

MOBILITY NEWSLETTER

**Research & reporting from California, the U.S.,
and around the world**

May 23rd, 2023



Next generation of fare payments:

The popularity of open-loop is clear, but what other technologies are transit agencies experimenting with?

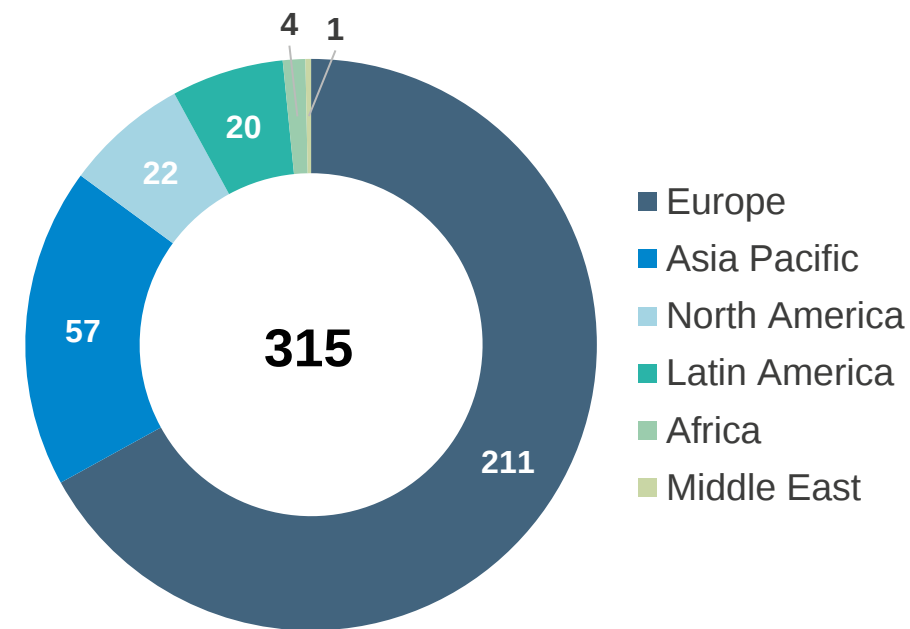


Transit agencies in over 300 cities worldwide already accept open-loop payments

Open-loop payment (OLP) eliminates the need for a physical ticket during a journey, as the credit/debit card or mobile device used for payment serves as the ticket itself. Payment for the journey can be processed either during the trip, upon completion of the journey, or at the end of the day when the fare is calculated based on the actual usage.

Transport for London (TfL) pioneered the use of open-loop payments in 2013, and reached ~55% contactless share of all payment methods in 2022 (S).

Building on the success and knowledge gained in London, OLP has now been **adopted globally**. North American and European transit agencies almost always request OLP in recently published procurements and transit agencies are making more and more products available on credit/debit cards.

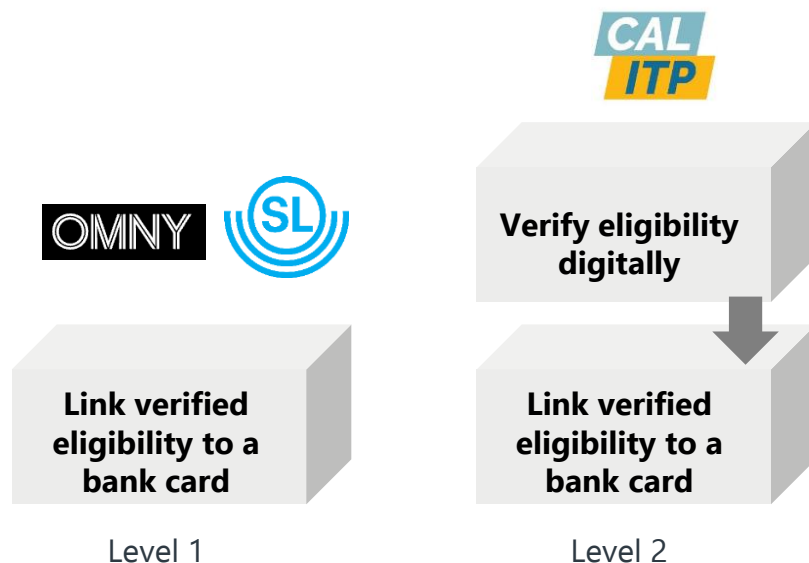


Number of cities with OLP implemented.

Source: Global Mass Transit Research 2023

Transit agencies are expanding products available on OLP with new eligibility verification procedures

Transit agencies are experimenting with, and launching, options for riders to digitally link their eligibility for a discount to a contactless credit/debit card, allowing them to receive reduced fares with OLP.



Building blocks towards completely digital discounted fare experience

Verification procedures differ, and can involve different entities:

Agencies can link a rider's pre-verified eligibility to their card:

OMNY allows reduced-fare riders to transfer their existing benefit to their credit or debit card (either physical or digital versions) without further verification.

Banks can be linked to provide digital eligibility verification:

In **Stockholm**, students and seniors can link their contactless bank cards to their transit discounts. During the enrollment process, people are redirected to their own online bank where they can verify their identity and change the 'price category' for transit that's associated with their bank cards (more info [here](#)).

States can also centralize digital identity verification for agencies:

In **California**, **Monterey Salinas Transit** in partnership with the California Integrated Travel Project allows seniors to link their debit or credit cards to their transit discounts. Working with the California Department of Technology, riders are directed to Login.gov, where they can create a digital identity account if they don't already have one to verify eligibility (more info [here](#)).

Prepaid mobility benefit cards and OLP on transit together lead to seamless mobility access

Mobility wallets to support travel



Low-income South LA residents can now apply for the Mobility Wallet Pilot Program!

Receive \$150 a month for a year to use on public transit, bike share, ride share, and more.

Apply now:
taptogo.net/mobilitywallet

LADOT

CALIFORNIA AIR RESOURCES BOARD

Mobility prepaid card program

The Los Angeles Department of Transportation (LADOT) launched a multi-modal transportation and integrated payments initiative called the **Universal Basic Mobility (UBM) Pilot**. The pilot aims to provide 2,000 residents in South Los Angeles with a seamless payment platform and improved access to both public and private transportation systems.

The pilot seeks to address transportation challenges faced by low-income residents and increase their access to mobility and economic opportunities. According to LADOT, residents can reach 12 times as many jobs with a car as they can with public transit, and the program hopes to help close this gap. (S)

In partnership with LA Metro, the pilot includes the development of a mobility wallet. The first phase of the pilot involves distributing **prepaid cards worth \$150 per month** for multimodal transportation options, including public transit, shared e-scooters, e-bikes, car sharing, and ride-hailing services.

The project is funded by a \$13.8 million grant from the California Air Resources Board and an additional \$4 million from the city's unappropriated balance (UB) fund. If successful, the program may be expanded to other parts of Los Angeles. (S)

The popularity of open-loop is clear, but what other technologies are transit agencies experimenting with?



Location-based mobile Check-In/Check-Out

These systems enable passengers to board public transport using a mobile app, without needing to validate tickets or make payments at fare gates or validators. The solution uses GPS data from a passenger's smartphone to calculate the fare and charge the passenger when completing their journey.



Austria



Denmark



Bluetooth Low Energy based mobile Be-In/Be-Out

With Be-In/Be-Out, a passenger can obtain a 'virtual' ticket just by being inside a vehicle or walking through a gate. Bluetooth beacons are often installed to detect a passenger's presence via their smartphone, enabling the entire ticketing process to take place automatically.



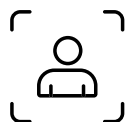
South Korea



Italy



U.S.



Biometric recognition-based payments

Biometric payment refers to a method that utilizes biometric data, such as fingerprints or facial recognition, to authenticate and authorize transactions. Instead of traditional methods like cards or mobile devices, biometric systems rely on unique physiological characteristics to verify the customer's identity.



Russia



China



Spain



Location-based mobile Check-In/Check-Out

These systems enable passengers to board public transport using a mobile app, without needing to validate tickets or make payments at fare gates or validators. The solution uses GPS data from a passenger's smartphone to calculate the fare and charge the passenger when completing their journey.

	Starting point			Solution they upgrade(d) to
 Austria	 Mobile application	 Paper tickets	No gate / turnstile infrastructure	 "SimplyGo!" mobile application
 Denmark	 Closed Loop Mifare transit card		No gate / turnstile infrastructure	 Mobile application coming in 2025



Location-based mobile Check-In/Check-Out



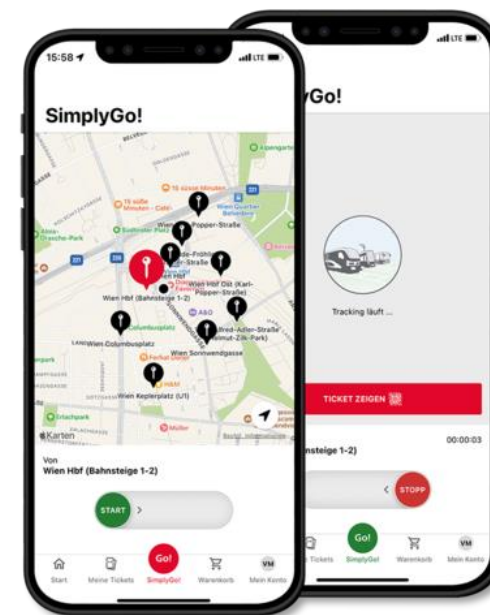
Austria

Austrian Federal Railways ÖBB launched nationwide multi-modal 'swipe on, swipe off' mobile fare payments. Once activated, the SimplyGo! function uses GPS to track the routes and distance travelled to calculate and charge the user the cheapest fare. The solution incorporates fare capping and is accepted on rail, bus, tram and subway services across the whole of Austria. The system was developed by FairTiq.



Denmark

Denmark is planning to introduce a national mobile ticketing system that will replace its existing closed-loop card. The system is expected to be rolled out in 2025 and will be based on a mobile app, allowing users to buy and store tickets on their smartphones. The country has no transit gates, a smartphone-savvy population and few unbanked people. The pilot was carried out with FairTiq.



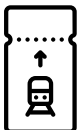
Source

Key trade-offs for transit agencies contemplating similar technology include the potential cost savings (no need for gates/hardware beyond location beacons) set against the need for regular inspections, and requiring riders to download yet another app, raising the barriers for entry.



BLE based mobile Be-In/Be-Out systems

With Be-In/Be-Out, a passenger can obtain a 'virtual' ticket just by being inside a vehicle or walking through a gate. Bluetooth beacons are often installed to detect a passenger's presence via their smartphone, enabling the entire ticketing process to take place automatically.

	Starting point			Solution they experiment with	
 Seoul	 Closed Loop Mifare transit card	 Paper tickets	Gate / turnstile infrastructure	 BLE	"Tagless gates"
 Genoa		 Paper tickets	No gate / turnstile infrastructure	 BLE	"Frictionless MaaS"
 Michigan	 Mobile applications	 Paper tickets	No gate / turnstile infrastructure	 BLE	"Hands-free MaaS"



BLE based mobile Be-In/Be-Out systems



Seoul

The 'tagless' pilot fare payment system in Seoul enables passengers to pay for their tickets by walking through a ticketing gate without having to tap a contactless reader with their transit card or smartphone. The detects a passenger's smartphone when they pass through a subway gate and automatically charges the fare to a payment card stored on the passenger's mobile device. The payment method is already common in South Korea for retail payments.



Genoa

In Genoa, the GoGoGe pilot uses BLE beacons placed in public transport vehicles and key locations throughout the city to connect users with various transportation options, including buses, taxis, ferries, bike-sharing, and car-sharing. Hitachi has connected 663 buses, 2500 bus stops, the metro line used by 15 million per year, two funiculars*, one historic hillside railway, 10 public lifts and two suburban bus routes that span 50km.

HITACHI



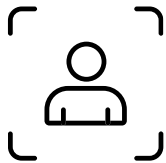
Michigan

MDOT granted Ecolane \$888,800 to develop and implement a mobility wallet solution to integrate all modes of transportation into a single mobile app. The solution will include a sensor technology allowing users to pay for public transport via their smartphone without needing to take the device out of their pocket. The platform integrates with a hands-free mobile wallet solution and is fully compliant with the Americans with Disabilities Act.

 **Ecolane**

** A funicular is a cable railway system on a steep slope.*

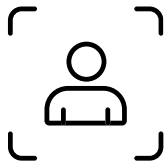
Given that there are no transit agencies using this technology at scale yet, it is hard to draw conclusions on how it is received by riders.



Biometric recognition-based payments

Biometric payment refers to a method that utilizes biometric data, such as fingerprints or facial recognition, to authenticate and authorize transactions. Instead of traditional methods like cards or mobile devices, biometric systems rely on unique physiological characteristics to verify the customer's identity.

	Starting point			Solution they upgraded to
 Moscow	 Closed Loop Mifare transit card	 Open Loop	Gate / turnstile infrastructure	 "FacePay"
 Zhengzhou	 Closed Loop Mifare transit card	 Mobile application	Gate / turnstile infrastructure	 "Face-scanning metro check-in service"
 Madrid	 Paper tickets	 Mobile application	No gate / turnstile infrastructure	 "Face recognition ticketing"



Biometric recognition-based payments



Moscow

Moscow Metro rolled out a fare payment system based on facial recognition technology in 2021. The cashless, cardless and phone-less system, called "Face Pay" has been fitted at special turnstiles across the Russian capital's more than 240 metro stations.



Zhengzhou

In Zhengzhou, nearly 200,000 passengers have embraced the technology, and an average 10,000 commuters are paying metro fares by scanning their faces every day. Pilots started in 2019 and the service was expanded to cover all 14 metro lines the same year.



Madrid

Madrid piloted facial recognition in 2019. To use the system, riders create an account using an app - providing an email, bank details, and a selfie - and can purchase a prepaid pass or opt to pay as they go. When boarding the bus, a camera scans their face and checks if they have an account. If they do, the system checks if they prepaid and grants them entry, or charges their stored card for the fare (video). If a rider is not recognized, they are prompted to use the traditional fare payment option.



Facial recognition-based systems raised concerns about privacy, inaccuracy and security risks and there are no countries where this technology is used at scale in transit – other than China and Russia.

Biometric recognition in other sectors

Despite the numerous concerns and criticisms surrounding facial recognition-based systems – such as privacy, inaccuracy and security risks – they are already being implemented for various purposes, most commonly at airports. Additionally, the retail sector is currently piloting other forms like palm vein recognition.

Retail pilots with biometric payments

Panera Bread and JP Morgan Chase are both embracing biometric payment technology to enhance their retail payment options.

Panera Bread has rolled out Amazon's Amazon One biometric palm-recognition technology at selected outlets, allowing customers to link their palm prints to their accounts.

JP Morgan Chase is piloting in-store biometric payments using palm recognition, starting with a select group of merchants, with plans for wider implementation if successful.



Source

Airports using facial recognition

Facial recognition technology is being increasingly adopted at airports worldwide. The benefits of this technology are improved efficiency, enhanced security, and reduced physical contact during check-in, security screenings, and boarding processes.

There are however concerns surrounding facial recognition at airports, including issues of privacy, accuracy, potential biases, and the need for informed consent. The TSA is currently testing facial recognition at more airports, but there is an ongoing debate surrounding its use in aviation.



Source

The use of facial recognition for purposes other than ensuring national security is still hotly contested and even banned for certain specific uses in some U.S. jurisdictions. Regulations to ensure privacy vary significantly across the states. (S)

