Interreg CENTRAL EUROPE

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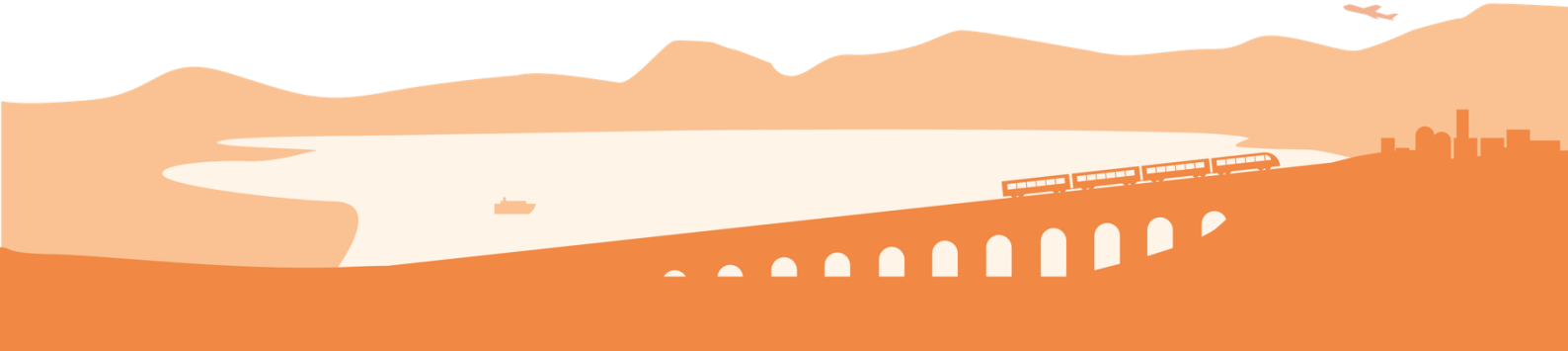
DREAM_PACE

New DRT service without fixed itineraries

Budapest area

Final version

02 2026



Authors of the document

Partner No.	Partner Acronym	Name of the author	Action	Version
5	BKK	Viktoria Hideg	Draft version	1
2	Redmint	Gabriele Grea	Review	2

Contents

1. Operational set-up and day-to-day functioning of the service

The Csobajbusz service (line 274) operates as a geoflexible, demand-responsive bus line fully embedded in Budapest's public transport system. It was launched in August 2025 in Budapest's 16th district and represents the first flexible-route DRT service of this type in Hungary.

The service operates within a clearly defined service area and is designed primarily as a feeder and distributor service to high-capacity trunk lines, most notably the suburban railway (HÉV) at Cinkota station, as well as to fixed bus services in adjacent areas. Although the route is flexible, the system operates with fixed scheduled departure slots every 30 minutes on weekdays between 05:00 and 21:00, ensuring predictability and integration with the wider network.

At each scheduled departure, the actual route followed by the vehicle is dynamically generated based on the travel requests received for that specific trip. From an operational perspective, the flexible routing logic is supported by a multi-layered system architecture, consisting of a passenger booking interface, an on-board driver application with real-time navigation, and a dispatcher interface for supervision and interventions. This enables the service to function reliably in real-world conditions despite the absence of fixed itineraries. The system also allows for fine-tuned connection management with the HÉV, ensuring that the flexible service continues to operate within a timetable-based public transport framework.

1. Figure: Timetable of the flexible route DRT service (Csobajbusz). Reference: https://bkk.hu/apps/menetrendek/storage/uploads/1772547699.pdf

1.1. Booking, passenger interaction and real-time information

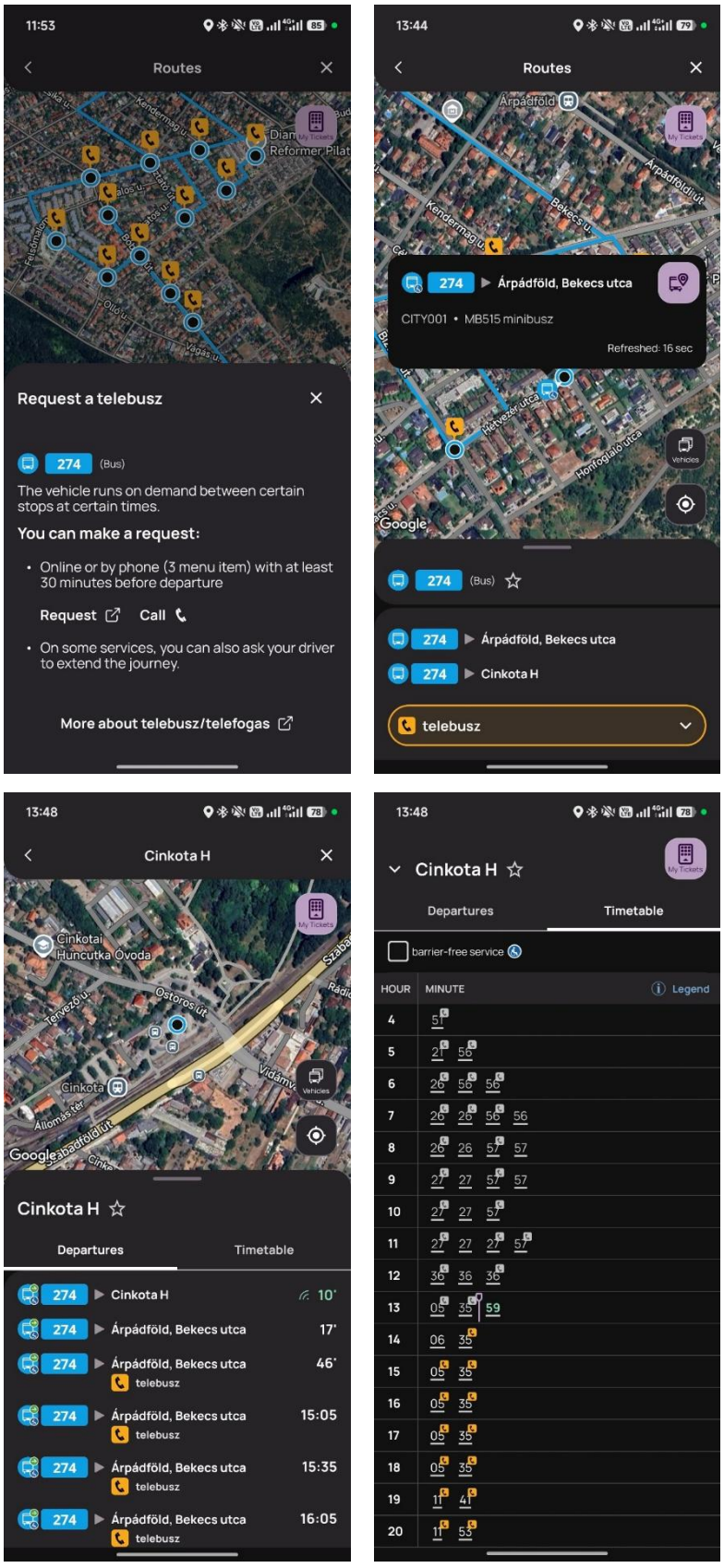
Passengers can submit travel requests through multiple channels, ensuring inclusivity and accessibility. Requests are primarily made via a web-based booking interface (csobajbusz.bkk.hu), which is accessible directly from the BudapestGO application via a hyperlink and users can register or log in with their existing BudapestGO account. Additional booking channels include telephone requests handled by dispatchers and on-site requests at Cinkota HÉV station.

To place a booking, passengers select:

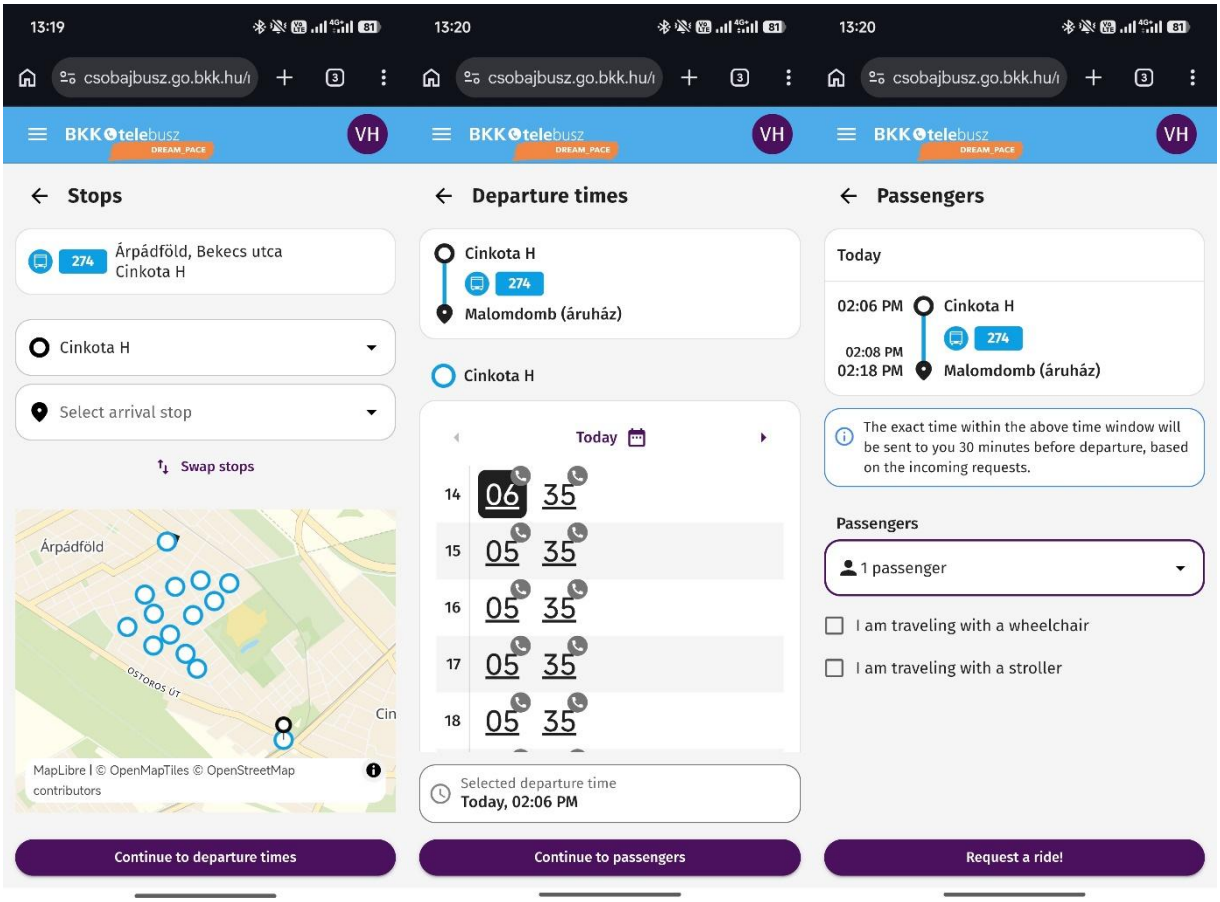
- A fixed departure time.
- A boarding point and an alighting point within the service area.
- The number of passengers.
- And any special mobility requirements (e.g. wheelchair or stroller).

Requests can be submitted up to seven days in advance and no later than 30 minutes before the scheduled departure. An exception applies to on-site requests at Cinkota HÉV station, where passengers may register their travel request directly with the bus driver up to 2 minutes before departure. The timetable of the Csobajbusz is coordinated with the HÉV services at Cinkota station in order to ensure reliable and convenient transfer connections.

Passengers receive real-time information through BudapestGO, where the Csobajbusz is displayed alongside traditional public transport services. Vehicle positions and expected arrival times are visible, which is particularly important due to the flexible routing and the fact that vehicles may approach boarding points from different directions.



2. Figure: The new, flexible route DRT service (Csobajbusz) in the BudapestGO application



3. Figure: Online travel request process in the Csobajbusz webbased application

1.2. Boarding points and physical operation in the street network

Due to the geoflexible nature of the service, traditional direction-specific bus stops are replaced by designated boarding and alighting points, typically located at intersections or clearly defined points along the street network. These boarding points have no fixed directionality, as vehicles may approach from different directions depending on the optimised route.

This operational concept significantly reduces infrastructure requirements while maintaining safety and clarity for users. The system relies heavily on real-time vehicle tracking to inform passengers about the actual approach direction of the bus, supporting smooth passenger exchange even in the absence of conventional platforms or bus bays.

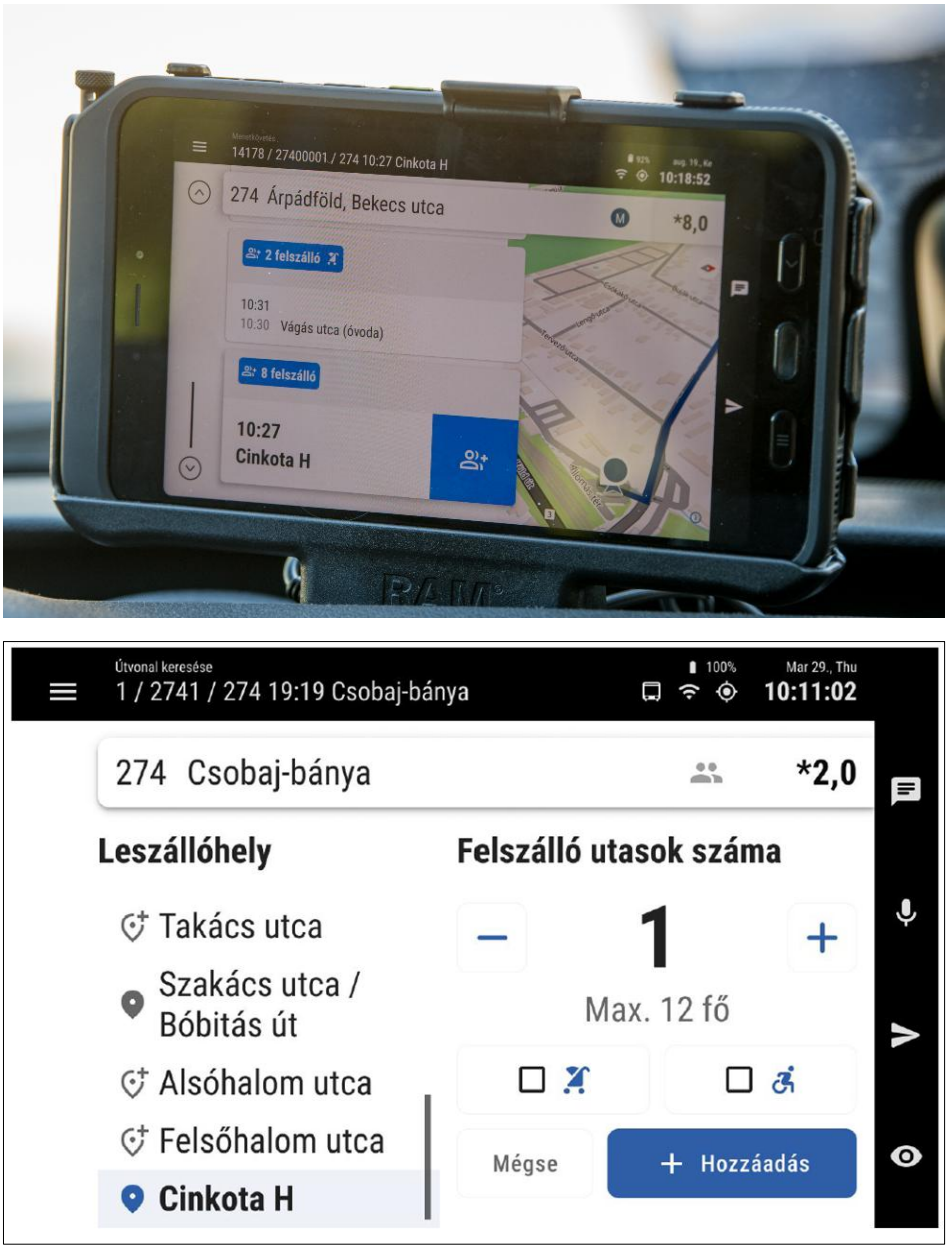
The service operates with a single low-floor minibus, with a capacity of approximately 18 passengers. Despite the flexible routing, the maximum round-trip time is constrained by the 30-minute headway, which defines the operational envelope and ensures timetable stability.

4. Figure: Marking of the boarding / alighting points

1.3. Driver interface and operational control

From the driver's perspective, the service is supported by an on-board computer with integrated navigation, which continuously displays the optimised route and the sequence of boarding points for the given departure. Unlike conventional navigation tools, the routing system is specifically calibrated for minibus operation, accounting for street width, traffic-calming measures and one-way restrictions.

The driver receives real-time updates if new bookings are added within the permitted timeframe or if operational adjustments are required. In exceptional situations, such as system failures, a predefined fallback route covering all boarding points can be used to ensure service continuity.



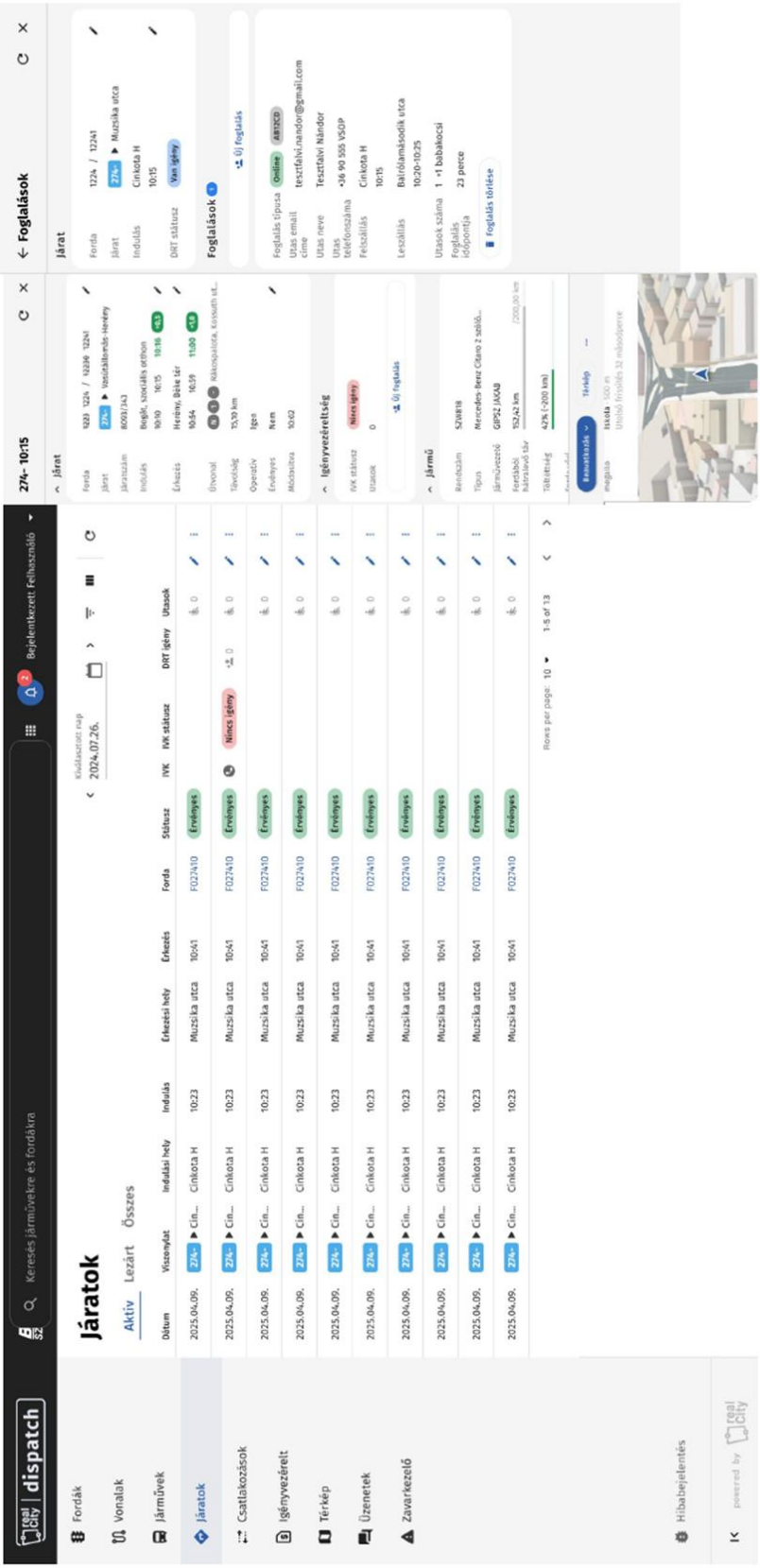
5. Figure: Driver interface

1.4. Dispatching, supervision and day-to-day management

A dispatcher interface provides real-time oversight of incoming bookings, vehicle movements and capacity utilisation. Dispatchers handle telephone bookings, monitor adherence to scheduled departures and can intervene when operational issues arise, such as delays or unforeseen disruptions.

The dispatcher also plays a key role in maintaining timetable integrity, especially in managing connections to the HÉV suburban railway. Limited buffer times are incorporated so that short delays of connecting services can be absorbed without compromising the overall service pattern.

Based on operational experience, approximately half of the travel requests are submitted online, while a similar share is registered in person with the bus driver at Cinkota HÉV station. Only around 5% of all requests are received via telephone.



6. Figure: Dispatcher interface

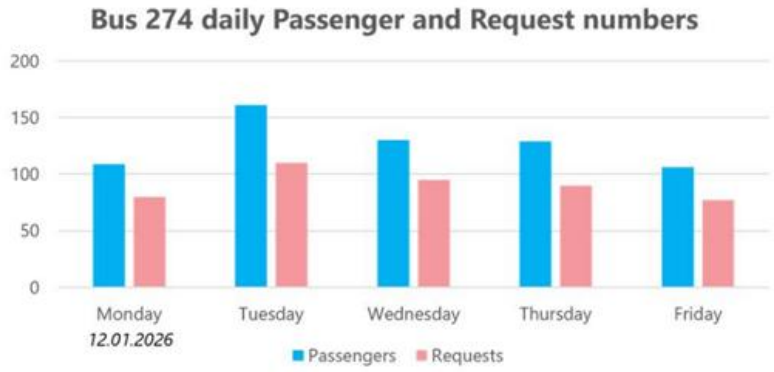
2. Monitoring, data collection and performance evaluation

Monitoring is a central element of the operational model. Because all trips are booking-based, the system generates high-resolution operational and demand data, including boarding and alighting patterns, temporal demand distributions, vehicle kilometres and occupancy levels.

Operational performance is assessed on a daily basis by comparing planned routes generated by the software with actual vehicle movements and kilometres driven. This is necessary because the high degree of routing variation does not allow for traditional, route-based contractual accounting. Instead, actual performance data are verified using driver logs and system records.

In parallel, user satisfaction monitoring has been carried out through targeted online surveys among residents and users of the service. Feedback has consistently highlighted high satisfaction with accessibility, flexible routing and ease of use, while also providing concrete suggestions for further improvements, such as additional boarding points and tighter integration within the BudapestGO interface.

Ridership levels are continuously monitored, with daily passenger numbers on peak days exceeding 150 users, a level comparable to – or exceeding – that of several long-established, fixed-route suburban DRT services in Budapest.



7. Figure: Traffic data for the new flexible route DRT service [boarding passengers and request numbers]

3. From pilot to regular operation

The service operated initially as a pilot between August 2025 and January 2026 under the DREAM_PACE project framework. Following a successful testing period, positive operational indicators and strong user acceptance, the service has been continued from February 2026 onwards with direct financing by BKK, confirming its transition from an experimental pilot to a stable, operational public transport service.

Overall, the Csobajbusz demonstrates how a highly flexible, digitally supported DRT service can be operated reliably in real-world conditions, provided that it is embedded in the public transport system, supported by robust IT tools and continuously monitored through operational data and user feedback.