
NFC in Transport for London

Setting a context for the role of NFC technology in TfL's ticketing strategy

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About TfL



- Mayor of London's transport authority
- Finances/procures/operates/maintains public transportation
 - London Underground
 - Buses
 - Docklands Light Railway
 - Croydon Tram
 - London Overground (part of the National Rail network)
 - TfL Road Network – 580km of arterial roads
 - 4,600 traffic lights
 - Taxi licensing
 - Congestion Charging
- Strategic objectives:
 - To support economic development
 - To tackle climate change and enhance the environment
 - To improve social exclusion

Oyster contactless smartcard

What Oyster is



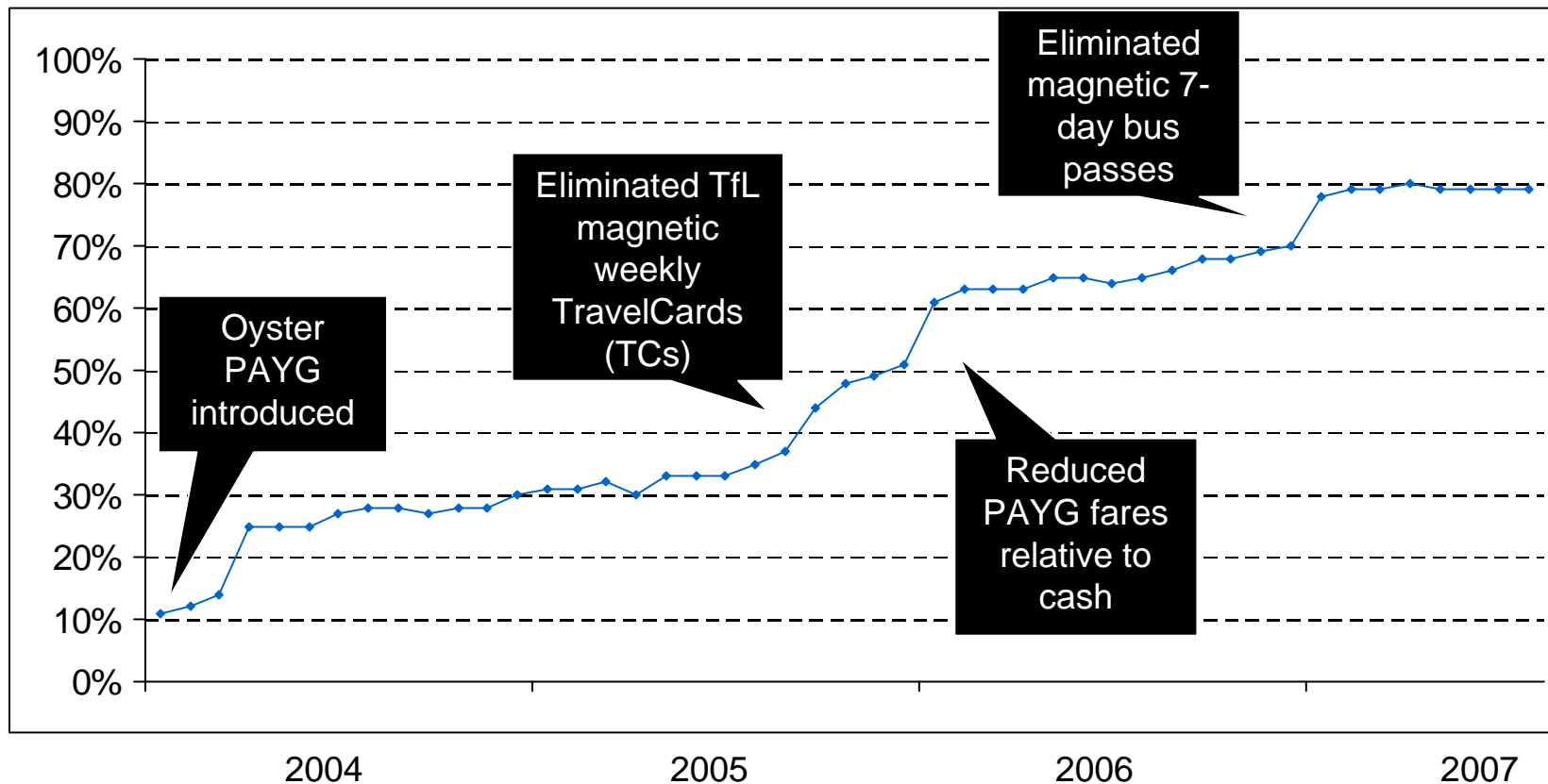
- **TfL's multi-modal smartcard**
 - London Underground
 - Buses
 - National rail
 - Tram
 - DLR
- **3 x period tickets + £90 PAYG with daily capping**
- **Contactless: below 300msec read/write at the reader**
- **Distributed to customers free with a period travel product or a £3 returnable deposit: >16m issued to date**
- **Concession & discount variants**
 - Freedom Pass for over-60s
 - Various child & student schemes
 - Bus & tram adult discount card

Statistics

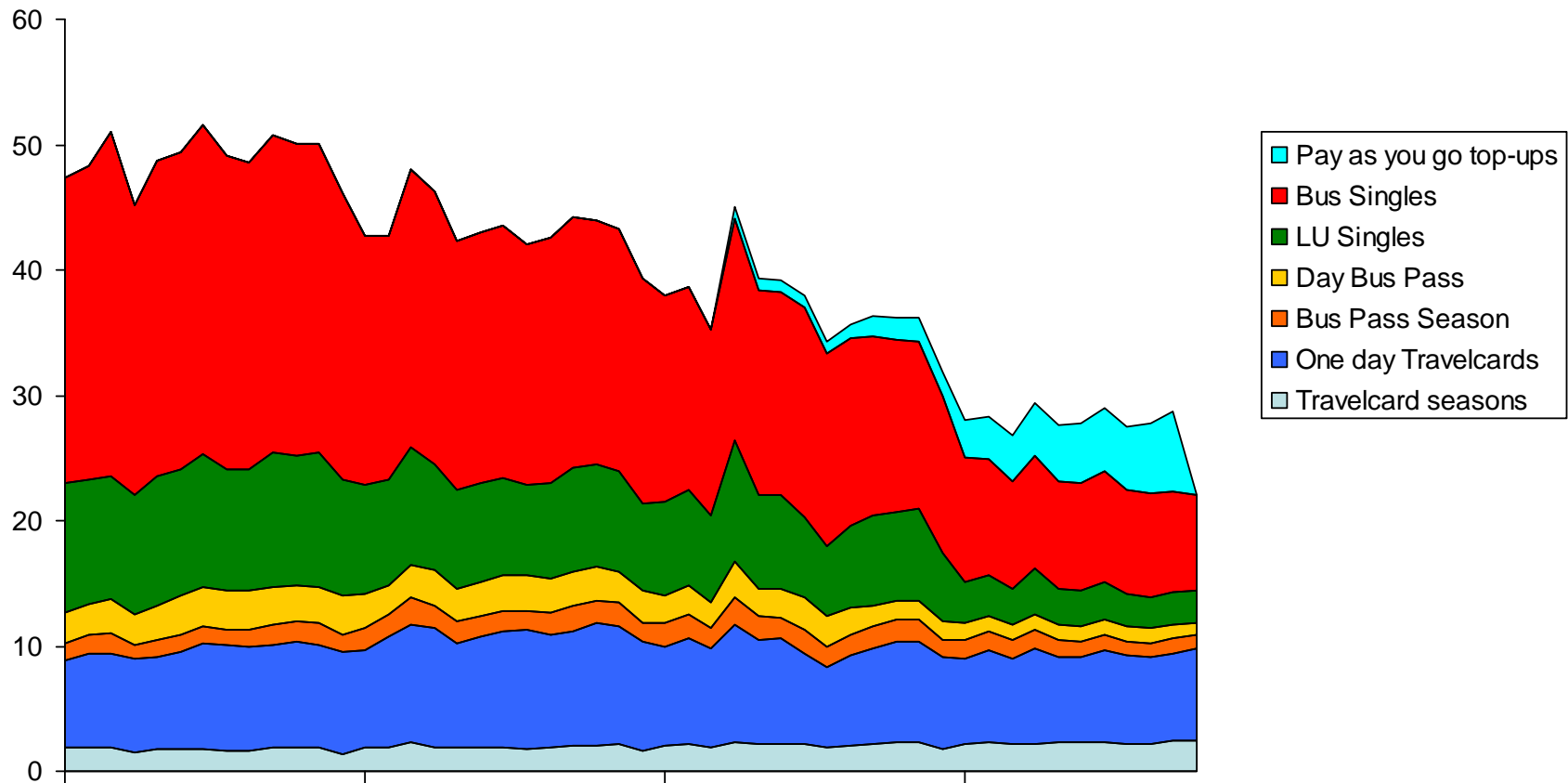
- **Every weekday in London:**
 - 6 million journeys on London's buses
 - 3.4 million on the Tube
 - 11 million car / motorcycle trips
- **8,000 buses**
- **290 stations**
 - rising to over 500 in 2009
 - 70% of National Rail journeys begin or end in London
- **2,300 retail outlets (newsagents)**
 - rising to over 4,000 by June 2008
- **Over 5.5 million separate cards used each month**
- **Over 20,000 smartcard readers**

Penetration of Oyster

Oyster share of all TfL trips

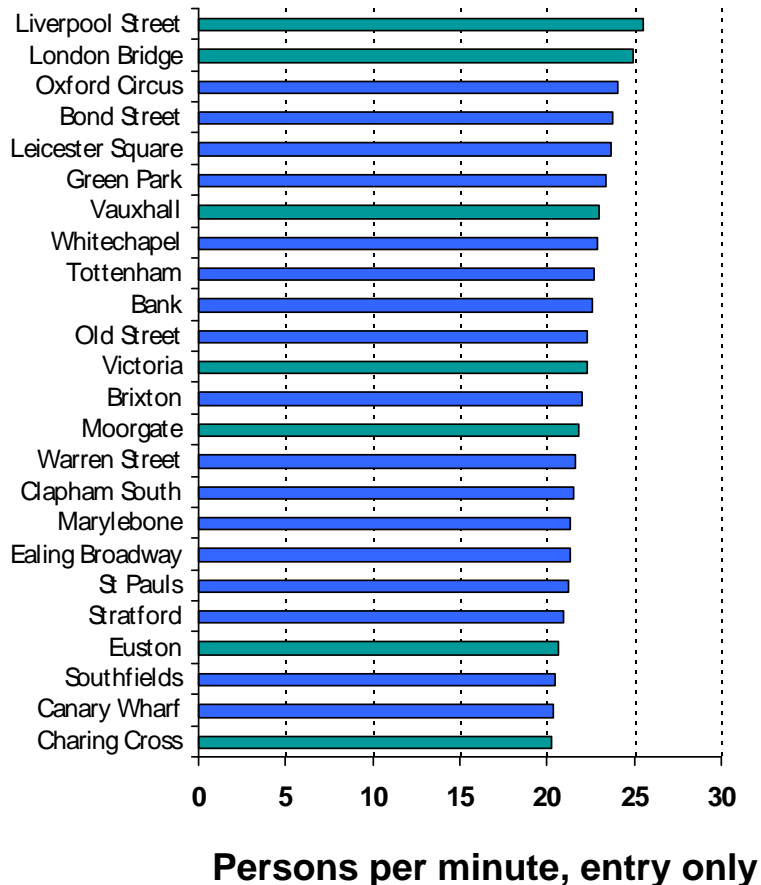


Impact of Oyster on the ticketing system



Increased gate flows

Average gate throughput during peak hour



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

Key benefits from Oyster

- Change in customer behaviour
- Old: purchase a ticket and then travel
- Oyster more streamlined travel for customer
- Reduces queues
- Minimises cash handling
- Tackles fraud
- Speeds customers through gate
- BUT WHAT NEXT



New Developments – Barclays Oyster Card Partnership

- Commuters are in a hurry and likely to value fast contactless payments for low value retail purchases
 - Oyster PAYG not suitable for general retail
 - UK banks wanted to introduce low value EMV contactless payments using London as first location due to customer familiarity with Oyster concept
- We agreed to License Oyster as a co-resident application
 - Oyster
 - Chip & PIN
 - Contactless (Visa Wave)
- Two purses
 - Credit (Chip & PIN and Contact less)
 - Oyster
- Oyster functionality same as blue Oyster card
- Foundation for deeper understanding of payments contactless standards for future transit aspirations



Oyster on Mobile NFC Pilot

- **O2 Wallet Trial with 500 Nokia Handsets (Nov 2007) – 6 months**
- **Barclaycard, Visa Europe, Nokia, AEG, Transys, TfL**
- **UK's first large-scale NFC trial**
- **Buy goods from retail merchants, coffee shops – credit card**
- **Use the Oyster card as normal**
- **O2 Event Tickets – O2 Dome access to special facilities (blueroom)**
- **O2 Tags to obtain information**
- **AEG to upload tickets for theatres**

Oyster on Mobile Pilot

- Customers like Oyster on Mobile
- Some initial presentation difficulties to card reader on Tube compared to Oyster card
- Feel much less likely to leave Mobile at home than Oyster card (Monday morning rush)
- Prevents multiple card in pocket collisions
- Want to display their Oyster information
- Gate and Bus throughputs are maintained

TfL's other NFC trial

- TfL pilot underway using NFC smart tags for providing passenger service information
- DTI funded – Visualization of Real-time Transport Interchange information (VORTIX)
- Tags on posters at Blackfriars station
 - **Directions & local information**
 - **Real time service information**

Future plans

Ticket Selling = Currency Exchange



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



Why tickets at all on urban transport?

IDEA – Why not just take payments like other merchants?



Identical
transactions

Can the differences
be managed?

TECHNOLOGIES



Fares & Ticketing Strategy

- Support Mayor of London initiatives after May 2008 election
- Reduce Revenue Services costs
- Increase customer self-service
 - Reduce queues for tickets
 - Develop on-line Travel Plans
- Improve customer journey experiences
 - Maintain gate throughput & bus boarding rate
- Centralised fare calculation system
 - Reduce dependency on read/write cycle & complex calculations at 20,000 card readers
 - Easier implementation of fare and product changes

Future Ticketing Project







- Examining how to use emerging technologies for Transit purposes
 - EMV
 - NFC
- Working with Master Card and Visa to understand how UK Bank issued contactless cards could be used from 2010
- Developing a new multi card reader specification
- Reduces number of new Oyster cards for the Leisure – Tourism – Through users
- Pay via their Credit or Debit Card account on Smartcard or NFC device

Use what Customers will have from their Banks






- **The EMV standard could be the best credible path to interoperability as it uses global networks that already exist and that work effectively every day for millions of purchases**



Opportunity for EMV?

- Will provide Best Value by a centralised PAYG Fare calculation system rather than complex calculations at 20,000 card readers 
- Will reduce queues for tickets 
- Will allow easier implementation of fare and product changes 
- Must maintain gate throughput & bus boarding rate 
- Extend to other users via on-line Travel Plan 
- Most UK banks have now announced plans to roll-out contactless EMV by 2010. 

Where does NFC fit in?

- Customers would like to display their Tickets, PAYG value and Journey Details 
- Would like to purchase of Tickets and Top-up of Stored Value OTA 
- Want to improve customer experience with TfL 
- Allows more EMV options for “unbanked” customers
 - Can refund capping “credits” to prepaid balance counters on card 
 - Meets social inclusion requirements
- Ticket purchase device in the pocket removes constraint created by geographically-dispersed Londoners 
- Also NFC devices can READ contactless tags, cards and NFC mobile devices
- Important use for our Gateline staff, train guards and revenue control inspectors

Where does NFC fit in?

- Joined NFC Forum and met with GSMA, Mobey Forum, Suppliers
- Working with Visa and Mastercard who are key members of NFC Forum
- Partnerships needed with MNOs, Trusted Service Managers as well as Issuing Banks
- Expect more Customer trials with Mobile Operators and Other Business Areas as the completion of the NFC standards leads to new generation of NFC enabled phones & devices
- Thank you and hope you are now aware of our Vision