather than relying on a single technology:

1. **Tactile paving**: guides people physically through the space.
2. **NaviLens app**: free, and already used on transport networks in New York and Barcelona. Reads polychromatic codes from up to 15 metres away across a 160-degree field of view through a phone's camera, delivering spoken directions without needing beacon hardware; the instructions themselves were written together with blind people, and can be updated at any time.
3. **Braille handbook**: available at the local ticket office, it explains the interface and the accessible path in braille.
4. **High Contrast map**: to help almost blind people understanding of the interface. Also available online.
5. **Braille Signage on handrails**: reassuring blind people they are in the correct path along the route. Also available online.

1. Tactile paving

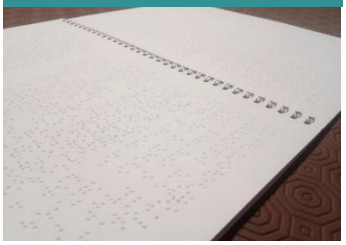


2. NaviLens app



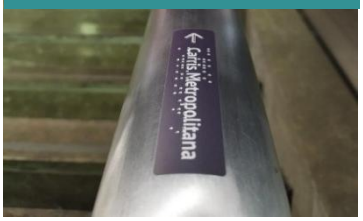
© TML

3. Braille handbook



4. High Contrast map

5. Braille Signage on handrails



Blind users participated in the development of the navigation instructions and tested the system throughout the pilot. Five Portuguese organisations representing blind, partially sighted and disabled people participated: Associação dos Cegos e Amblíopes de Portugal (ACAPO); Associação Promotora do Ensino dos Cegos (APEC); Associação Promotora de Emprego de Deficientes Visuais (APEDV); Santa Casa da Misericórdia de Lisboa (SCML); Associação Portuguesa de Deficientes (APD).

Enabling conditions

The pilot launched on 20 October 2025, Portugal's National Accessibility Day. Implementation has included the preparation of trainers, public promotion, online registration for guided visits, the visits themselves and continuing evaluation. Adjustments are made as issues are identified.

The participation of user organisations was central to the project. It ensured that navigation instructions and proposed improvements were based on the experiences of the people who would use them.

Having infrastructure managers Infraestruturas de Portugal and Metropolitano de Lisboa as partners was also critical, because the proposed changes fall under space under their responsibility.

Results and lessons

Feedback from testers has been direct. One participant described Gare do Oriente as "hell" to navigate, illustrating the severity of the barriers passengers can encounter.

NaviLens received particularly positive feedback. Some users considered its spoken information so effective that it reduced their reliance on tactile paving. Real-time bus-arrival information was also valued. However, some codes installed at greater heights were difficult to scan using a phone. The Braille handbook was regarded as useful for understanding the station before travelling, while tactile paving helped users maintain their orientation. Testers also identified a significant gap: tactile paving is entirely absent from Level 0.

Testing produced a list of proposed improvements:

- Move Braille signs further up the handrails.
- Allow users to select application functions using a headset button instead of a touchscreen.
- Provide simple relief maps and three-dimensional station models that passengers can study before travelling.
- Reposition the NaviLens code near the staircase so that it is read at the correct point in the journey – already implemented!
- Offer basic NaviLens training before first use – already implemented!

- Publish station information online in a format compatible with screen readers – already implemented!
- Colour-code staircase frames according to bus service for passengers with low vision.

Guided testing will continue until October 2026, together with promotion, station visits and feedback collection.

TML then intends to involve infrastructure owners and operators in a final review, jointly develop detailed guidebooks for accessible routes and seek funding to extend the approach to other interchanges. Monitoring and improvement would continue as permanent activities rather than ending with the pilot.

The project demonstrates that accessibility improvements require collaboration between infrastructure managers, transport operators and organisations representing the people who experience the barriers. Their involvement is needed from the start of the process.

Guided discussion | Highlights

How did your organisation deliver innovation beyond its formal responsibilities?

As a relatively new authority, TML has gradually taken on activities beyond its original remit. Accessibility is one of its strategic objectives. TML secured cooperation from infrastructure owners by demonstrating the public value of improving independent travel for blind and partially sighted passengers. Implementation nevertheless required the project team to work through the different procedures and responsibilities of each organisation.

How can innovations become embedded within organisations rather than remaining individual initiatives?

WayFinding GO is managed as a TML project rather than as the initiative of a single employee. The pilot is intended to produce common guidance that can be used across the metropolitan interface network. TML also plans to seek further funding and encourage infrastructure managers to implement similar improvements at other locations.

What advice would you give authorities implementing innovation?

Authorities should anticipate possible failures and discuss risks openly with funding organisations from the beginning. This makes it easier to adjust the project when problems arise.

TPBI

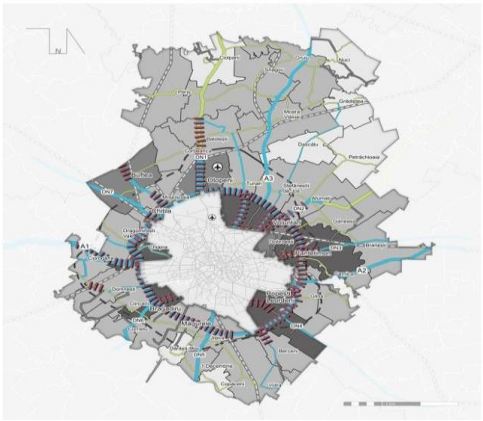
Modernisation and expansion of the Bucharest-Ilfov Traffic Management System

TPBI is the public transport authority for Bucharest and Ilfov County. It was established in November 2017 as a joint organisation representing local authorities across the region. Its founding members include every administrative-territorial unit in Bucharest-Ilfov: Bucharest Municipality, Ilfov County and 40 surrounding municipalities. These authorities jointly fund its budget.

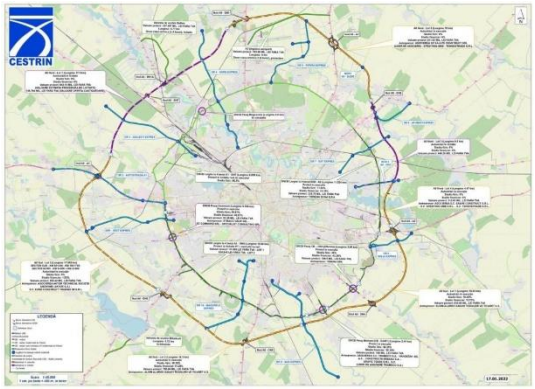
TPBI's responsibilities cover three principal areas:

- Acting as the contracting authority for surface public transport under European Union Regulation 1370/2007, including service planning, fares, social policy and performance monitoring
- Leading the Bucharest-Ilfov Sustainable Urban Mobility Plan to 2030, including transport modelling and project preparation
- Preparing to take on the same contracting role for a future metropolitan railway system

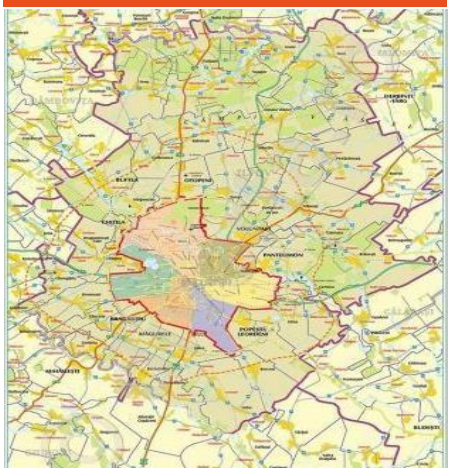
Medium daily traffic volumes- Congestion zones



New peri-urban areas and large road infrastructure projects



Bucharest & Ilfov County



© TPBI

A region growing faster than its infrastructure

Several towns in Ilfov are among the fastest-growing places in the European Union. Chiajna's population has increased by 205.7%, Bragadiru's by 161.47% and Popești-Leordeni's by 144.05%. This suburban growth is generating travel demand that the region's infrastructure was not designed to accommodate.

Although 65% of residents can reach a metro station within a ten-minute walk, buses and trams regularly become delayed in road traffic. Commercial speeds can fall below 15 kilometres per hour. More than 30% of tram lines are in poor condition, while over 500 trams, buses and trolleybuses are expected to reach the end of their operational lives within five to seven years.

Cycling infrastructure faces similar problems. Of the 14.3 kilometres currently available, 12.6 kilometres require reconfiguration before they can provide a consistently safe route. Car ownership exceeds 700 vehicles per 1,000 residents, placing Bucharest ahead of many European capitals and increasing congestion and pressure on public space.

Responsibility for parking is divided across seven public organisations. Illegal parking occupies around 30% of streets in the historic centre, while fewer than 5% of parking spaces are provided in purpose-built multi-storey facilities.

Road safety is also a significant concern. Bucharest records 2.7 road deaths per 1,000 inhabitants, compared with 1.7 in Berlin, 0.7 in Stockholm, 2.1 in Paris and 1.8 in Cluj-Napoca. An undersized ring road, only 40% of county roads modernised and 35% of trips still outside greenhouse-gas emission standards, against a 2030 target of 60%, complete the picture. Addressing these interconnected issues requires coordination between several authorities.

A single platform for traffic management

TPBI's response is to modernise and extend the Bucharest-Ilfov Traffic Management System (BTMS). The project will transform a series of disconnected tools developed since 2006 into a single integrated metropolitan platform. Many intersections currently operate independently, some controllers cannot connect to the central system and traffic volumes are placing increasing pressure on infrastructure that was not designed for current demand.

The project extends beyond the replacement of traffic signals. It includes:

- New signal controllers
- The integration of every signalised intersection into one platform

- Expanded communications infrastructure
- Adaptive control based on real-time conditions rather than fixed signal timings

When completed, the system will continuously monitor traffic flows, adjust signals in response to conditions, give priority to public transport and manage entire corridors rather than individual junctions. The intended outcomes include shorter journey times, reduced congestion, improved air quality and safer streets.

Of the region's 502 operational signalised intersections, 260, or 52%, are already connected to BTMS. A further 223, or 44%, remain outside the system. Eighteen are non-operational and one is under construction. More than 220 additional intersections could therefore be integrated to expand real-time coverage.

The system operates through several connected layers. Field equipment, including traffic signals, detectors, closed-circuit television cameras, buses, trams, variable-message signs, weather stations and roadside units, feeds information into a communications network. This network uses fibre, fourth- and fifth-generation mobile communications, dedicated radio, Internet Protocol and Multiprotocol Label Switching and secure virtual private network connections.

The data is received by UTOPIA, the traffic-management platform responsible for monitoring, adaptive control, public transport priority, forecasting and reporting. Above UTOPIA sits OMNIA, an integration layer responsible for data validation, interoperability, application programming interfaces and security. OMNIA connects the traffic-management system with transport operators, public authorities, passenger-information services and external platforms. These include the Service Interface for Real Time Information public transport feed, emergency services and city systems covering parking and road tolls.

The architecture is modular so that it can support future mobility services rather than being limited to services that already exist.

Enabling conditions

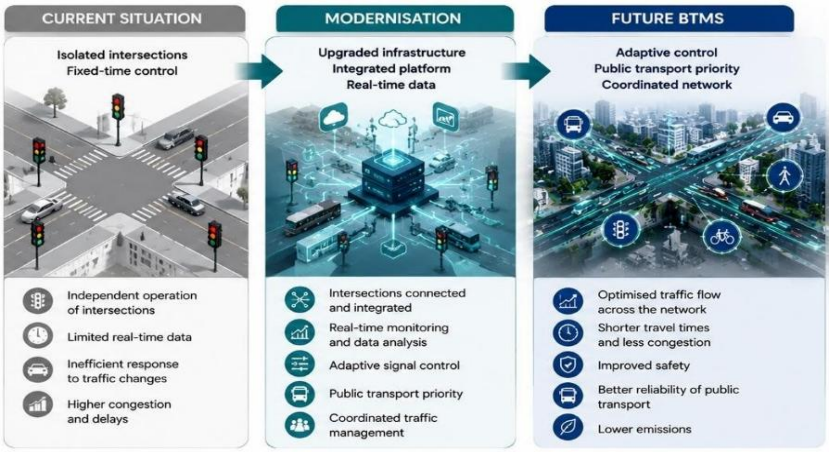
TPBI prepared the concept and technical specifications, while Bucharest Municipality is responsible for construction and implementation. This division reflects TPBI's role as a metropolitan coordinator rather than the direct delivery organisation.

Implementation is being carried out in phases so that available funding can be used progressively. Phase I covers five major corridors into Bucharest and will modernise and connect approximately 92 intersections to BTMS. Procurement is targeted for the end of 2026, alongside feasibility work for later phases. Phase II will upgrade the Traffic Management Centre's software, hardware and information-technology systems. The objective is to improve performance, scalability, cybersecurity and reliability. Procurement is also targeted for the end of 2026. Phase III will modernise a further 185 intersections through smart

detection and fibre upgrades. Phase IV will cover another 194 intersections and integrate 80 additional locations.

In parallel, Ilfov County will connect 18 intersections and eight pedestrian crossings to the Bucharest centre. This will extend public transport priority onto regional corridors and gradually create one traffic-management platform for the metropolitan area.

Funding has not progressed as initially planned. After the project lost its original allocation from the Recovery and Resilience Facility, TPBI obtained alternative financing through operational programmes.



© TPBI

Results and lessons

TPBI's experience illustrates how a transport authority can act as a coordinator even when it does not directly control project delivery.

It has brought municipalities, infrastructure managers and transport operators together around a common technical plan. This has required cross-authority planning, sustained investment in digital infrastructure and a willingness to proceed through successive funding rounds rather than wait for one complete financing package.

Strategic coordination does not necessarily require direct control over construction or operations. It depends on sound technical preparation and relationships between authorities that are strong enough to support a multi-year programme.

Guided discussion | Highlights

How did your organisation deliver innovation beyond its formal responsibilities?

TPBI's responsibility for implementing the Sustainable Urban Mobility Plan placed it in a natural coordinating role. Improving public transport performance required cooperation between municipalities and road authorities. TPBI therefore took a proactive role in developing integrated solutions rather than limiting itself to its formal contracting responsibilities.

How can innovations become embedded within organisations rather than remaining individual initiatives?

TPBI involves infrastructure managers and operational staff throughout project development. Staff who will eventually operate the system participate in project meetings so that they are prepared for implementation and future management. Organisational capacity is therefore developed alongside the technical system.

What advice would you give authorities implementing innovation?

Authorities should invest time in building relationships and maintaining constructive dialogue with their partners before launching major projects.

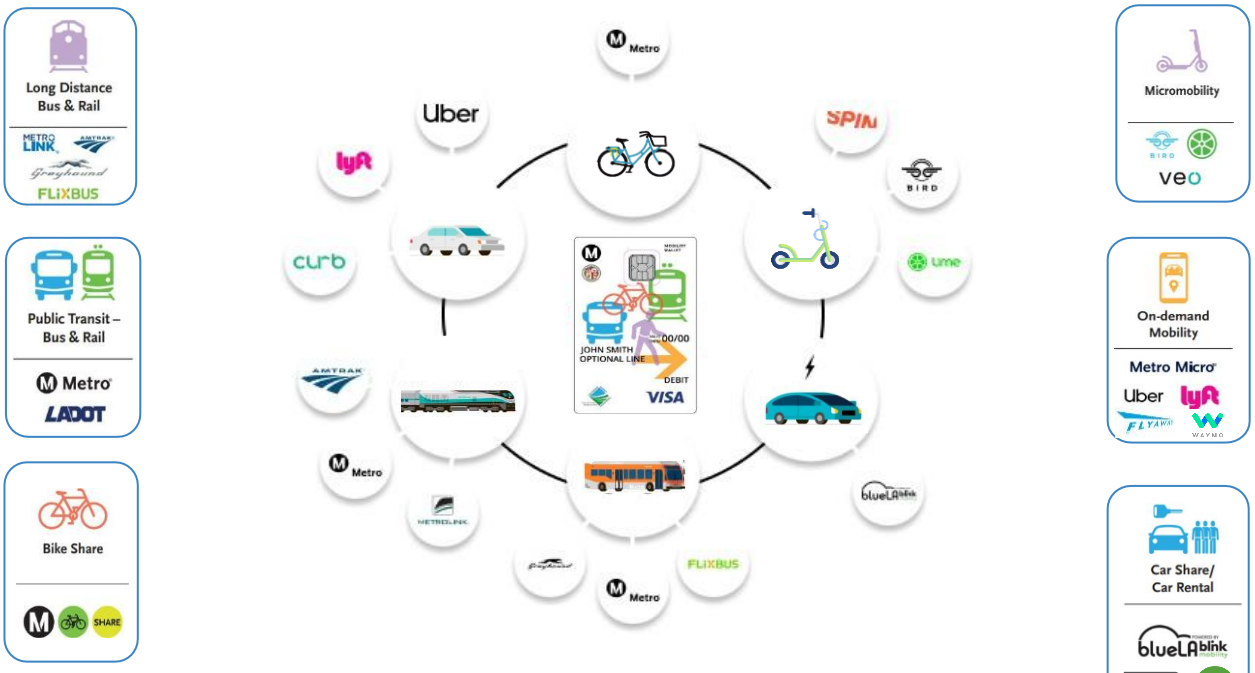
LA Metro

Mobility Wallet

LA Metro serves approximately 10 million residents across Los Angeles County. It operates, builds, plans and funds transport services and manages state and federal transport funding across 88 municipalities. The region experiences severe road congestion and remains highly dependent on private cars. Increasing the use of shared and sustainable transport is therefore an important long-term objective.

One card, many modes

The Mobility Wallet addresses a specific challenge: enabling residents on low incomes to access a wider range of transport options. It uses established banking infrastructure to provide eligible participants with either a physical or virtual payment card. Merchant Category Codes restrict spending to transport-related goods and services. Eligible expenditure includes: public transport; bicycle purchase and repair; bike-sharing and other micromobility services; ride-hailing; car-sharing; intercity bus and rail; accessible transport services. The aim is to provide one card that can be used across several modes. This supports multimodal travel, reduces reliance on private cars and makes daily journeys more affordable and secure.



© LA Metro

Enabling conditi

LA Metro has used a deliberate test-and-refine process. Phase 1 provided 1,000 residents on low incomes in South Los Angeles with up to USD 1,800 each to spend over one year. Phase 2 increased participation to 2,000 people from South Los Angeles and the wider county.

Participants in both phases had to be Los Angeles County residents aged 18 or over and meet the programme's income requirements. Physical and virtual cards were tested in parallel to assess their relative benefits. The University of California, Los Angeles and the University of California, Davis contributed to the design of the pilots and carried out independent evaluations.

Phase 1 ran from May 2023 to May 2024. Participants spent approximately USD 1.36 million across around 160,000 journeys. Surveys conducted before the pilot and after six and twelve months showed improved access to opportunities and social networks. They also identified a measurable improvement in transport security using the formal Transportation Security Index.

Approximately 4% of participants sold a vehicle or postponed purchasing one. Although this was a relatively small proportion, it justified further research into the programme's effect on overall vehicle kilometres travelled. Follow-up interviews were conducted by the University of California, Los Angeles with 30 randomly selected participants. These interviews provided further information about how the wallet was used.

Ride-hailing services generally filled specific gaps, including late-night journeys when public transport services were limited, time-sensitive appointments and the final part of a journey after travelling by bus or train. Participants also reported feeling more socially connected, more independent and less stressed in their daily lives.

Spending patterns differed during the first six months of Phase 2. Metro and municipal bus and rail services accounted for 28% of journeys but only 3% of spending, reflecting their comparatively low fares. Ride-hailing and taxi services accounted for most expenditure. Smaller amounts were spent on Amtrak and Metrolink, LA Metro's FlyAway and Metro Micro services, FlixBus and Greyhound intercity coaches, car rental and other micromobility services. Bicycle shops accounted for around 15% of purchases. Participants used the funds to buy bicycles, electric bicycles, electric scooters and accessories such as locks and helmets. An estimated 374 bicycles were purchased through the programme.

Supporting wildfire recovery

The programme's flexibility also proved useful in circumstances beyond its original purpose. During the major Los Angeles wildfires, LA Metro offered a USD 900 virtual Mobility Wallet to people on the Phase 2 waiting list who lived in the Eaton or Palisades fire or evacuation zones. Of the 233 eligible people, 79 activated and used the wallet. For some participants, the support had an immediate and personal effect. One participant described it as essential after losing their possessions and taking on debt, saying that it helped them continue managing their daily needs.

A college student in Santa Cruz used the wallet to purchase an Amtrak ticket home and help their family with the clean-up. The same funds paid for their retired father's grocery journeys, their mother's commute to a part-time job and their sister's journey to school.

Results and lessons

Phase 2 received USD 2 million from the Southern California Association of Governments' Regional Early Action Planning 2.0 programme and a further USD 2 million from the City of Los Angeles. This funding was in addition to the emergency wallets distributed during the fires. LA Metro is preparing to introduce open-loop payments and a new Mobility Wallet card.

A third pilot phase, supported by a USD 15 million federal grant, will expand the programme to as many as 20,000 wallets across the county. It will be introduced alongside a new contactless payment system and will contribute to the region's preparations for the 2028 Olympic Games.

The pilots show that a restricted multimodal payment card can be built using existing financial infrastructure. Testing the approach with participants and evaluating it independently have provided the evidence needed to determine how the programme should be expanded.

Guided discussion | Highlights

How did your organisation deliver innovation beyond its formal responsibilities?

The Mobility Wallet originated in community requests for free public transport. LA Metro developed this request into a broader mobility programme supporting several modes. The process demonstrated the importance of beginning with users' needs, testing an approach before expanding it and building evidence through research partnerships and pilot programmes.

How can innovations become embedded within organisations rather than remaining individual initiatives?

Universities and other research partners should be involved from the earliest stages of project development. Authorities should establish clear roles and expectations and maintain regular communication. Where possible, research partners can secure their own funding, simplifying the administrative arrangements needed for collaboration. Long-term trust between authorities and research organisations provides the foundation for effective partnerships.

What advice would you give authorities implementing innovation?

Authorities should recognise that setbacks are a normal part of innovation. Risks and possible

Key conclusions

Data-driven co-design and testing for user-centric

Innovation should begin with a clear understanding of users' needs and be supported by evidence throughout design, testing and operation.

Communication and trust-building

Complex and multi-level reform require clear, effective, and constant communication to be accepted by the public.

Embedding innovation within long-term visions for future-proof innovation

Integrating measures in long-term visions and aligning with existing strategic priorities to facilitate stakeholder coordination and adapt to evolving markets.

Promoting adaptive and risk-aware approaches

Increasing uncertainty and market instabilities (shared/on-demand services) can be overcome through flexible contracting, market monitoring, and regular adjustments.

Capitalising on internal capacity

Internal training, access to learning tools, and strong capacity as a long-term investment in attracting and sustaining innovation over time.

Strengthening institutional credibility to mitigate political barriers

Consistency and reliable delivery as fundamental tools in cross-governmental cooperation and changing political priorities.

Capitalising on internal capacity

Strong organisational capacity, stakeholder engagement, and aligned incentives to mitigate internal and external organisational fragmentation: informal context-specific cooperation/collaboration processes.

Exposure as a driver of innovation

Learning from other PTAs from (inter)-national networks and being embedded in an innovative environment as a driver of future internal innovation.

UPPER CLUB

Find more about UPPER

upperprojecteu.eu

AUTHORS:
Emmanuel Dommergues, UITP
Iryna Moroz, UITP

WITH THE CONTRIBUTION OF:
Arturo Luciani, UITP
Avital Shavit, LA Metro
Chaeyeon Lee, SMG
Geanina Suditu, TPBI
Mário Alves, IFP
Mariona Conill de Azpiazu, AMB
Miklós Gábor Bánfi, BKK
Pedro Homem de Gouveia, POLIS
Pedro Machado, TML
Pete Moth, AT
Rui Martins, TUB

UPPER Project EU

@UPPERProject-on8dq