Interoperable Ticketing & Technology

Jeremy Acklam
Venture Innovators

+44 (0)782 44 11 432
+44 (0)207 193 9078
jeremy.acklam@ventureinnovators.com

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Interoperable Ticketing & Technology

- Definitions…
- Where is Interoperable ticketing headed?
- The future of Money?
- Future ticketing technologies?
- What makes a successful ticketing scheme?
- DfT's strategy
- ITSO's strategy
- What does the future transport ticketing landscape look like?
- Wrap-up

Definitions

- Interoperable ticketing….
    - the ability for the customer to buy <u>one</u> ticket to complete a journey which includes <u>more than one</u> transport mode or operator

- Interoperable ticketing technology….
    - The underlying technology which allows the customer to complete a journey which includes more than one transport mode or operator, using just the single piece of ticketing technology, which may have multiple, separate tickets encoded within it

- Perfectly good interoperable ticketing exists without smartcards!

Where is Interoperable ticketing headed?

- Interoperable ticketing is at the core of successful smartcard schemes around the world:
  - Eg Octopus, Oyster, OV Chipkaart, EZlink
  - Schemes which failed to sort out interoperable fares were not successful and now there is a strong view (eg Sydney, Oslo) that fares architecture reform must be completed before technology implementation. There is no reason to think this will be any different in the UK.
- Airline and rail models point to fewer interoperable tickets…
  - EasyJet, Ryanair and other low-cost airlines do not use interoperable tickets at all, and passengers are used to that
  - Most UK rail operators have at least some non-interoperable tickets
  - Most UK bus tickets are non-interoperable whereas in the rest of Europe most are interoperable
- Discuss!

Where is Interoperable ticketing headed?

- A re-birth of interoperable fares?
  - complex settlement = cost
  - Interoperable fares are organisationally complex in the UK
  - fare complexity = customer confusion

- Better-value non-interoperable fares?
  - cut complexity, cut cost
  - reduce customer choice or increase value proposition?
  - are interoperable fares worth the associated cost?
  - is there the leadership required for successful interoperable fares?

- Some interoperable fares will continue to exist, but these are likely to be at a premium price to the customer.

The future of money

- The future of money and the future of ticketing are interlinked because simple cash-entry payment is still an important form of ticketing
- Low-value transactions are moving in three directions away from physical cash:
  - Mobile – account management and micropayments
  - Contactless – credit/debit/purse transactions
  - Aggregation – micropayments aggregated to reduce payment fees
- Money transfer is moving rapidly to Mobile because it allows authentication using the customer's own device and ease of use

The future of money

- Reduction of transaction fees and better customer usability are the focal points driving adoption of new methods of payment – the consequences for ticketing could be significant :
  - Payment processors such as PayPal, Visa & MasterCard begin to part-own customer relationships for ticketing
  - Multiple methods of payment have to be supported by transport operators, potentially increasing costs
  - Method-of-payment becomes a customer lock-in when linked to the ticket (eg for Pay-as-you-go fares)

- There is no single answer – but mobile, contactless and payment aggregation will all feature in future successful ticketing schemes.

Future ticketing technologies

- The biggest problem with technology is the business case for adoption. Always.

- Future technologies in the frame for transport ticket fulfilment:
  - Paper 2d barcode
  - Phone 2d barcode
  - Paper smart
  - Plastic smart
  - NFC phone smart

- Most people will try new technology if it offers them a benefit (usually an economic one). Some people will try it because they like technology, but if the technology involves multiple steps to make it work, most customers will need a significant incentive.

Paper 2D barcode Ticketing

- The most-used form of self-print ticketing for transport currently – airlines, ferries and rail primarily

- Very low cost for merchant and customer alike and strongly supports operator-only fare products

- No settlement needed

- Validation is easy where the ticket includes a counted place, but difficult if not impossible for 'open' tickets

- Strong adoption pressure for operators due to the low fulfilment cost provided that they have the ability to read for validation.

Phone 2d barcode Ticketing

- The next generation of the self-print paper barcode for bus and rail to promote operator-only fare products
- More difficult to read – needs a different type of scanner
- Does not work if the phone is discharged
- Can be fiddly to locate the barcode on the phone, thus extending transaction times compared with other methods
- Reasonable investment required by the merchant in applications to run on most phones
- Some customers cannot participate because they don't have the right phone

Paper Smart Ticketing

- Thought by some to be an important step towards plastic smartcards, these low-cost smartcards were originally proposed for single-trip use or weekly season tickets, but if they are supplied in a cheap plastic wallet, they appear to be quite durable.

- Less than half the price of a plastic smartcard (<10cents)

- ITSO compliant and therefore can be used to reduce season/carnet printed-ticket fraud

- Can be issued at a self-service terminal

Plastic Smartcard Ticketing

- The 'standard' smart solution as implemented in most major cities and for concession cards in the UK
- Requires a significant investment in infrastructure and a fundamental change in business process – smartcards are not a replacement for existing paper tickets
- Many smartcard schemes do not achieve their planned benefits (more later…) and the technology gets tarred with the same brush
- Customer expectations about smartcards are surprisingly clear – "they reduce the cost of travelling" – a trap which awaits all new schemes
- ITSO or EMV or Oyster or another 'standard'?
    - It's down to the business case

NFC Smart Phone Ticketing

- The 'natural' step-on from smartcard ticketing?
- Or an un-implementable technology?
- For once (technology-wise) the validation part of the technology is not an issue – standard smartcard validators will work. The problem is with the media – the phones themselves.
  - Abortive launch in 2005
  - Redesign to cut-in the mobile network operators
  - Deals to cut-out the mobile network operators
  - Confusion about costs
  - Too many players in the chain, specification too complex
  - Missed the boat? NFC seems always to be 'next year'
- SIM-centric goes against customer choice of network and this remains a major hurdle.

What makes a successful ticketing scheme?

- The UK has a rich history of public sector pilots and trials for new ticketing, practically all of which have had artificially skewed 'business cases' which have resulted in either the need for continued public-purse support or the pilot ending without wider implementation.
- Getting the business case correct is the first step:

Customer convenience	80%
Growth	67%
Operational efficiency	66%
Fare management	46%
Marketing	46%
Strategic goals	26%
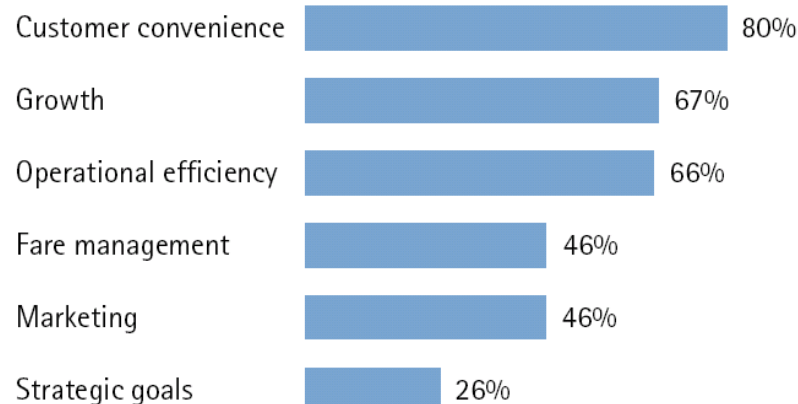
Accenture survey 2008

What makes a successful ticketing scheme?

Overdelivered

100%

50%

- Calculate fares by destination traveled
- Restructure company organization/business processes
- Improve brand management
- Enter new markets (retail, etc.)
- Raise political awareness
- Improve CRM and one-to-one marketing capabilities

25%

- Improve speed of boarding/reduce queuing
- Increase safety (i.e. better crowd control)
- Create cross-modal transport offer

Delivered what expected

- Decrease cash handling costs
- Improve knowledge of traffic flow
- Get government/municipal backing for the project

25%

- Lower ticket printing costs
- Improve fare management/fare evolution
- Improve the attractiveness of public transport
- Decrease error rate (compared to the previous system)
- Increase customer satisfaction
- Decrease fare evasion (fraud reduction)
- Decrease equipment maintenance costs
- Alignment of policy and systems across differing regions
- Increase revenues
- Increase total ridership

50%

Underdelivered

100%

- Gain new customers (i.e. from car users)
- Increase ease of access
- Decrease distribution and total costs

Accenture survey 2008

UK scheme activity

CENTRO

- Smartcard readers (buses & metro)
- Development for data processing equipment
- HOPs: processing and support
- ITSO
- Centro development & implementation teams
- E-purse development

GMPTE

- Business case development
- Overall scheme design
- Stop infrastructure design
- Communication network upgrades to support Smart Ticketing system
- Metrolink Sales System Upgrade to implement ITSO readers on TVMs
- Operating and development of existing smart ticketing work streams
- Development of deployment & marketing strategies

UK scheme activity

MERSEYTRAVEL

- ISAMS for all devices including ETMS, handhelds, rail gates, TVMs
- ETMs for supported services
- Smartcards
- HOPS/CMS licenses
- Settlement model development

NEXUS

- Upgrading Metro ticketing and gating to smart
- Upgrade of TVMs to issue ITSO tickets
- Upgrade information technology to handle smartcard information
- Business case development by MVA
- Legal advice
- Project management costs

UK scheme activity

YORCARD

- HOPS & associated back office functionality
- Upgrade of Metro TVMs
- Card management system
- Conversion of gates at Leeds and Bradford stations to ITSO
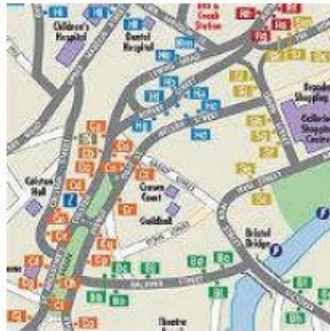- Staff costs
- Card purchase and production

NOTTINGHAM

- Vastly expand HOPS
- Mobile ticket centres (3 buses) to increase take up of all integrated tickets
- City smartcard upgrade away from Mifare Classic
- Consultancy
- Project Management
- Upgrade of INIT ticket machines to ITSO compliance

UK scheme activity

BRISTOL

- Regional HOPS to be made available to all local authorities and operators
- ISAMs to cover the entire area's bus operation
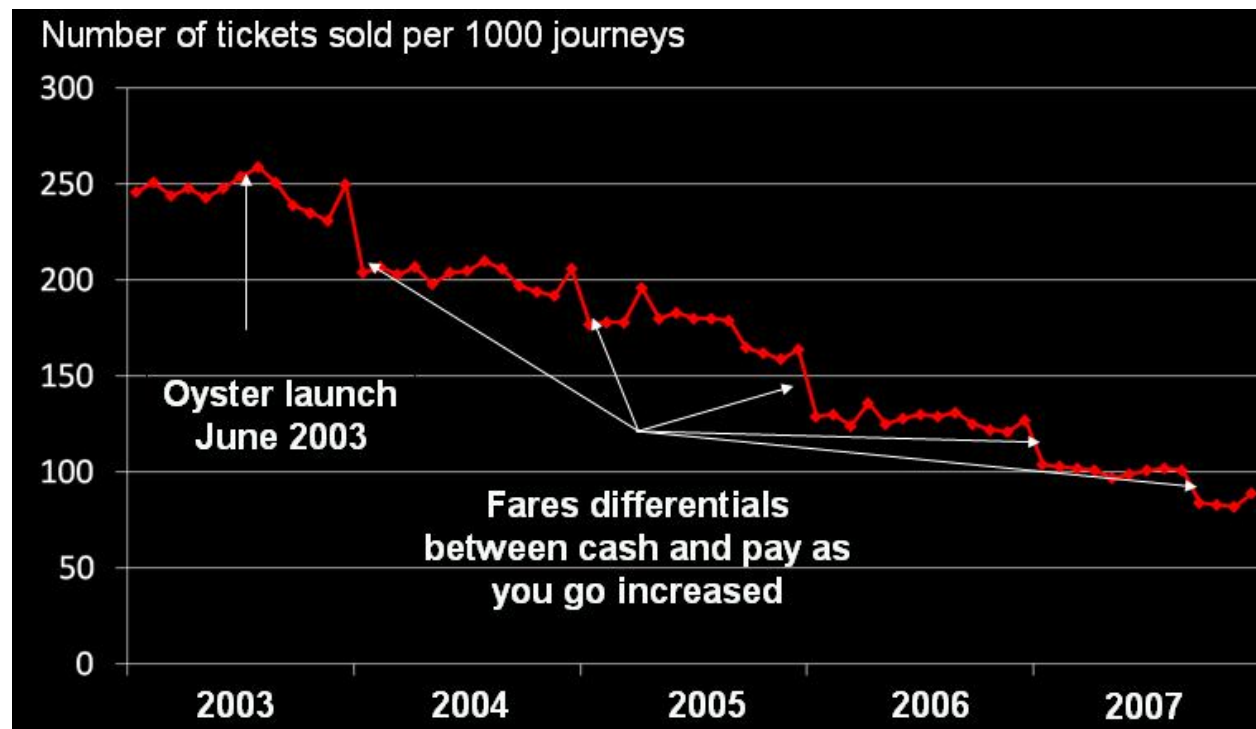- Smart cards
- Project Management and Delivery

LEICESTER

- Grant fund ETMs for Arriva
- Purchase of HOPS
- Gain full ITSO membership
- Blank smartcards
- Carry out preliminary market research

What makes a successful ticketing scheme?

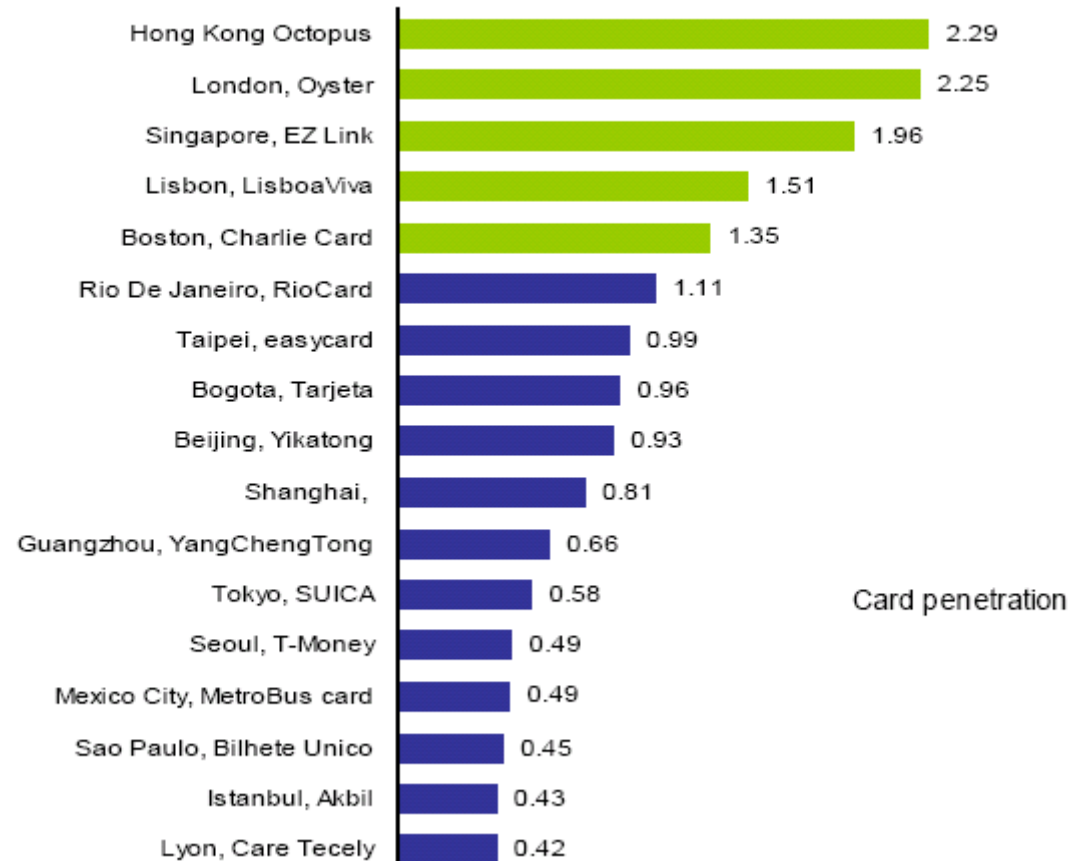- Example: TfL business case for reducing the number of tickets sold:

What makes a successful ticketing scheme?

- Viewing smart ticketing as a technology implementation risks reducing the benefits to almost nil, but with the right vision and strong leadership smart ticketing can be transformational.

  1. Must have a single vision around a sustainable and real business case
  2. Publish the proposed benefits and focus the project plan on achieving them (NOT on implementing the systems)
  3. Align all stakeholders
  4. Create end-to-end managed service operations for delivery
  5. Mass distribution (to customers) and usability must be focal points from day 1

- Without a successful scheme, additional aspirations of payment, retail and citizens functions cannot be delivered.

What makes a successful ticketing scheme?

Number of cards per city inhabitant, 2007

City	Card penetration
Hong Kong Octopus	2.29
London, Oyster	2.25
Singapore, EZ Link	1.96
Lisbon, LisboaViva	1.51
Boston, Charlie Card	1.35
Rio De Janeiro, RioCard	1.11
Taipei, easycard	0.99
Bogota, Tarjeta	0.96
Beijing, Yikatong	0.93
Shanghai,	0.81
Guangzhou, YangChengTong	0.66
Tokyo, SUICA	0.58
Seoul, T-Money	0.49
Mexico City, MetroBus card	0.49
Sao Paulo, Bilhete Unico	0.45
Istanbul, Akbil	0.43
Lyon, Care Tecely	0.42

Card penetration

Card scheme better than one standard deviation from the average of more than 30 PT provider (0.7)

Source: Accenture research comparing number of smartcards issued (as publicly announced) with population of area covered by e-ticketing scheme

DfT's strategy

	DfT	Successful Schemes
Objectives	Improved customer convenience Modal shift Efficiency improvements	Improved customer convenience Safety improvements User-friendly payments system Reduction in evasion
Governance	No central scheme Devolved implementation	Central scheme Unified implementation
Technology	Mandated standard	Mandated standards
Interoperable ticketing	No standardized products No national e-payment product	Standard products One e-purse
Non transport extensions	Unclear	Defined from the start

What does the future transport ticketing landscape look like?

- The proportion of interoperable tickets is likely to reduce as operator-only commercially-led opportunities progress
- Settlement cost is likely to remain a factor for interoperable fares
- Pay-as-you-go will dominate non-season transport ticketing
- ITSO will be required for government products (concessions) & BSOG payments only but optional for other products
- EMV ticketing will start to be implemented at the end of 2010
- Lo-cost, non-ITSO smart schemes could be attractive for commercial operators
- Printed and phone-based barcodes will continue to have niche markets
- NFC isn't going to be around anytime soon

Wrap-up

- Both ITSO and NFC may be too late/expensive/complex for commercial schemes
- DfT's smart ticketing strategy is unlikely to deliver the expected benefits when compared to successes and failures elsewhere
- Schemes must have clear objectives and strong leadership in order to succeed
- Passenger incentives are required to achieve the mass adoption required to achieve commercial objectives
- Transport operators need to move forward with their ticketing technology, to ensure that others don't move in to take the customer relationship