

TfL's Contactless Ticketing: Oyster and Beyond

Transport for London



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Introduction

Transport for London

- Report to the Mayor of London
- Responsible for delivering integrated transport in London
- Responsibilities include:
 - London Underground
 - Docklands Light Railway
 - London Overground
 - River services
 - Walking and Cycling
 - Working with Train Operators in London
 - London's Bus services
 - Trams
 - Taxi regulation
 - Strategic Road Network
 - Congestion charging



Transport for London

TfL... moving London forward

Every day, TfL provides transport and services for more than 10 million people across the Capital

- London Buses – 6.3m journeys per day
- London Underground – 3.1m journeys per day
- London Overground, DLR & Tram – 0.2m journeys per day



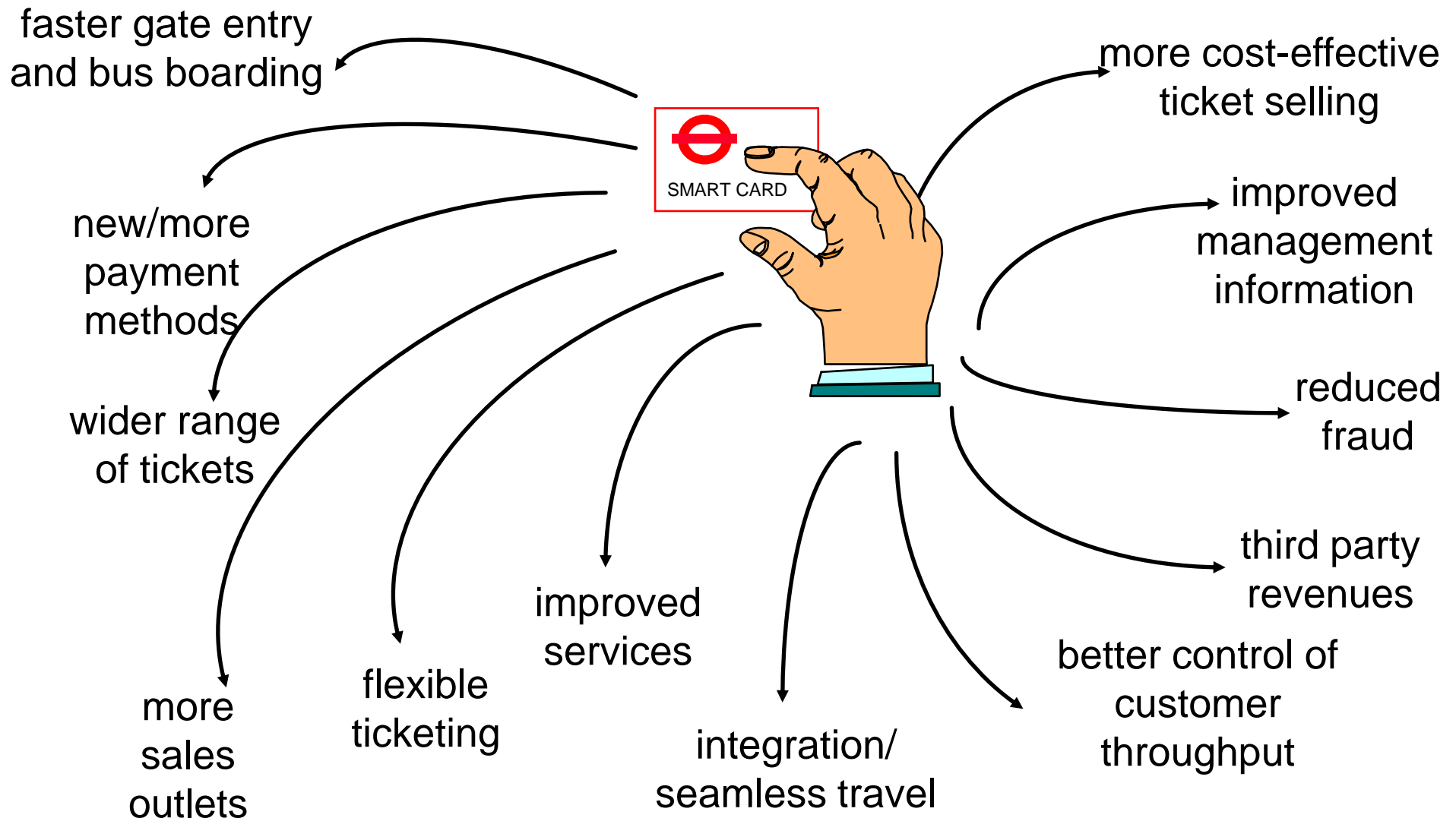
Why a TfL Smartcard?

A Step Back into History

- In the mid-1990s, London Transport faced three challenges on ticketing and revenue collection
 - Improving revenue protection on the Underground system
 - Replacing the ageing bus ticketing system
 - Increasing the flow of passengers through Underground gates
- Achieving all of these challenges required introducing some improvements and provided an opportunity for introducing new technology. The choices LT made were to
 - Complete the gating of LU stations, to the extent practicable
 - Replacing the bus ticket machines with Enhanced Ticket Machines
 - Introduction of a smartcard based ticketing system

Implementing a Smartcard

We saw these potential customer benefits





We called our card Oyster

About Oyster

TfL's Ticketing Smartcard

*Oyster is essentially an electronic bowl which can hold a range of products—
Travelcards, Bus & Tram Passes, pay as you go, concessionary tickets*



Valid on bus, Tube, Tram, London Overground, DLR and selected National Rail.

Can also provide free and discounted travel including:

- Freedom Passes (for Londoners aged 60+ or with an eligible disability)
- under 18s in full-time education and living in London can get Oyster photocard for free travel on buses & trams
- discounted travel for students in selected full time education on season tickets

Able to specifically tailor discount automatically:
particular mode/ticket products/time

About Oyster

How we launched

Phased Oyster Implementation

- 1st phase was to issue cards to staff
- Customer launch in 2003 with Annual & Monthly Season Tickets only and then weekly tickets.
- Pay as you go (2004) - Tube first then bus



About Oyster

Oyster has enabled a series of ticketing innovations



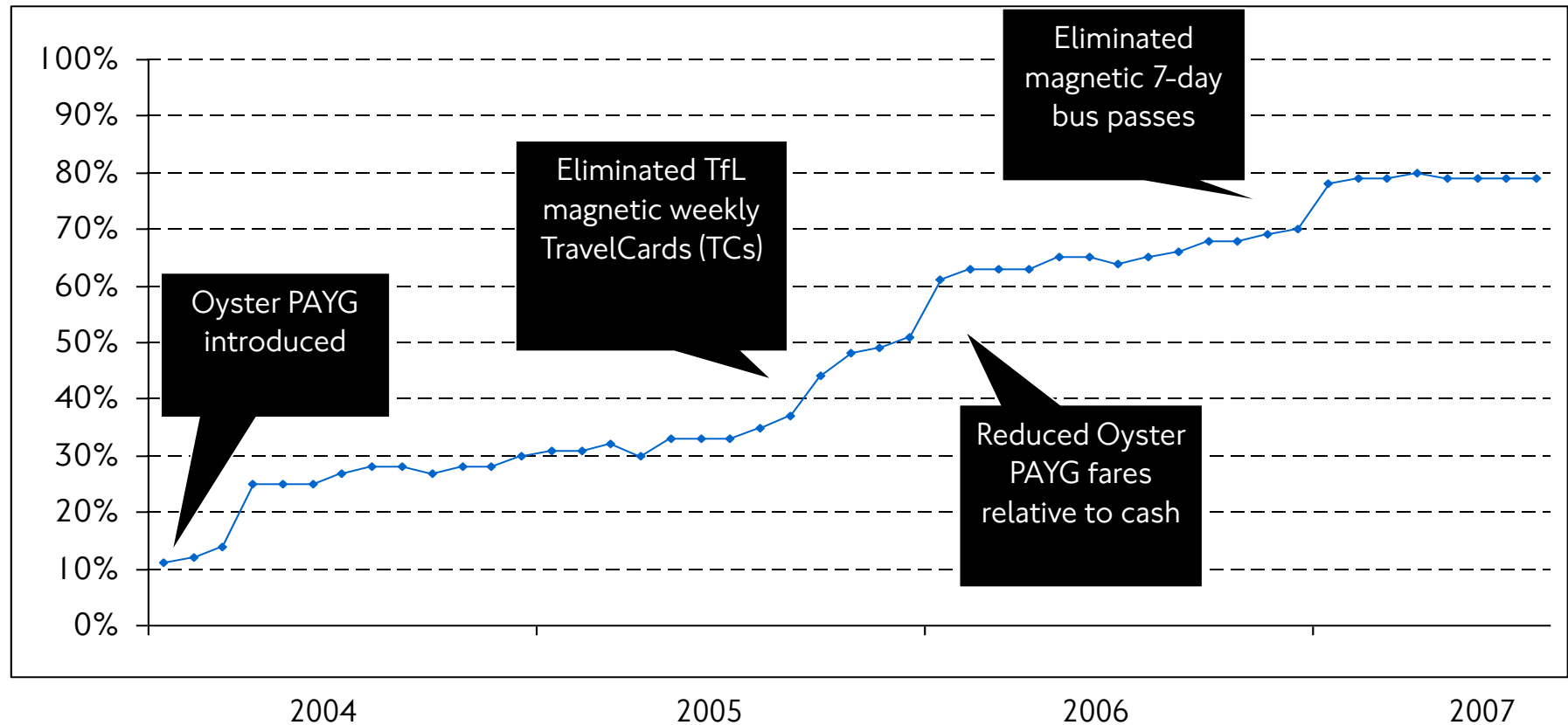
- **Daily Price Capping** (Feb 05) – automatically calculates the cheapest fare for all the journeys a customer makes in a single day.
- **Auto top-up** (Sep 05) – customers using pay as you go can have their card automatically topped up with either £20 or £40 whenever their balance falls below £5.
- Fares policy has introduced and steadily expanded Oyster versus Paper Ticket price differential over past two years.

Oyster is now the way to travel

About Oyster

Penetration of Oyster

Oyster share of all TfL trips



Source: TfL Fares & Ticketing Directorate

About Oyster

Key Oyster Facts

- More than 20 million Oyster cards have been issued; 38 million journeys a week are made using Oyster.
- 80% of all Tube and bus payments are now using Oyster.
- The proportion of cash payments on the Tube and buses has fallen to under 3% since Oyster was launched.

Where are we today?

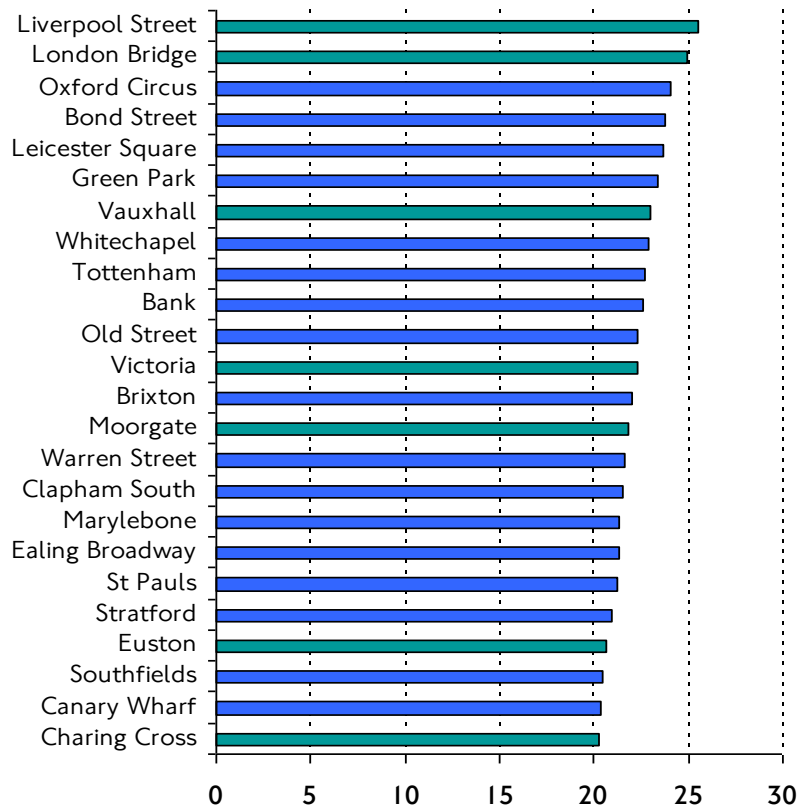
Evaluating the benefits

- There were three large areas of benefits envisaged from the smartcard system
 - Improvements in gate throughput thus offsetting the need for gate congestion relief projects
 - Reduction in the number of ticketing transactions, reducing the overall cost of ticket selling
 - Reduction in fraud overall on the system
- So, how have we performed against these objectives?

Evaluating the Benefits

Increased Gate Flows with Oyster

Average gate throughput during peak hour



Persons per minute, entry only

24 stations currently need an average gate throughput >20 people per minute; another 41 need >15 per minute

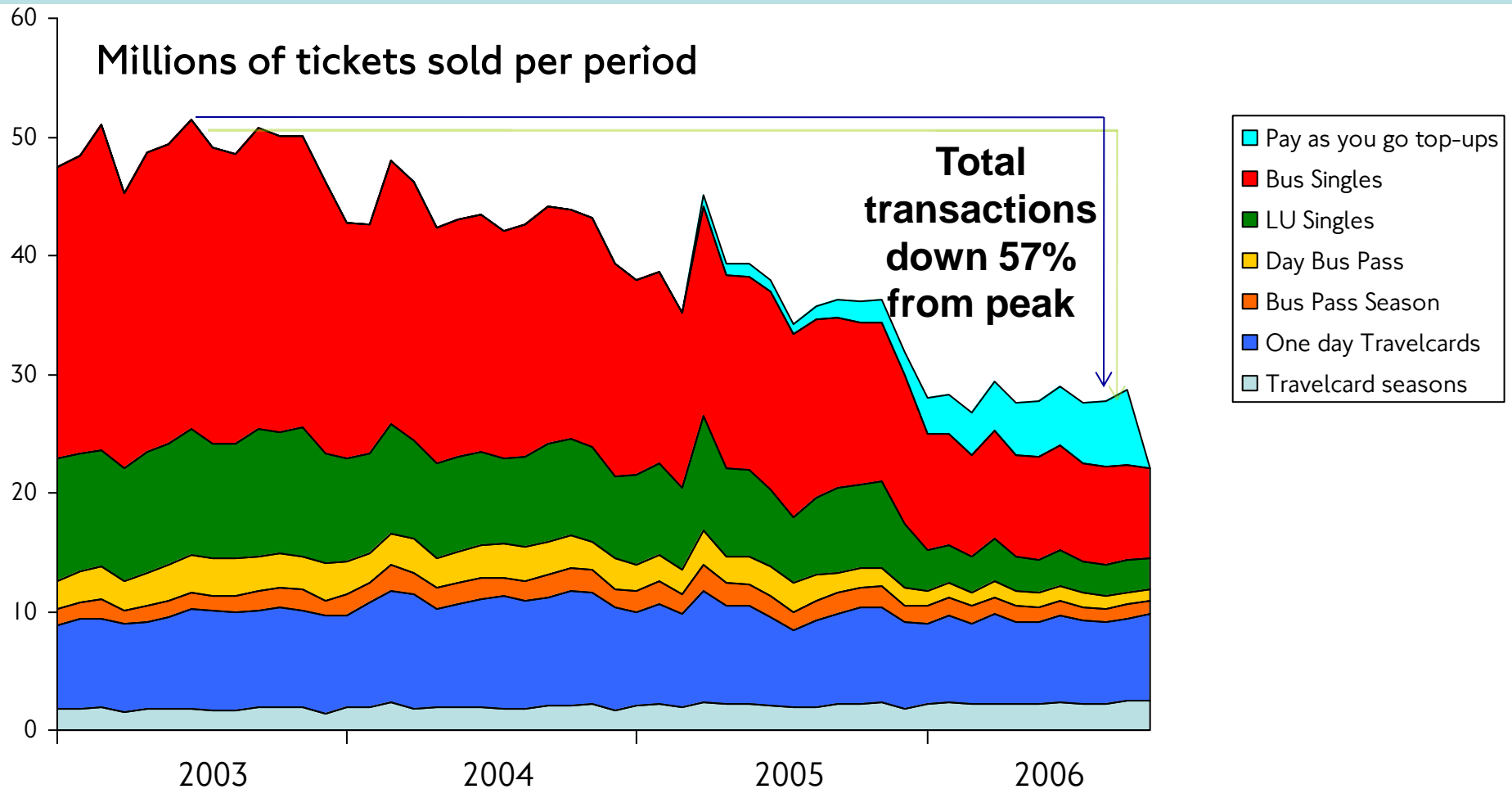
Operational peak capacity, with Oyster tickets only is around 25 per minute; with magstripe only it is 20 per minute

Biggest constraints on the system are at national rail termini where there is a dilution of gate capacity due to higher proportion of magstripe tickets

Source: TfL Fares & Ticketing Directorate

Evaluating the Benefits

Reduction in Ticket Sales from PAYG



Evaluating the Benefits

Leveraging the success of Oyster

- Anti-Fraud

Reduced ticket touting

Ticket copying/cloning prevented

- Ticketing simplification and convenience

Fare calculated for journey made (in 200 ms)

pay as you go does the work for the customer

- System integration

Oyster is a powerful symbol for multi-modal travel



Evaluating the Benefits

Key Oyster Benefits

- Changed customer behaviour
 - ✓ **Old:** purchase a ticket and then travel
 - ✓ **New:** flexible travel for customer
- Reduces queues
- Minimises cash handling
- Revenue losses reduced
- Speeds customers through gate



Oyster Developments

New technology and further integration

- TfL and Barclaycard (2007) launch a 3-in-1 credit card with cashless and credit payment facilities as well as Oyster functionality. 120,000+ currently in use.
- O2 wallet trial (2007) - Trial led by O2 to evaluate the potential of Near Field Communications (NFC) technology on mobile phones – including Oyster functionality
- Oyster acceptance on National Rail – TfL working with London TOCs to bring Oyster pay as you go to 260 NR stations



Thinking to the Future

Ticket Selling = Currency Exchange



Thinking to the Future

Ticketing is changing fast elsewhere

- Seoul – transit application data mostly on customer contactless credit cards and key fobs
- New York City – Citibank issuing contactless MasterCard cards for use at Subway gate-line
- Tokyo – tickets are bought on screen & delivered “over the air” to contactless mobile phone handsets



Thinking to the Future

So why ticket at all on urban transport?

Why not just take payments like other merchants?



Identical transactions

Can the differences
be managed?

TECHNOLOGIES

Visa
payWave

MasterCard
paypass

NFC
FORUM

Thinking to the Future

TfL's Future Ticketing Project

- TfL is considering alternative ticketing solutions – including the opportunity of 'EMV' contactless payment cards



- Customers in possession of bank issued contactless 'EMV' payment cards (credit, debit or prepaid), could be able to use one of their cards to travel on London's transport system.
- Future system design anticipates moving from current card-based solution to a back-office solution
 - Flexibility for customers e.g., online purchasing/topping up on the move
 - Better able to handle disruption, better efficiency

Thinking to the Future

Future Ticketing Questions

- We are currently exploring a number of questions:
 - Can enough throughput be achieved?
 - Can fraud be controlled?
 - Will fare structure flexibility be retained?
 - Will everyone have access to these contactless payment devices?
 - How much cheaper than today's AFC systems could it be?
 - How do we provide for customers who do not have contactless cards/ bank accounts?
- The EMV standard could be a path to inter-operability as it uses global networks that already exist and that work effectively every day for millions of purchases



Conclusions

- Oyster has been a success for TfL
- Contactless technology delivers on the business case in intensively-used urban transport
- Technology combined with policy drove change in behaviour required to deliver results
- TfL is looking at non-transport revenue collection technologies and will embrace them if doing so wrings out cost from the business and provides the opportunity for customers to purchase travel seamlessly in future

Questions?