Open Loop Payment systems
Drivers for Introducing Open Loop Ticketing

- one card multiple uses
- improved management information
- wider range of payment options
- reduced fraud
- third party revenues
- integration/seamless travel
- focus on core area of transit
- Greater adoption
- common standards
- integrates ticketing
- Bank CARD integration/seamless travel
Global Trends & Practices – Off Board Ticketing

Ticket Media

Validation

High Speed: 200 times/sec; Precision: 5 milli;
Overall observations from the Global Case Studies

Most leading implementations are currently over closed loop / semi closed loop model. However all of these deployments have reached a saturation point and customers are reluctant to block money in various balances.

In the context of above third party closed loop systems are gaining strength since it allows customers to manage these payments through a single balance.

To arrest the above trend transport operators deploying technologies in a effort to move towards an Open Loop model so that customers can pay using existing accounts without creating fresh balances.

Card based fare collection is the most prevalent technology with on-board ticketing and largely used for urban transport.

Mobile based fare collection gaining some traction based on off board ticketing concept and largely gaining traction in intercity travel.
What is an Open Loop Instrument

As per RBI, have to necessarily issued and acquired by a Bank and settlement is done by a scheme

Should be Easy & Convenient to use by consumers so as to enable deeper demographic penetration of the system among the masses

Must have all necessary Security features to ensure safety of data and money and should be PCI-DSS compliant

Must be Inter-operable across wide avenues of usage i.e. it should accepted at all merchants
Growth of Open loop market growth in 5 years

How large is the mobile payment market and how fast is it growing?

**Smartphone Penetration in India**

**Global Mobile Payments Transaction Value**

**Mobile Payment Trends in India**

Card Penetration in 5 years (Cr)

Card transactions growth in 5 years (INR, Cr)

Source: Google’s Our Mobile Planet, Gartner, Goldman Sachs, eMarketer

Source: RBI
<table>
<thead>
<tr>
<th>Feature/Specifications</th>
<th>Closed Loop / Semi Closed</th>
<th>Open Loop</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Issuance</strong></td>
<td>Issued by SRTUs on the Spot</td>
<td>Bank issued instruments (Debit/Credit/Prepaid) both at the Spot and through Bank</td>
</tr>
<tr>
<td><strong>Top-up</strong></td>
<td>Cash and Auto Top-up</td>
<td>Cash and Auto Top-up</td>
</tr>
<tr>
<td><strong>Banking Partner</strong></td>
<td>Single – Lock-in</td>
<td>Can be multiple</td>
</tr>
<tr>
<td><strong>Limit on storage value</strong></td>
<td>Prepaid with max limit as per RBI guidelines</td>
<td>Bank issued instrument as per RBI guidelines;</td>
</tr>
<tr>
<td><strong>Interoperability and acceptance</strong></td>
<td>Closed loop acceptance only at select proprietary outlets</td>
<td>Work in all Open loop POS terminals, ATMs and E-commerce as Contact/Contactless</td>
</tr>
<tr>
<td><strong>Fare media cost</strong></td>
<td>Cost borne by SRTUs; Smart Card lifecycle management by SRTU</td>
<td>Bank issued instrument for customers; Card lifecycle management by Banks</td>
</tr>
<tr>
<td><strong>Transaction Cost to SRTUs</strong></td>
<td>Low since no other entity involved except system Integrator</td>
<td>Standard MDR charge as agreed by industry for various transit types</td>
</tr>
<tr>
<td><strong>Payment system Maintenance costs</strong></td>
<td>High fixed maintenance costs for closed loop payment system hosted at SRTU’s end</td>
<td>No costs to SRTU and standard AFC system plugins</td>
</tr>
<tr>
<td><strong>Vendor lock-in</strong></td>
<td>Yes – proprietary message format</td>
<td>No; supports industry led EMV and ISO 8583 messaging format</td>
</tr>
<tr>
<td><strong>Potential of digital payments penetration</strong></td>
<td>Limited; as customers need to carry multiple cards/balances for multiple SRTUs</td>
<td>Higher digital adoption and speed to market with One card/balance for all payments</td>
</tr>
<tr>
<td><strong>Analytics</strong></td>
<td>Analytics based on closed loop available data</td>
<td>Holistic rich data insights for analytics purpose</td>
</tr>
<tr>
<td><strong>Challenges</strong></td>
<td>Multiple cards for multiple SRTUs</td>
<td>Market development</td>
</tr>
</tbody>
</table>
Fare Collection Models

<table>
<thead>
<tr>
<th>Closed Loop</th>
<th>Open Loop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Store Value</td>
<td>Multiple Cash Cards</td>
</tr>
<tr>
<td>Server</td>
<td>-</td>
</tr>
</tbody>
</table>

* Possibly no deployment in India currently
## Current Digital Fare Collection Media

<table>
<thead>
<tr>
<th>Arrangements for fare collection</th>
<th>Cash</th>
<th>Closed Loop</th>
<th>Open Loop</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-house fare collection management</td>
<td>✓</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Fare collection management in association with System Integrator</td>
<td>✓</td>
<td>✓</td>
<td>X</td>
</tr>
<tr>
<td>Fare collection management in association with System Integrator and Financial Institution</td>
<td>✓</td>
<td>✓</td>
<td>✓ NCMC BHIM/UPI</td>
</tr>
</tbody>
</table>

- **Cash**
  - Cash Card
  - Mobile App
- **Closed Loop**
  - Cash Card
  - Mobile App
- **Open Loop**
  - Hybrid Card
  - Mobile App
  - NCMC BHIM/UPI
Opportunities in India

Transaction Value per annum (in INR, Cr)

Transaction Count per annum (in Cr)
Milestone of Product Developments
NCMC Specifications from NPCI

- NPCI was entrusted by Ministry of Urban Development (MOUD) to prepare the standards & specifications of the NCMC.

- NCMC is an interoperable, open-loop, EMV based contactless payment product. This advanced and secure card can be used for all payment applications including transport (Metro, Bus etc.), toll plazas and shopping.

- For payments lower than INR 2,000, the customers can simply tap their card and the transactions are processed in a matter of seconds.

Customers are also able to leverage other digital payment solutions offered by RBI / NPCI.
National Common Mobility Card

Outline of NCMC Standards to be followed

► Online (CT & CL) transactions
► Offline (CL only) transactions
► Dedicated storage areas
► Can be used for transit, toll, parking & small value merchant payments
► Can be issued as debit, credit or prepaid card

Features of National Common Mobility Card

► Banks issued standard & Secure Payment method based on dual interface EMV+ standard
► Vendor agnostic ecosystem
► Provision of Stored Value
► Reserved space on card
► Can be used on PoS/ATM machines
Mobile Based approach

Mostly prevalent for off board ticketing since the customer is aware of destination and would like to pre buy.

Consumers may not like to use mobile/app while on the bus
Tap out at end stop may not be feasible

Thus largely based on QR code where the ticket has to be visually verified unless the TC has a reader device

Requires consumers to have a smart phone where the app can be downloaded

Bharat QR Code is the new upcoming national standard and is adopted by all schemes and banks and is based on full open loop concept

Apps like BHIM, Bank-UPI apps and other wallet companies have rolled out implementation of Bharat QR code

STRUs may develop their own APP which can have multiple payment options for customers including BHIM
Card issued as Credit, Debit or Prepaid

Issuing bank

Stored Value on the Card

Fare collection

Retail purchases

NPCI Settles between Issuer and Acquirer

Terminal / AFC system sends txn to Acquiring Bank

Provision of Central/Zonal/Standalone AFC

Acquirer sends txn file to NPCI

Key Stakeholders
Issuing Banks (Multiple Entities)
AFC System (Regional Zones)
Acquiring banks (Specific to Zones)
Clearing System (NPCI)
### Stakeholder Responsibilities

#### Operators
- Selection of business model in consultation with bank and Scheme
- ETIM procurement and Formulation of ticketing and pass rules in the AFC system
- Integration with Banking data base for getting customer and transactional reports

#### Schemes
- Development of specification and back end systems
- Certification of vendors (cards, terminals, Issuer & Acquirer Host) on open loop EMV systems
- Running payments switch, clearing and settlement and Dispute management activities

#### FI
- Selection of card suppliers
- Integration with Schemes
- Creation of front end websites, customer grievance cells, manage operational aspects

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PTO can continue to focus on core business – transit, while the banking partners manage the card lifecycle and operational aspects such as issuance, maintenance, blocking, customer accounts, grievances, key management etc.
### NCMC Projects

#### Work in Progress
- Surat Smart City
- Bhubaneswar Smart City
- Nagpur Metro

#### Launched
- Ahmedabad Municipal Corporation
- Kochi Metro
- BMTC Bengaluru

#### Upcoming Projects
- Noida Metro
- Raipur Smart City
- Rajkot Smart City
- MMRDA
- NMMT
- DMRC
## NCMC challenges and Way Forward

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Way Forward</th>
</tr>
</thead>
<tbody>
<tr>
<td>➢ Huge CAPEX investment and/or pay-out of royalty by FIs to PTOs</td>
<td>➢ Developing and agreeing on standard business model between PTO and FI leading to negligible CAPEX investment by FI</td>
</tr>
<tr>
<td>➢ Non existence of centralised agency to monitor the adoption of NCMC standards by PTOs</td>
<td>➢ Mandate to be released by MOUD for all the new public transport operators to adopt NCMC and timelines to be given to existing operators to migrate to NCMC</td>
</tr>
<tr>
<td>➢ Adoption of closed loop card model by some of the existing big transit operators to save time/cost thus dependency on single FI for issuance</td>
<td>➢ Standard RFP terms &amp; conditions with respect to NCMC specification to be included in the tender document floated by PTOs</td>
</tr>
<tr>
<td>➢ Non existence of standard fare collection system for transit operators</td>
<td>➢ Mobilize approved vendors and additional areas of usage for NCMC including Toll (non ETC), Citizen services etc.</td>
</tr>
<tr>
<td>➢ International card schemes promoting and implementing proprietary standards for contactless leading to delay in adoption of NCMC</td>
<td>➢ Mandate international card schemes to adopt NCMC specification for any transit specific project</td>
</tr>
</tbody>
</table>
In Summary

Customer
• One card for all use
• Interoperability for multimodal transport
• Quick transaction with contactless mode
• Reduced cash holding
• No need to stand in queue
• Digital trail for all transactions
• Offers on usage of cards

Operators
• Large customer base for issuance
• Interoperability; Access to unbanked customer
• Higher activation percentage, consumer spend
• Increase in CASA deposits
• Business intelligence with rich data insights
• Long term business relationship with PTOs

Financial Institution
• Unified cards with online/offline transaction
• Savings on card lifecycle management cost
• Reduced cash handling & operating cost
• Higher customer loyalty & stickiness
• Rich data insights
Other Solutions available in Market

- DIMTS
- Ridlr
- Trupay
- Paytm
- Paycraft
- Asis
- Trimax
Thank You