I am not a machine, Sir: RFID and Customer Services

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Overview

• Prestige project overview
  – business and organizational background
  – payment and service objectives
• The Oyster card system
• Other similar systems and extensions
• RFID in retail sales
• Agency and workplace realities
Transport for London

• Formed in 2000
• Reports to Mayor of London
• Includes the Underground, the Docklands Light Railway, the Croydon Tramlink and the London River Services

• The Underground
  – Operates since 1863
  – 500 trains at peak times
  – 253 stations owned (275 served)
  – over 12,000 staff
Private Finance Initiatives

• 3 PFI partnerships
• Power PFI (£133m)
• Connect Communications PFI (£475m)
• Prestige Ticketing PFI (£1.3bn)
  – Over 17 years
  – Launched in 1998
  – Financing based on a design, build, operate and maintain contract (off-balance sheet for TfL, fully debt-financed)
  – System delivered later than planned due to technological problems.
  – Contract proved to be inflexible and expensive to amend.
  – Looking to develop to support new technology options.
Prestige drivers

• Business Drivers - Underground
  – reduce fraud
  – reduce queues at ticket offices
  – improve service offering

• Business Drivers - Buses
  – Common ticket for deregulated environment
  – Life expired equipment
  – Allows for Cashless Buses

• Integrated Travel
Project scope

ASSETS

- Gates
- Ticket Machines
- Computer Systems
- Communications Network
- Back Office Systems

NETWORK

- 8,000 buses
- 273 stations
- 2,600 retail outlets (newsagents)
- 16,000 Smartcard Devices

CUSTOMER BASE

- 1,534 million bus journeys per annum
- 942 million tube journeys per annum
- 8.5 million journeys a day

SERVICES

- Fares Revenue & Collection System
- Smartcard procurement
- Maintenance & Asset Management
- Call Centres
- Retail Network management
Oyster technology

- Ticket gates
- New ticket selling machines
  - self-service
- Expansion of retailing facilities
  - internet in particular
- Portable read/write equipment
  - store and forward for buses
- New data processing & back office systems
- Conversion to smartcard technology (ISO 14443A)
- Support systems and processes
Implementation schedule

Asset Delivery
(Back Office systems & software for smartcards)

Upgrade to smart capability

Training & staff comms

Smartcard Deployment

Maintenance
## Evaluation of Prestige

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>RAG Status</th>
<th>Project evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Value for money &amp; affordability</td>
<td>Red</td>
<td>Initial costs managed but monopoly pricing of variations.</td>
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<tr>
<td>2. Risk transfer</td>
<td>Red</td>
<td>Technological obsolescence during contract life. Some risk transfer proved inefficient.</td>
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<td>3. Expertise &amp; innovation</td>
<td>Green</td>
<td>Specialist knowledge / innovative technology.</td>
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<tr>
<td>4. Quality &amp; customer issues</td>
<td>Red</td>
<td>No incentive to market / promote. Success of promotion of Oyster depended on TfL intervention (particularly fare incentives).</td>
</tr>
<tr>
<td>5. Delivery</td>
<td>Red</td>
<td>System delivered but required rephasing of delivery timetable.</td>
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Steve Allen  
MD, Finance  
March 2008
The Oyster Card

• Transition from a magnetic system to one that accepts smartcards as well
  – Always working on a live system
• Intense system proving required
• Phase in ticket products
• Phase in sales outlets training
• Phase in Oyster Web functions
Oyster card scope

• 10 million Oyster cards issued
• 5 million journeys a day
• 16,000 readers in stations
• 8,000 buses
• 2,600 readers at external retail points
• cash accounts for 4% today
Phased rollout

• New products and systems introduced gradually
  – manage the impact on existing systems, processes and staff
  – allowed lessons to be learnt that could be applied to later phases

• Simple products first – build up staff and customer confidence

• Maintain credibility
  – desire to avoid high profile (London-wide) problems
  – manage demand to avoid major impact on operations
  – contain errors and deficiencies that are not obvious at development testing phase
Phased Rollout of Oyster

Number of cards issued to date

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<thead>
<tr>
<th>Date</th>
<th>Staff Pass</th>
<th>Period Tickets</th>
<th>LU Pre Pay</th>
<th>Freedom Pass</th>
<th>Bus Pre Pay</th>
<th>Capping</th>
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Lessons learned

• Agree firm deliverables
  – PFI contract has output service clauses
  – Focused work-teams to assure requirements and then specifications
  – Technology risk on the contractor

• Sensible programme of deployment
  – Limited changes at any one time
  – Significant and realistic test scenarios

• Identify the new process owners
  – Have people simulate these roles
  – Both Business and Contractor
  – Allow for Learning Curve
More lessons learned

• Don’t underestimate organisational issues
  – Operational staff training and internal communications
  – Customer help desk
  – Customer documents and leaning curve

• Expect problems anyway at start-up
  – Daily reporting
  – Automated system health-checks

• Facilitate independent test and trial
  – Be able to try new functions without affecting current users
  – Launch incrementally
Other ticketing systems

• Oyster is one of the bigger but not the only one
• Wikipedia records over 70 similar systems across 5 continents*

Suica – Tokyo
KentKart – Izmir
EZ-link – Singapore

Beyond ticketing

- (Mobile) Suica is used across organizations as identification
  - To operate lockers
  - Airport check-in
  - Coupon
  - Bank account access
Mobile payments

• Mobile Suica (through Edy and Sony FeLiCa technology) is widely used for payment.
Oyster and mobile payment

- Oyster has not been used for payment
  - although all the technology is in place
- Payment is regulated by the FSA
- TfL is not in this business
  - would require a major shift in business focus
- Oyster as part of a triple-play credit card
  - Independent functions
Customer service

- Most interactions with TfL now self-service
  - Ticket machines (accepting credit cards)
  - Internet
- Significant reductions in station operational staff
- Many stations now operate without any staff
  - Safety considerations
  - Response to crime
  - Fully-automated access control (no manual override)
- Ticket inspection now only at entry points
More on customer service

• Reduced service points at stations
• Reduced numbers of staff
• Less flexibility for staff to help
  – Often advise to by-pass the system
• Self-service can often be more convenient
• Can improve efficiency at stations
  – by encouraging commuters to buy in advance
• More efficient to operate for TfL
Retail applications

- Marks and Spencer clothing item-level rollout of RFID tagging
- 50 Million garments tagged per annum
- 53 stores live
- 500,000 tags/week read
- Tags installed in 50 factories in 25 countries (all products own brand)
- ROI justification based on stock taking
- Allows sales assistants to do what they do best: talk to people and sell!

Photos by James Stafford
More retail applications

Photos by Shin’ichi Konomi
More retail applications

Photos by Shin’ichi Konomi
Retail implications

- Help sales assistants maximize their time with customers
- Reduce time for repetitive-unproductive tasks
  - Stock taking, searching for availability, locating items
- Allow sales assistants to focus on their actual task
- Allows for a more enjoyable shopping experience
- Interactions with humans, not machines
A comparison

• Borrowing heavily from Tony Salvador
• Agency as the ability to control and/or make a difference through decision-making power
  – humans possess and can express agency
  – machines are designed to serve human needs
• The role of workers and information systems in retail establishments is that of agency:
  – through interactions with all involved actors create a situation of dynamic and polymorphic processes
An objective for RFID

• From technology to rationalize to technology to energize
• TfL’s Oyster is rationalization of processes
• M&S and Mitsukoshi towards the opposite side of the spectrum
Summary

• The TfL Prestige project
  – organizational issues
  – business drivers

• The Oyster card system
  – self-service replacing humans

• Restrictions and limitations

• RFID to support retail

• From streamlining to supporting agency