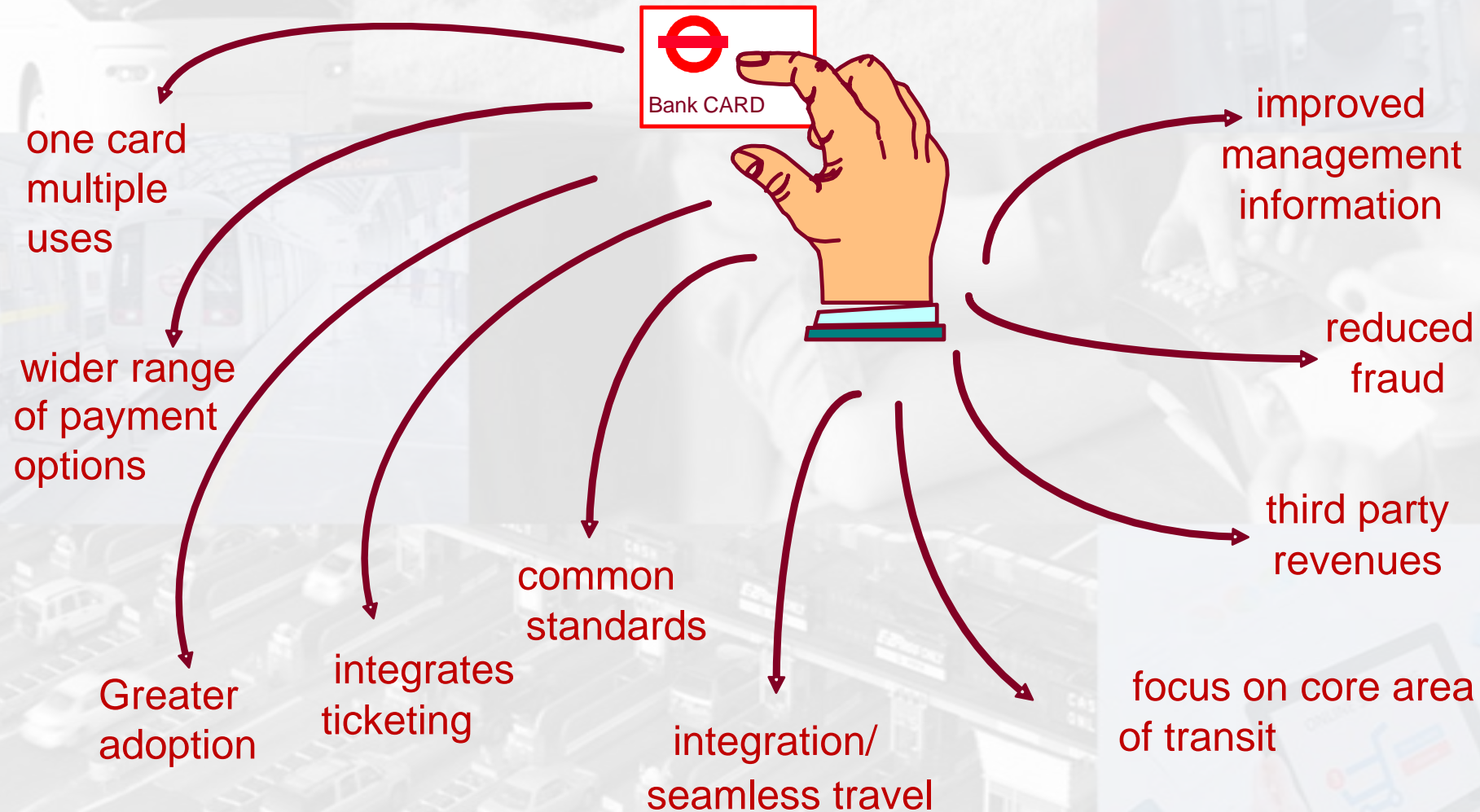




Open Loop Payment systems



Drivers for Introducing Open Loop Ticketing





Global Trends & Practices - On Board Ticketing

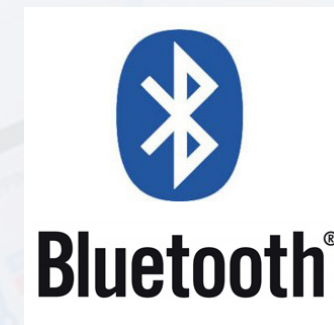
Paper Tickets



Tap-in



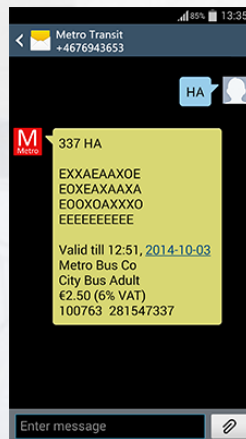
Tap-out





Global Trends & Practices – Off Board Ticketing

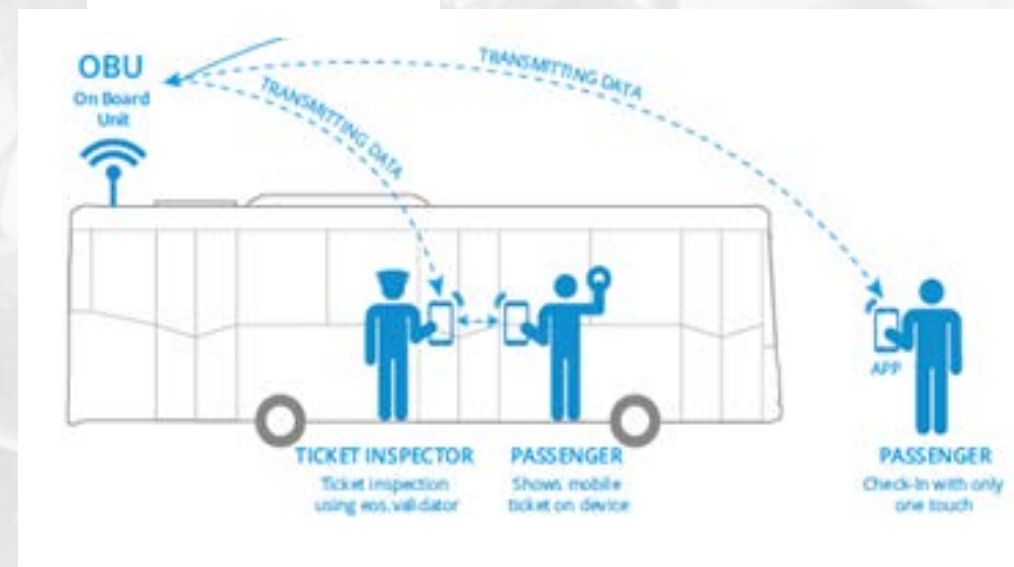
Ticket Media



Validation



High Speed : 200 times/sec;
Precision:5mil;





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

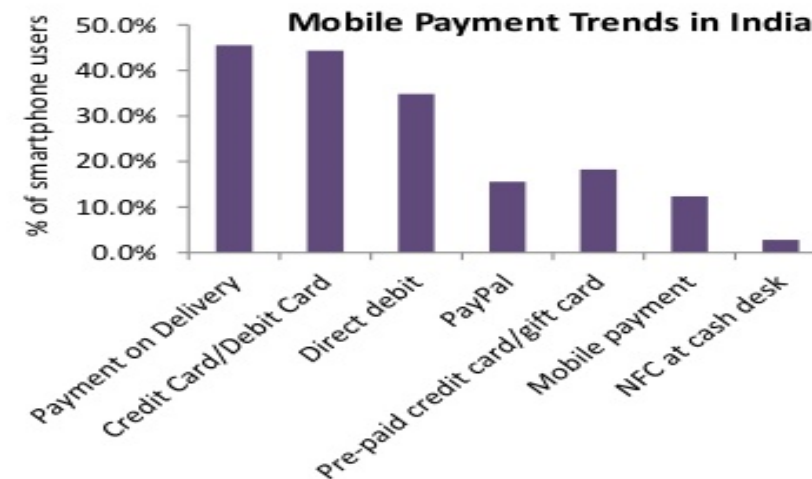
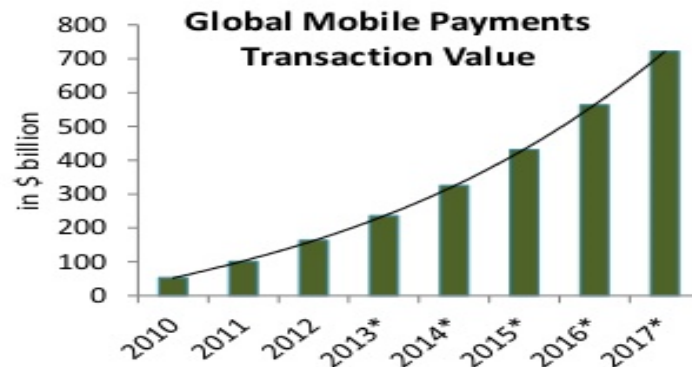
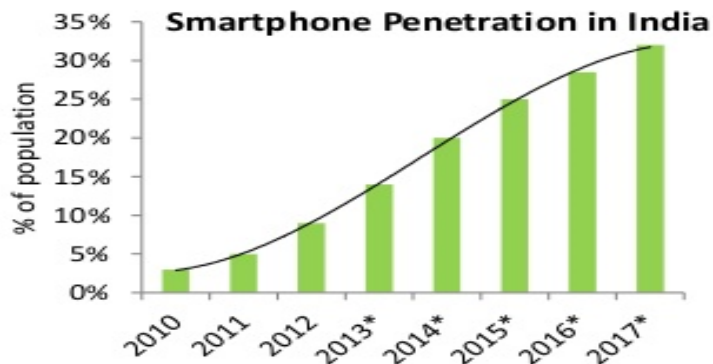
Must be Inter-operable across wide avenues of usage i.e. it should be accepted at all merchants



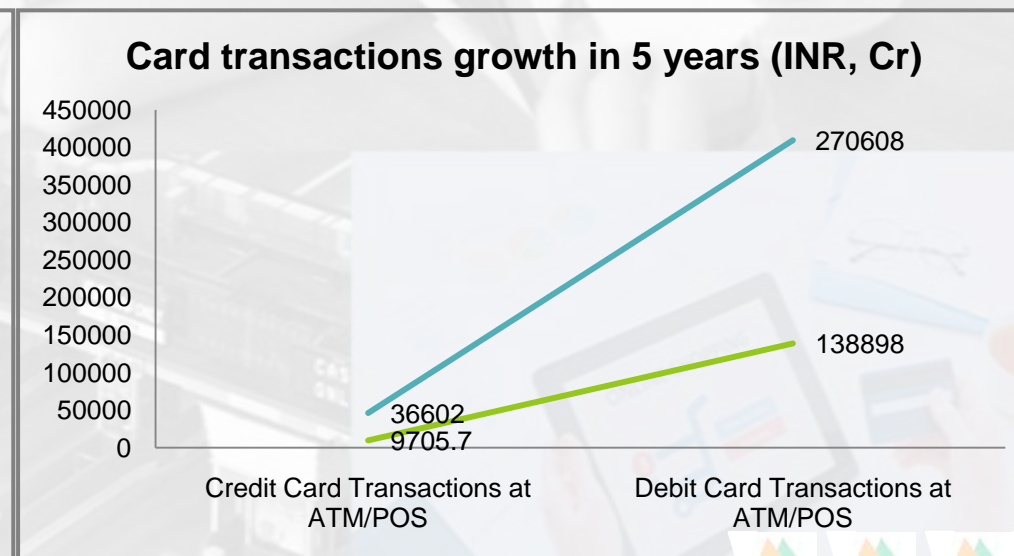
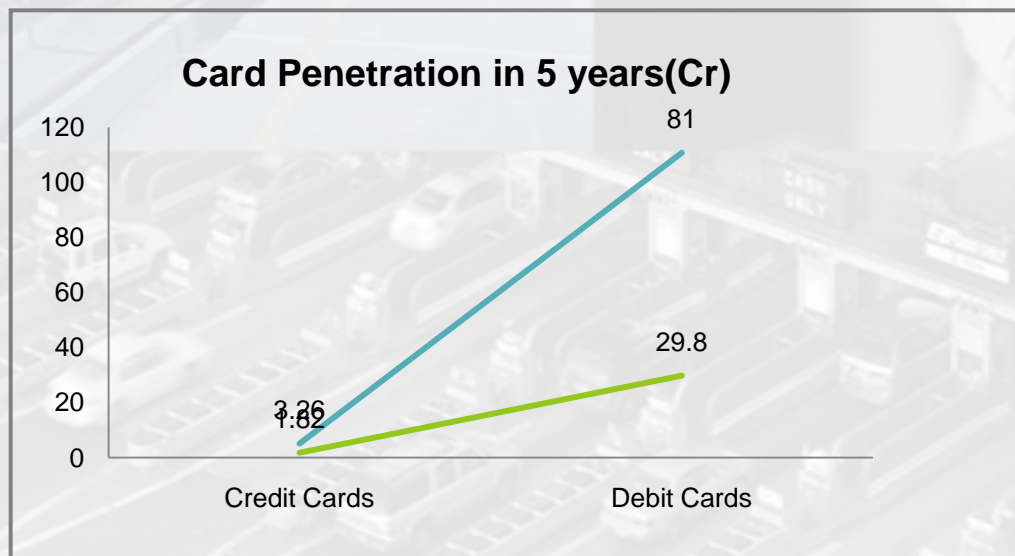


Growth of Open loop market growth in 5 years

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



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



Stored Value – Open Loop vs Closed Loop?

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



Fare Collection Models

	Closed Loop	Open Loop
Store Value	Multiple Cash Cards	NCMC
Server	-	NCMC / ICS*

Hybrid

* Possibly no deployment in India currently



Current Digital Fare Collection Media

Arrangements for fare collection	Cash	Closed Loop	Open Loop
In-house fare collection management	✓	X	X
Fare collection management in association with System Integrator	✓	✓ Cash Card Mobile App	X
Fare collection management in association with System Integrator and Financial Institution	✓	✓ Hybrid Card Mobile App	✓ NCMC BHIM/UPI

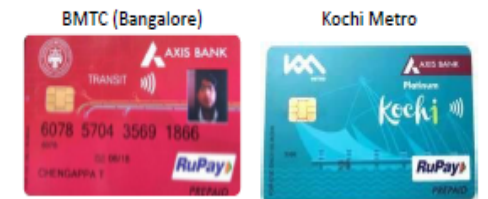
Closed Loop System NFC Cards



Closed Loop System NFC + EMV Debit Cards



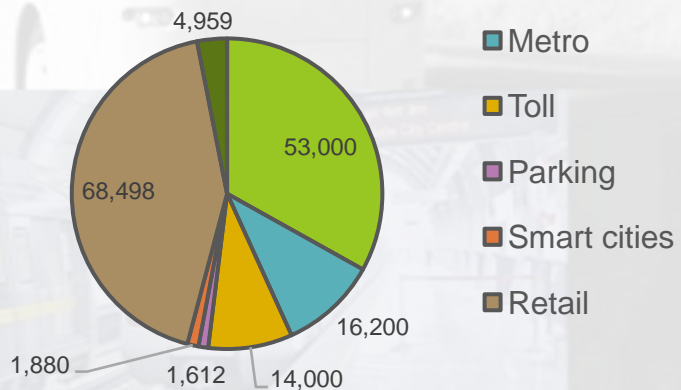
NFC Contactless Open Loop Prepaid Cards



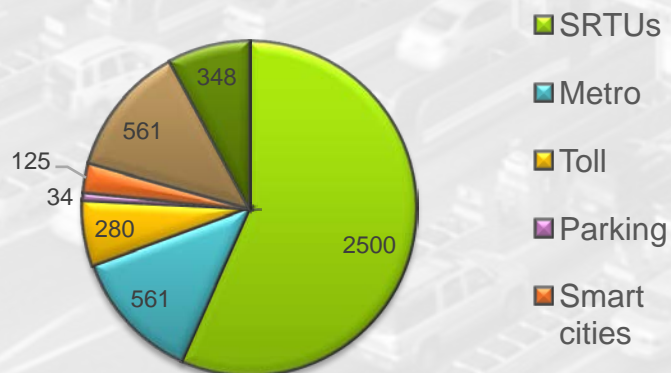


Opportunities in India

Transaction Value per annum (in INR, Cr)

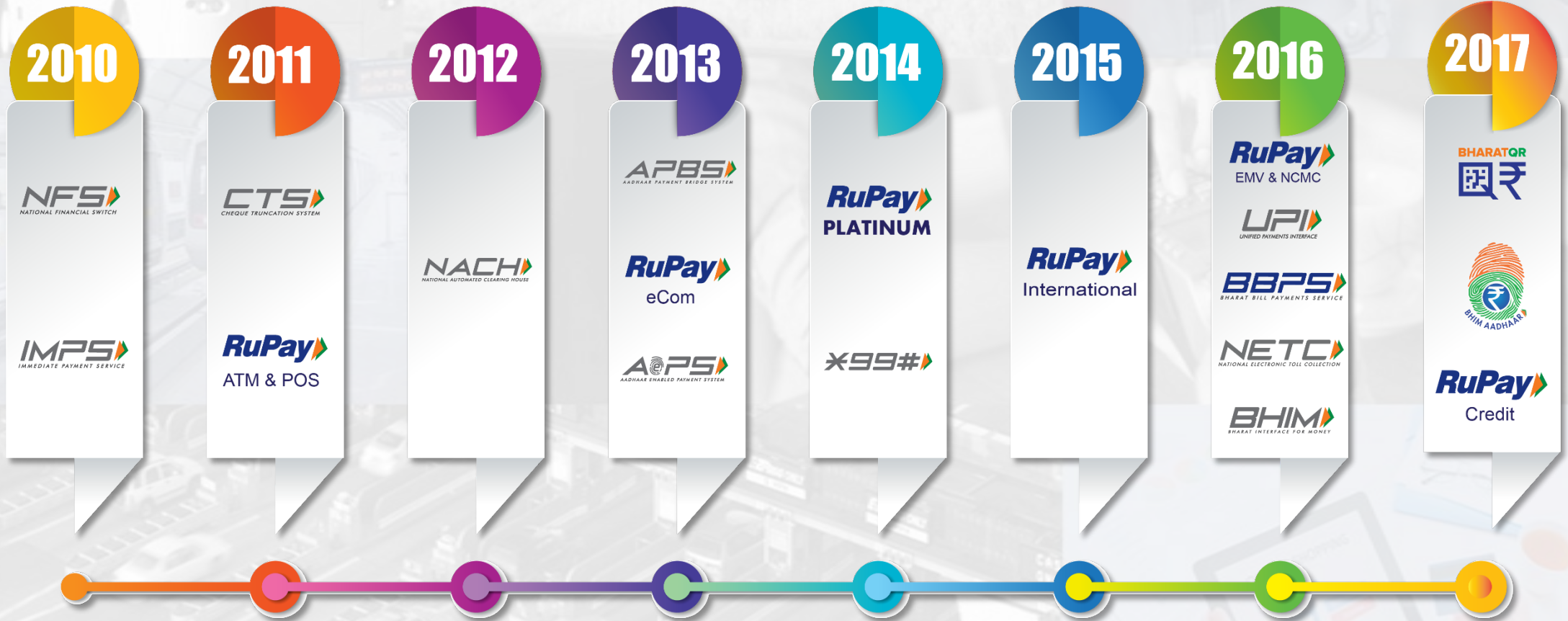


Transaction Count per annum (in Cr)





Milestone of Product Developments





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





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



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

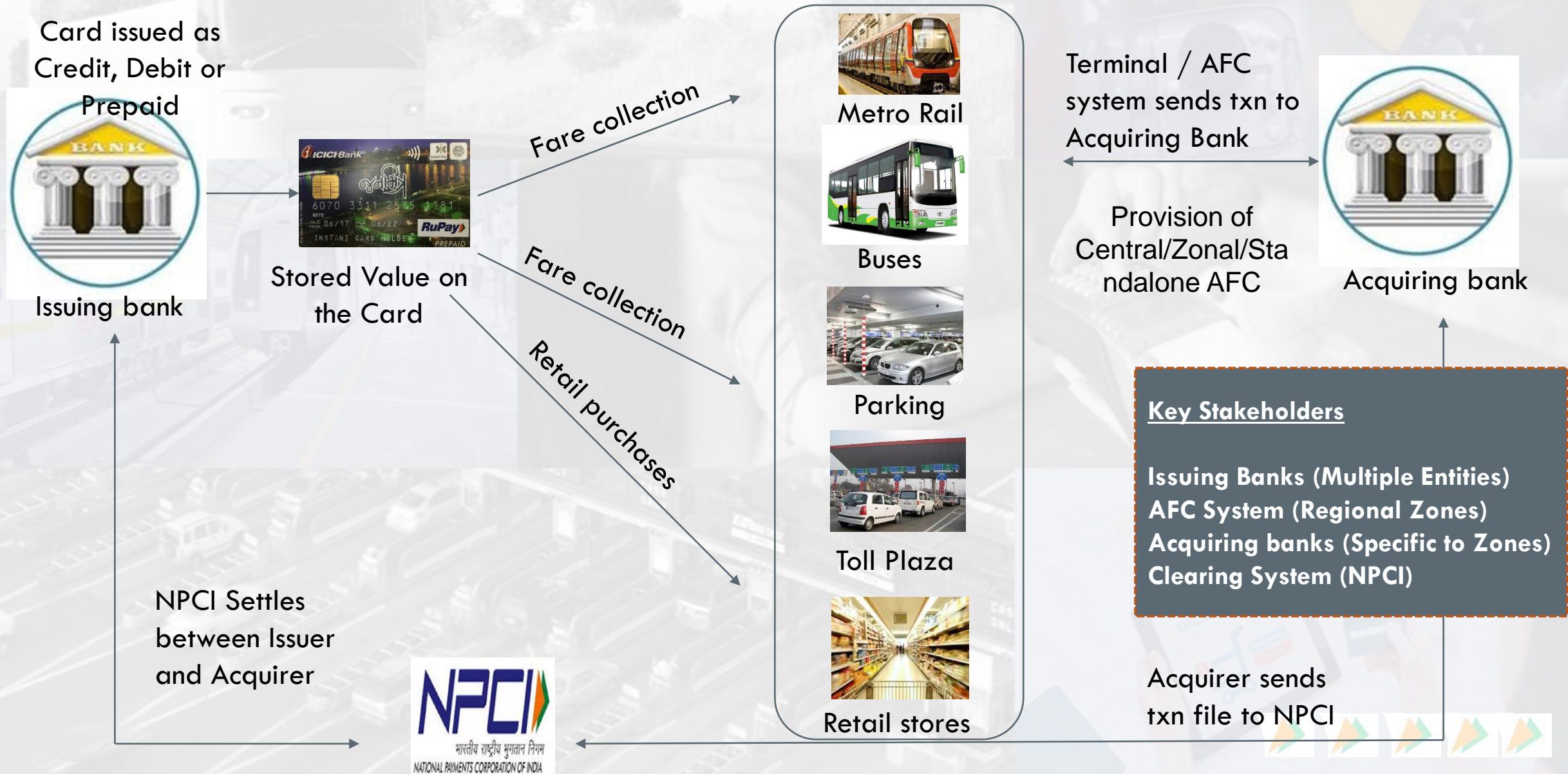
Requires consumers to have a smart phone where the app can be downloaded

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







Stakeholder Responsibilities

Key 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

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.



Work in Progress

- ▶ Surat Smart City
- ▶ Bhubaneswar Smart City
- ▶ Nagpur Metro

Launched

- ▶ Ahmedabad Municipal Corporation
- ▶ Kochi Metro
- ▶ BMTCL Bengaluru

Upcoming Projects

- ▶ Noida Metro
- ▶ Raipur Smart City
- ▶ Rajkot Smart City
- ▶ MMRDA
- ▶ NMMT
- ▶ DMRC



Challenges	Way Forward
<ul style="list-style-type: none">➤ Huge CAPEX investment and/or pay-out of royalty by FIs to PTOs➤ Non existence of centralised agency to monitor the adoption of NCMC standards by PTOs➤ 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➤ Non existence of standard fare collection system for transit operators➤ International card schemes promoting and implementing proprietary standards for contactless leading to delay in adoption of NCMC	<ul style="list-style-type: none">➤ Developing and agreeing on standard business model between PTO and FI leading to negligible CAPEX investment by FI➤ 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➤ Standard RFP terms & conditions with respect to NCMC specification to be included in the tender document floated by PTOs➤ Mobilize approved vendors and additional areas of usage for NCMC including Toll (non ETC), Citizen services etc.➤ Mandate international card schemes to adopt NCMC specification for any transit specific project



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

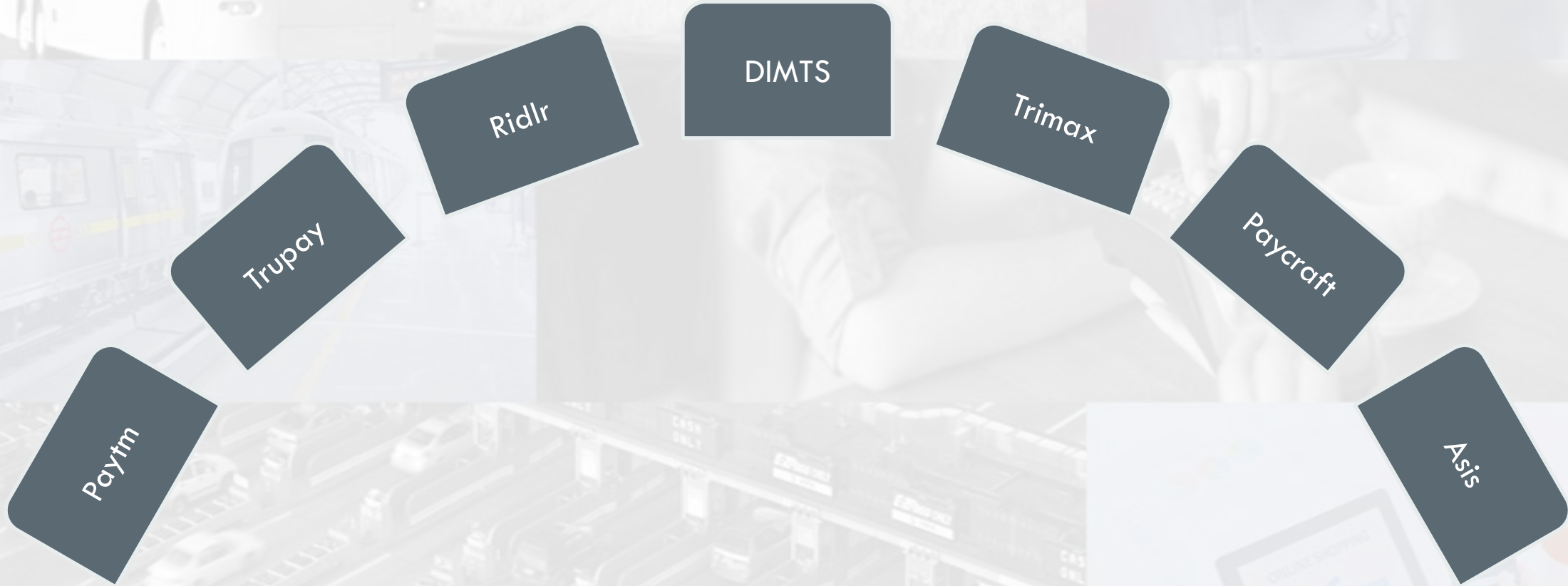


Financial Institution

- 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



The logo for the National Payments Corporation of India (NPCI) is centered in a white circle. It features the acronym 'NPCI' in a bold, blue, sans-serif font. To the right of the 'I' is a stylized Indian flag with saffron, white, and green horizontal stripes. Below the acronym, the text 'भारतीय राष्ट्रीय भुगतान निगम' is written in Devanagari script, followed by 'NATIONAL PAYMENTS CORPORATION OF INDIA' in a smaller, blue, sans-serif font.

NPCI
भारतीय राष्ट्रीय भुगतान निगम
NATIONAL PAYMENTS CORPORATION OF INDIA

Thank You

