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Contactless Brings a More Convenient Commute to London

Architecting new global ticketing standards with TfL

PROJECT OVERVIEW

Transport for London (TfL) runs the public transportation network for one of the world's busiest cities. With over 20 million[1] annual international visitors, TfL ensures the efficient running of the city's network of buses, overland trains, Tube and ferry services for the capital's regular commuters and influx of visitors.

Mastercard worked with TfL to complement London's existing closed-loop smart card system, Oyster, with open-loop EMV payment acceptance in order to enable the city's residents and visitors to use the payment card or enabled device that they already carry with them to pay for public transit. By eliminating the need for top-ups and separate paper tickets, contactless ticketing reduced the resources TfL expended managing and distributing fares which drove operational efficiencies and delivered convenience to TfL's riders. London's contactless ticketing deployment was a world first and set a new standard for transit ticketing innovation.

CHALLENGE

London's existing Oyster system meant that travelers either paid in advance for a weekly, monthly or annual transit card or registered and topped up a Pay-As-You-Go card with incremental amounts at ticket offices or top up stations. As a closed-loop transit card, funds added to Oyster could only be used across the TfL network, and once loaded, the top up was lost if not used.

For the city's domestic and international visitors, this system could be problematic, creating a barrier to overcome before they could enjoy all that London had to offer. Before a visitor could utilize TfL's extensive network, they first had to educate themselves, find a station or merchant that sold Oyster, register and then load the card. When visiting a new location, this scenario caused confusion and hindered people from enjoying the city.

> "We wanted to give people the independence to pay for transit in exactly the same way they pay for everything else…with the product that's already in their pocket"
>
> Shashi Verma
> Director of Strategy &
> Chief Technology Officer, TfL

[1] https://web.archive.org/web/20130228094422/http://www.london.gov.uk/sites/default/files/wp53.pdf

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For regular users well-accustomed with guessing transit use in advance and pre-loading funds, Oyster still required them to queue at top up locations and didn't support their travel requirements outside central London.

For TfL, not only did Oyster create barriers and inconvenience for their customers, it also caused operational inefficiencies and high cost for them. With the burden of managing and distributing smart cards and user accounts, TfL was looking for a better way to serve London's residents and visitors while cutting the high cost of fare collection that Oyster delivered.

APPROACH

At the outset of the project, TfL set clear criteria for the new transit payments system:

Cost

Cut the cost of collecting fares, with a target of reducing them to

6%

OF REVENUES

Speed

LIMIT THE TRANSACTION TIME at Oyster readers to a maximum of

500

MILLISECONDS—the time it takes to walk through a ticket gate without breaking stride

Global Interoperability

Find a solution that could **SEAMLESSLY OPERATE WITH**

EXISTING

PAYMENT TECHNOLOGIES, in the UK and around the world

After examining a number of technologies, TfL selected Mastercard's contactless payment technology as the enabler to enhance the existing Oyster system under the Future Ticketing Programme. Both TfL's own technology team and the Oyster system provider, Cubic Transportation Systems, were tasked with designing and implementing a system upgrade. The enhancement would eliminate both the need for occasional or one-time travelers to acquire an Oyster card as well as the middlemen required to sell and administer them.

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SOLUTION

The project was an industry first. At its core was to enable contactless payment technology - which allows everyday purchases to be made quickly and simply by tapping a bank-issued contactless card - to function in a public transit environment. This involved changes to the fundamentals of the traditional payment processing structure, such as putting in place deferred authorization (allowing a traveler to tap into a gate swiftly) and aggregation rules to accommodate the high density, low transaction value environment of mass transit.

Working with the UK Payment Card Council, Mastercard developed a framework to manage industry-specific issues such as first ride risk and debt repayment transactions. In order to ensure that TfL's customers could continue to enjoy the daily and weekly fare capping that they were used to, Mastercard introduced an aggregation rule where charges are applied on a daily cycle, once the most cost-effective option has been reached. More generally, fare aggregation allows the flexibility to offer a range of constructs such as free transfers or time-based tickets. In addition, Mastercard's collaboration with Apple, Google and Samsung means that transit payments can also now be accepted via smartphone.

RESULTS

Contactless payments have been a success for TfL. Riders have embraced the convenience that the technology brings and the deployment set a standard that cities across the globe are eager to replicate. By reducing payment activity across TfL rails, they have seen a reduction in the Cost of Fare Collection from 14% to around 9%[2], with further reductions expected. In 2018, TfL announced that contactless accounts for 50%[3] of all pay-as-you-go journeys on Tube, commuter rail and buses, 17 million[4] journeys per week and has helped TfL achieve £100 million[5] pounds annual savings.

MORE INFORMATION

To hear more about how Mastercard is architecting transit solutions that offer convenience, drive efficiencies and cut cost, please contact enterprisepartnerships@mastercard.com and a member of the Global Cities team will be happy to connect with you.

[2] TfL Commissioners report Feb 2016 P34
[3] https://www.intelligenttransport.com/transport-news/67260/contactless-methods-london/
[4] https://www.intelligenttransport.com/transport-news/67260/contactless-methods-london/
[5] Can NSW Trust Contactless Payments, April 2016