

---

## *Contactless Convenience*

**The Shift to Contactless Smart Cards –  
Consumers, cost, convenience.**

**Colin Tanner – Consultant**

# Contactless Convenience

## Overview

### 👉 Introduction

- Quick Technology Overview

### 👉 Contactless Smart Cards

- Platforms
- Business Drivers
- Examples: Retail and Transport

### 👉 Payments Case Study

- Payments: MasterCard *PayPass*

### 👉 Conclusions

## *Contactless Convenience*

# Introduction to RFID Technology

☞ **Radio Frequency Identification (RFID) includes:**

➤ **Contactless Smart Cards**

Similar in functionality to that of conventional contact smart cards.

➤ **Tags**

Used to 'Chip' animals, track goods through the supply chain, and for Electronic Article Surveillance (EAS) in retail stores.

➤ **Transponders**

Typically used for road tolling and tracking of shipping containers.

**Typically these three types are not interoperable with each other**

## Contactless Convenience

# Introduction to RFID Technology

## 👉 Indicative (falling) costs

- |   |        |
|---|--------|
| ➤ 1 bit Chip-less RFID Tags                                       | 1p     |
| • Applications: Electronic Article Surveillance (EAS)             |        |
| ➤ Passive Tags  | 30p    |
| • Applications: supply chain management and animal tagging        |        |
| ➤ Low Cost Proximity Smart Cards                                  | 40p    |
| • Applications: disposable venue and transport tickets            |        |
| ➤ Mifare Classic Proximity Smart Cards                            | £1.00  |
| • Applications: general ticketing and access control              |        |
| ➤ Multi-application Dual Interface Smart Cards                    | £3.00+ |
| • Applications: payment, lifestyle and city cards                 |        |
| ➤ Active Tags and Transponders                                    | £10+   |
| • Applications: long range tagging and road tolling applications. |        |

(Actual price dependant on functionality required and volume purchased.)

## Contactless Convenience

# Introduction to RFID Technology

## ☞ Contactless Smart cards

- Operate at 13.56 MHz (unlicensed band)
- Power obtained from readers electromagnetic field.

## ☞ Device standards include:

- Vicinity – ISO/IEC 15693 - up to 1m range
  - » Longer range at expense of device functionality.
- Proximity – ISO/IEC 14443 - up to 10cm range
  - » Memory and microprocessor devices available.
  - » High strength cryptography supported if required.



## Contactless Convenience

# Proximity Smart Cards

## 👉 Business Drivers

- **Ease of Use**, card operates from within a persons wallet.
- **Fast Operation**, typical transaction below ½ second.
- **Reliability**, no moving or exposed parts.
- **Robust**, operation not effected by dust, liquids or dirt.
- **Vandal Resistant**, readers more easily designed for unattended operation.
- **Form Factor**, few limitations as device does not need to be inserted into reader.
- **Integration**, straightforward to combine with other technologies.
- **Costs**, lifetime cost of ownership lower than contact.

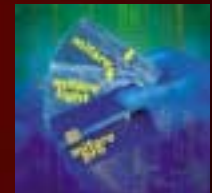
**The latest generation devices offer similar functionality to conventional smart cards.**

## Contactless Convenience

# Proximity Smart Cards

## ☞ Platforms

- Most popular platform is still 'Philips Mifare Classic'.
- Most card vendors now offer contactless smart card devices.
- Many card platforms now mature, costs generally falling.
- Major Multi-application platforms now available as Dual interface (Contact / Contactless) devices.



## Contactless Convenience

# Proximity Smart Cards

## ☞ Current Applications using this Technology

### ➤ Transport

- Automatic Fare Collection e.g. Octopus in Hong Kong.
- Ticketing e.g. Calypso (Europe) and ITSO (U.K.)

### ➤ Physical Access Control

- Building security.
- Football club and venue ticketing / loyalty.

### ➤ Payment Cards

- Amex - Internal and various US trials of 'ExpressPay'.
- MasterCard - Orlando 'PayPass' Trial.
- Visa – Contactless payment application now available on Java Card.
- EDY – Electronic purse technology popular in Japan / Asia.
- Fuel Companies - Exxon SpeedPass, Philips 66 PhilPass etc.

## Contactless Convenience



# Transport Example: ITSO

## 👉 The Concept

- The Integrated Transport Smartcard Organisation (ITSO) was formed in December 1998 to manage and develop the technology specifications that make inter-operable, multi-modal public transport a reality.

## 👉 Who is involved

- DfT, Department for Transport.
- ATOC, Association of Train operating Companies.
- PTEs, Passenger Transport Executives.
- Bus operators, Local Authorities
- Suppliers and other interested parties

## Contactless Convenience



# Transport Example: ITSO

## ☞ What are the benefits?

- Faster Boarding times
- Interoperable transport ticketing throughout the UK, and later Europe.
- Seamless Travel for passengers, across all modes
- A platform able to support more sophisticated ticket products to meet consumer requirements.
- Improved collection of journey data so that transport services and timetables can be better planned.
- Improved reconciliation and proportionment of fare revenue.
- Ability to combine transport ticketing with other applications on a single contactless smartcard.

## *Contactless Convenience*

# Retail Example: Supply Chain

### ☞ **Gillette, Benetton etc**

- Mass tagging has begun
  - anti-shrinkage
  - supply chain management

### ☞ **The “Walmart” factor**

- Tags will become as common as bar codes

## *Contactless Convenience*

# Retail Example: ID

### 👉 Not all about payments

#### ➤ Ticketing

- Swatch ski passes and season tickets

#### ➤ Tracking

- Children as well as pets and stock

#### ➤ Loyalty

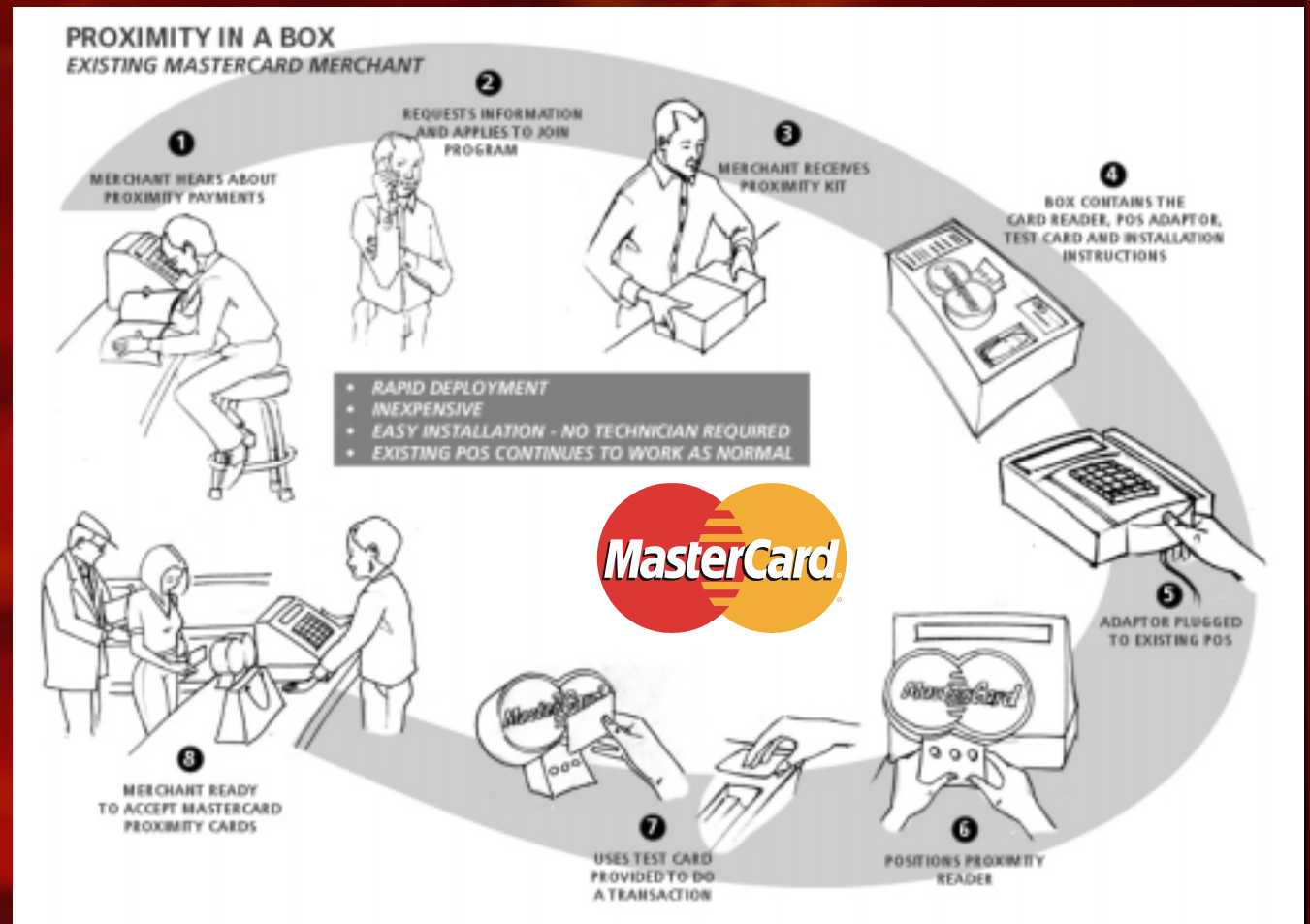
- Recognising people when it counts

**Strategic opportunity to integrate digital money and digital identity**

## Contactless Convenience

# Payment Case Study: *PayPass* concept

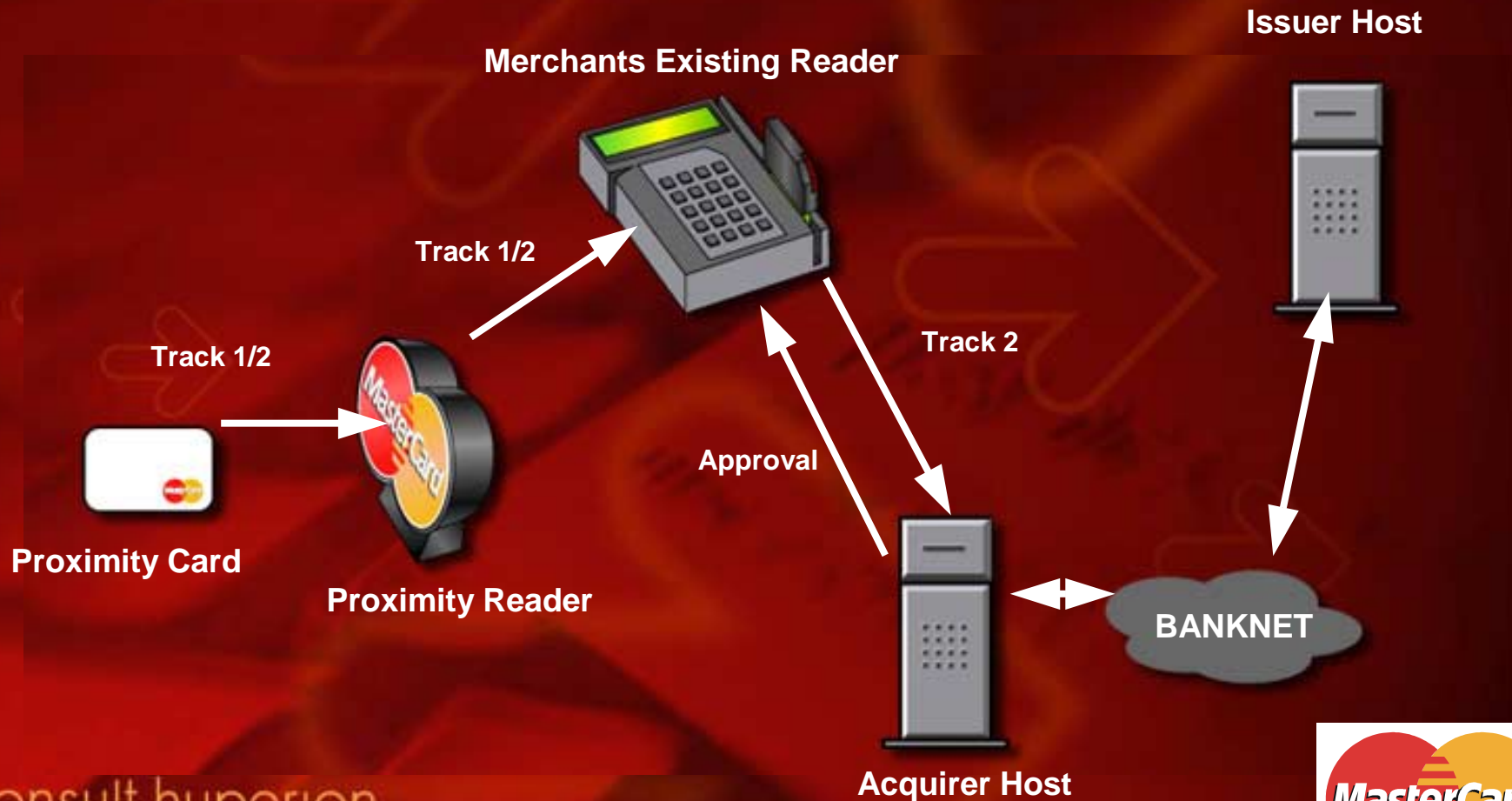
## 👉 The Concept



## Contactless Convenience

# Payment Case Study: *PayPass* operation

👉 How does it work



## Contactless Convenience

# Payment Case Study: PayPass benefits

### ☞ What does MasterCard see as the Benefits

- “ideal for *cash-only* environments where speed is essential”
- “*simpler and faster* than cash”
- “increases the *feeling of security* as cardholders remain in control”
- “can used used like existing Magnetic Stripe cards, so can be used ... in *29 million locations* around the world”
- “The *Orlando pilot* is testing the *operational reliability, interoperability and cardholder/merchant experiences* of PayPass”

On successful completion of the pilot, MasterCard plans to introduce it to  
additional markets



## *Contactless Convenience*

# Conclusions

- 👉 Unlike contact smart cards, the consumer will notice a positive difference.
- 👉 Consumers like the speed and convenience of 'touch and go' operation.
- 👉 The form factor of a contactless card is not constrained: the "card" might be a watch, badge, key fob, garment label or a surgical implant (!)
- 👉 It is straightforward to transfer current smart card applications to contactless devices.
- 👉 Due to the maturity of contactless readers and the state of standardisation, bespoke reader testing and integration is still required.
- 👉 Currently contactless infrastructure within consumer devices not widespread.
- 👉 Future consumer devices will have RFID built-in (see Sony & Phillips NFC).

---

*Contactless Convenience*

## For Further Information

**Colin Tanner**

Mail [colin@chyp.com](mailto:colin@chyp.com)

Web [www.chyp.com](http://www.chyp.com)

Digital Money Forum

[www.digitalmoneyforum.com](http://www.digitalmoneyforum.com)

Digital Identity Forum

[www.digitalidforum.com](http://www.digitalidforum.com)

consult hyperion  
[www.chyp.com](http://www.chyp.com)