



Deployment Of Digital Payments In Public Transport



- 1 Digital Fare Collection – Key Consideration
- 2 Digital Fare Collection Platforms
- 3 NCMC – Digital Fare Collection using Card Platform
- 4 NCMC Salient Features
- 5 NCMC Implementation Model
- 6 Key Takeaways- NCMC



Administrative



Government initiatives like NCMC, Urban Mobility, Digital India & Smart cities



Green field and Brown field projects with digital fare collection implementation



Complex fare system with multiple products
Multiple operators within same cities

Infrastructure



Network Connectivity



Infrastructure Management and up gradation



Investment and central control

Risk & Liabilities



Risk associated with Issuer Bank



Averse to financial liability



Lack of customer credit data

Recommendation- Low dependency on network connectivity & minimal financial risk to involved stakeholders should be considered



On Board Ticketing

Ticketing while on journey (Tap in & Tap out/Single Journey)

Card



Open Loop NFC
Cards



Closed loop cards

Mobile



QR Codes



NFC/HCE
Payment



Card



Open Loop



Closed Loop card

Mobile



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



QR Codes

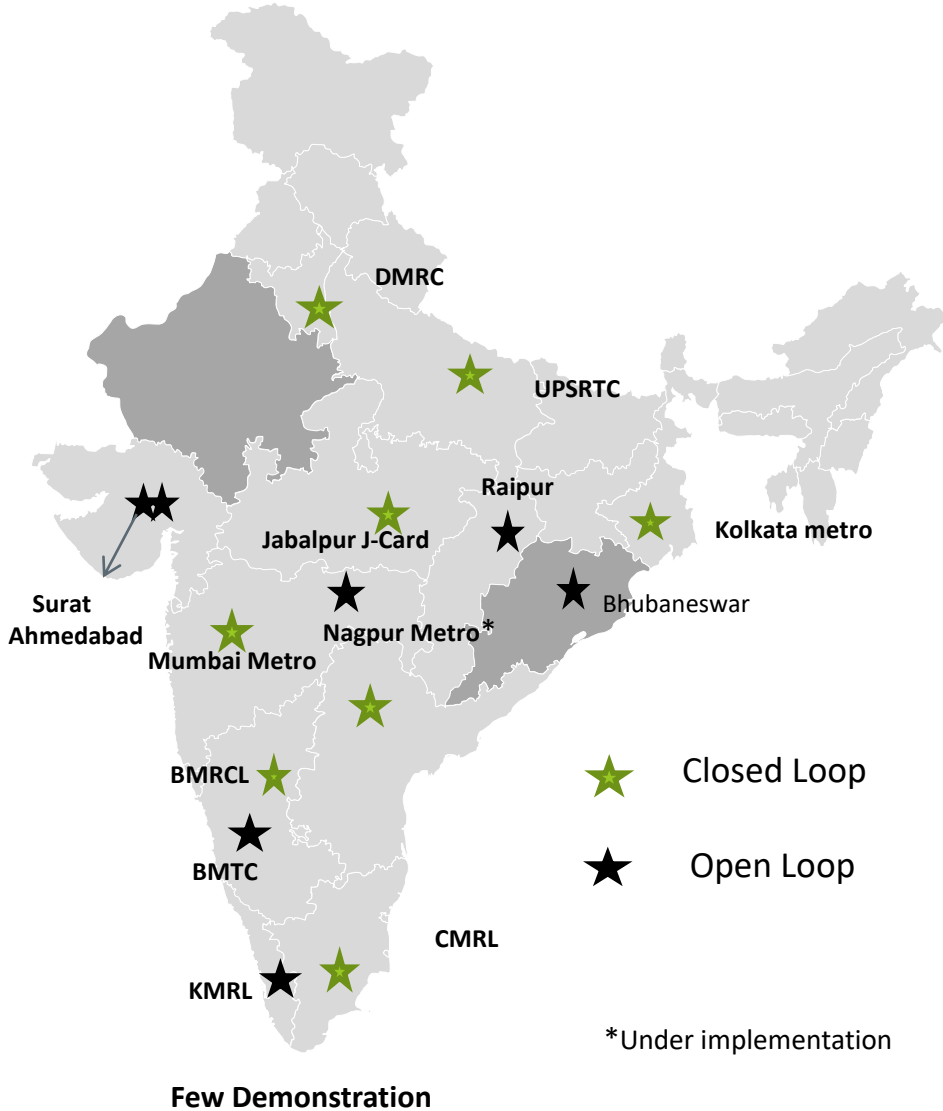


Ticket App



NFC Mobile





Card Based



Closed Loop card



Hybrid Card



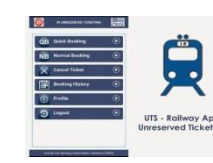
Open loop EMV Card



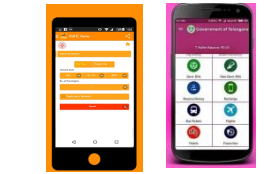
Mobile Based



Third Party App



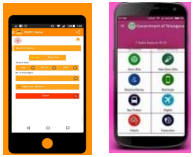
Operator App



Wallet Provider App

- ❖ **62 bus transit Operators** operational with an estimated annual ridership of 2500 Cr per annum
- ❖ **24 Metros Projects** with an estimated annual ridership of 561 Cr per annum. 8 Metro projects functional
- ❖ **6 operators live with an open loop bank card ticketing solution** in Bus, Metro & Smart City segments
- ❖ **Implementation in process across more than 10 cities** for open loop bank card ticketing solution or common card payment system
- ❖ **Mobile platform mostly used for inter-city ticketing**
- ❖ **Few implementation on closed loop/semi-closed loop mobile wallet platform** for intra-city travels





- **Operator Specific Apps** to book ticket using various payment modes including card/wallet/UPI etc.
- **Third Party Apps** having integrated ticketing platform of multiple operators in one App e.g.- Riddlr
- **Wallet Provider Apps** providing ticketing facility for multiple operators. e.g.- Paytm, Mobikwik etc.

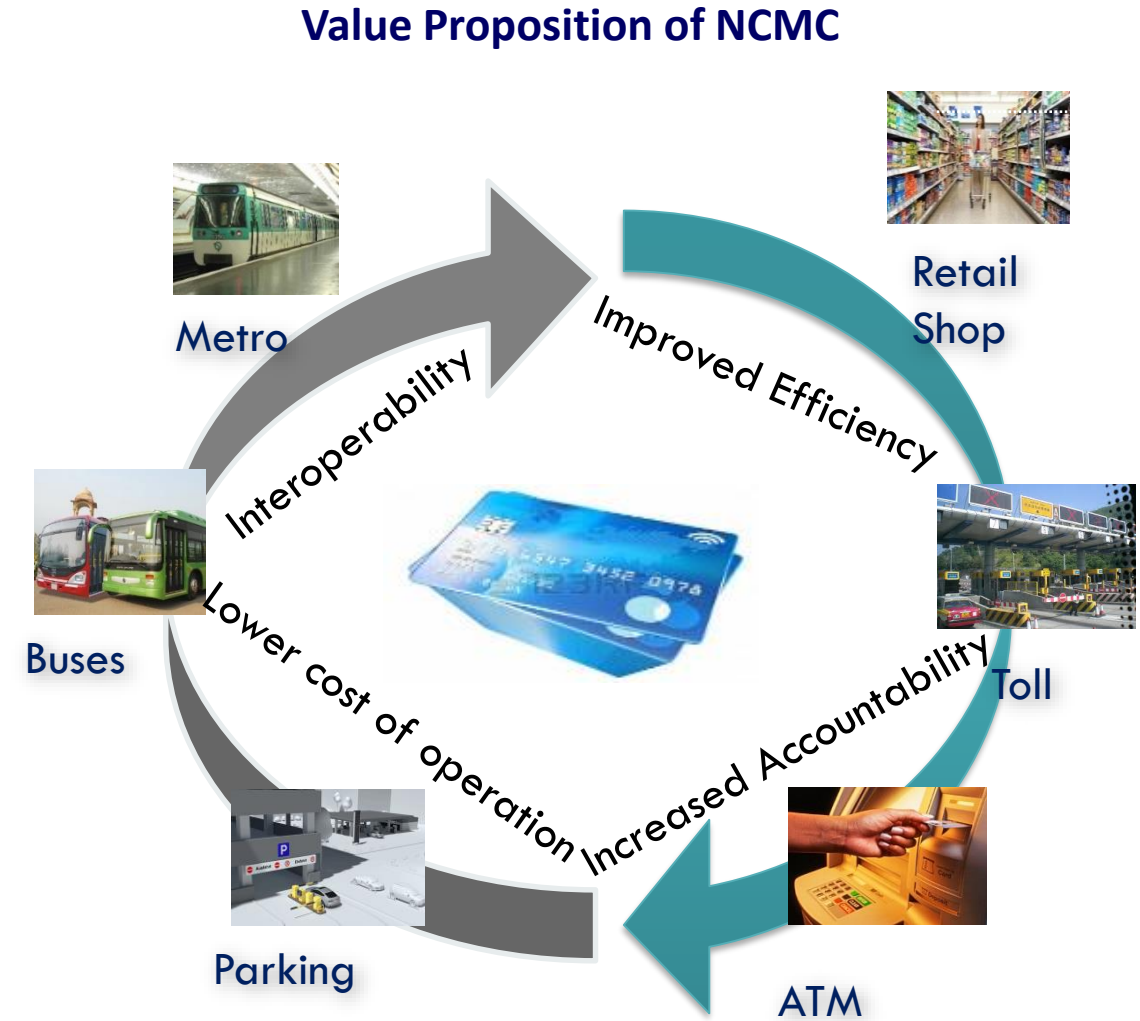
- Adoption of **Mobile platform mainly for intercity travel**
- **300% increase in mobile ticketing in Railway** indicates the growing popularity of mobile ticketing
- **Mobile platform for intra-city travel still at a nascent stage;** using QR code based technology
- New **technologies like NFC/HCE** evolving in proximity space with significant market potential in mobile ticketing
- With the **new guidelines of RBI for interoperability of wallet**, the mobile payment is expected to get a boost



Mobile Payment Solutions	On-Boarding	Off-Boarding	Operational In India
QR Code	☑	☑	☑
NFC	☑	☑	
Mobile Tickets		☑	☑



- Various implementations based on closed loop/semi-closed cards; limited adoption due to restricted usage
- Indian market moving towards digital fare collection based on **open loop payments implementation**
- **National Common Mobility Card Program (NCMC)**
 - Program envisaged by MoHUA, to support **one card for all payments** including retail, transit, para-transit and smart cities
 - **EMV based open loop card** available on Prepaid/Debit/Credit platform
- **Cater to key drivers of various use cases** including transit, toll, retail, parking etc.
 - **Customers inclusion** across entire socio-economic strata
 - **Minimal transaction time, Offline payments**
 - **Minimal financial risk** to involved stakeholders
- Aimed at **huge economies of scale** for the Acquirer/Operators based on standard interoperable platform



1
2
3

Banks issued standard & Secure Payment method based on dual interface EMV+ standard

Vendor agnostic ecosystem and same card can be used across all operators

Provision of Stored Value {Money} Cards which can be accessed offline and speed up transactions

Unique Feature

4
5

Service Area (Reserved space) on card for Storage of Merchant/Operator specific application e.g. Monthly Passes, Season Tickets etc.

Based on open loop and can be used on all PoS/ATM machines in contactless/contact mode

Unique Feature



- Card based payment model
- Stored Value for offline payments
- Debit/Prepaid/Credit card platform with Stored Value

Payment Model



- Supports online (contact & contactless) & off-line (contactless) transactions

Transaction Types



- Multiple service areas to support limited duration tickets / Season Tickets / Smart City Specific application / Loyalty points etc.

Multiple Service Areas



- To be used at ATMs, Merchant establishments & online (e-commerce) payments in addition to Transit, Toll, parking & small value merchant payments

Card Usage



- Provision of Topping up the stored value through any mode of payment viz., Online using card, Internet Banking, UPI, Cash at customer service point

Stored Value Top-up



- Since the transaction is permitted against available balance, there is no risk of any loss either to the bank or the SRTU

Transaction Risk



Recommended
by RBI, MEITY
and MoHUA

Closed Loop

- Operator runs a closed loop scheme
- The responsibility of CAPEX and card lifecycle management lies with the operator
- It may tie up with banks to launch 2 chip hybrid cards (Desfire+EMV)

Open Loop with exclusivity

- Operator ties up with a bank for payments
- The Capex for readers may be shared by the bank
- The acquirer bank is also the issuer for co-branded OTC cards and may have exclusivity for issuance
- The above exclusivity may extend to the fact that only partner bank cards are accepted

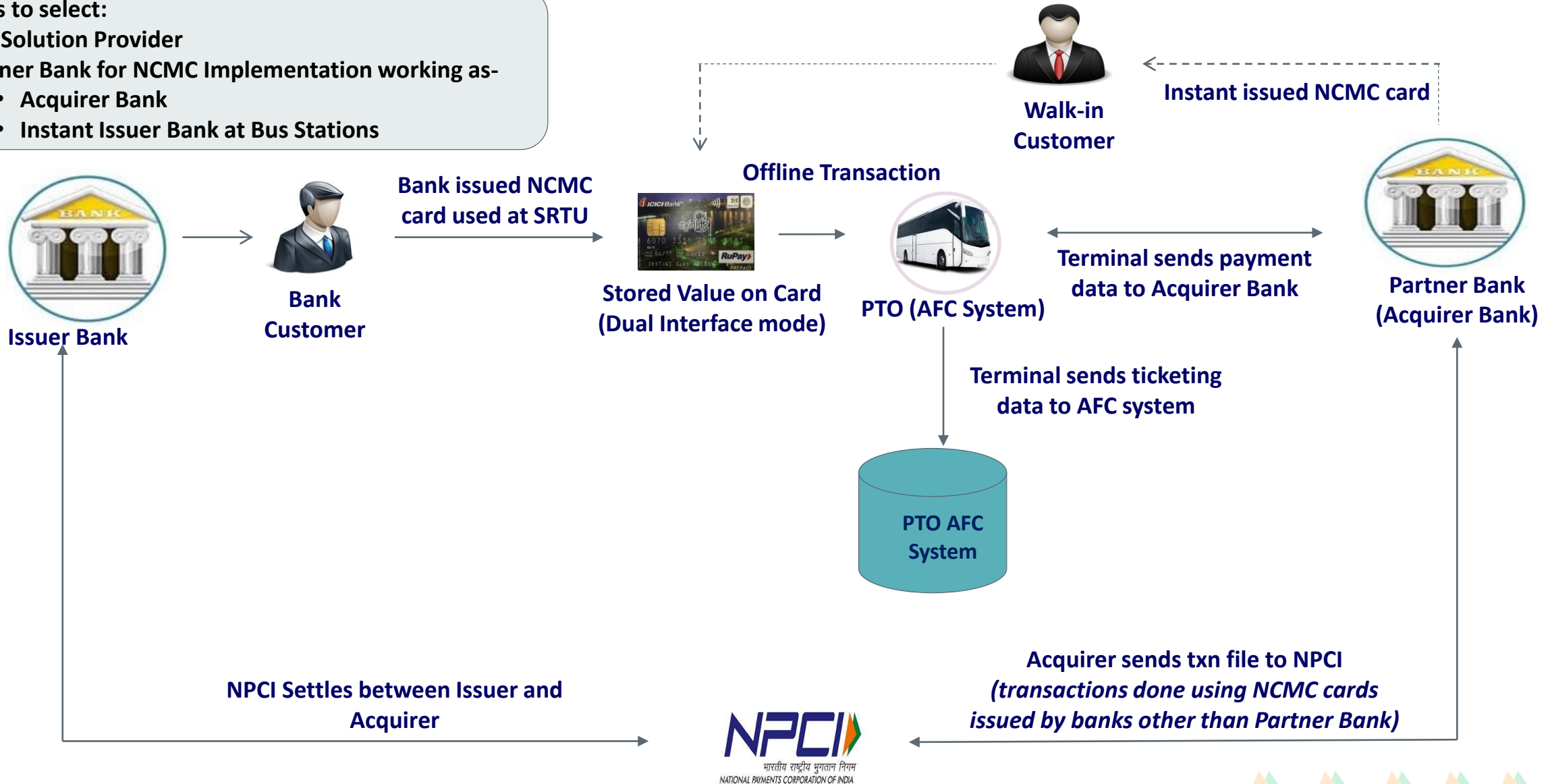
Open Loop Multiple

- Operator ties up with a bank for payments acquiring
- The acquirer bank may also be the issuer for co-branded OTC prepaid cards and may have exclusivity for issuance
- However, other banks issued cards are accepted by the operator

NCMC Implementation Model Architecture

PTOs to select:

- AFC Solution Provider
- Partner Bank for NCMC Implementation working as-
 - Acquirer Bank
 - Instant Issuer Bank at Bus Stations



PTOs with in-house fare collection management

- ❖ Need to deploy the back-end system in association with System Integrator for automated fare collection system
- ❖ Procurement of EMV compliant terminal devices certified as per NCCMC specification
- ❖ Associate with bank for acquiring of NCCMC based digital transactions

PTOs managing the fare collection in association with SI

- ❖ Need to phase-out the existing closed loop terminal devices and replace them with EMV compliant NCCMC certified devices
- ❖ Associate with banks for acquiring of NCCMC based digital transactions
- ❖ Integration of NCCMC based payment system with the AFC system

PTOs managing the fare collection in association with SI and FI

- ❖ Need to open-up for multi-banks issuance so that customers may associate with bank of his own choice



Operational

Adoption of NCMC specifications for open loop payments

- NCMC implementation for greenfield projects
- Phase-wise up-gradation for brownfield projects

Centralized/Zonal AFC system to ensure minimal deployment cost by small individual operators

Acceptance of all NCMC cards issued through any operator or bank

Instant issuance of NCMC cards at Service Delivery Points as a short term option

Commercial

Segregating Ticketing RFP from Payment RFP

- Ensure minimum involvement of banks in AFC/Ticketing systems

Banks to be approached **only for payment acquiring and settlement**

Avoid capex investment through Acquiring Bank. Cost of the payment readers / gate validators may be

- Picked up by the operator
- Rental model with the bank

MDR not to be passed on to customer as it creates resistance in digital adoption





Implementation Challenges & Resolutions



Topic	Challenges	Resolutions
NCMC Prepaid Card Issuance at PTO Service Points	<p>KYC to be done for instant card issuance</p> <ul style="list-style-type: none"> Minimum KYC to be done with OTP verification and OVD number Full KYC to be done with POI & POA; physical documents submission Minimum KYC Processing time of around 5 minutes 	<ul style="list-style-type: none"> NCMC Card envisaged as customer using his existing Debit/Credit Card for all sorts of payments DFS advisory for Issuance of NCMC compliant Debit/Credit Cards to eliminate the project specific cards issuance Prepaid Cards instant issuance at PTO service points aimed at facilitating the customers not having Debit/Credit Cards <ul style="list-style-type: none"> At PTO Service Points, Minimal KYC as well as Full KYC may be done as facilitated by Issuer Bank Instant issuance goes away to a great extent with NCMC Debit cards proliferation KYC Processing time to reduce with operational efficiency and seamless user interface; May leverage digital channels before coming to the counter
	<p>Issuance of NCMC Prepaid Cards (passes) to students or other segments not availing banking services</p>	<ul style="list-style-type: none"> Student/bulk KYC available with institutions may be used
Transaction Fee to be paid to NPCI/Issuer Bank	<ul style="list-style-type: none"> MDR Payable by PTO to Acquirer Bank as an additional burden on PTO Benefits Vs Cost associated with NCMC implementation 	<ul style="list-style-type: none"> NPCI switching fee for offline transaction decided based on portfolio analysis for card usage across transit, para-transit and smart city related use cases; ticket value ranging from INR 10 to INR 60 Involvement of banks only for banking activity to bring down the MDR Benefits with NCMC implementation in terms of cash handling cost, fare collection cost, card lifecycle management etc.

Topic	Challenges	Resolutions
Integration of PTO Ticketing Application and Terminals with Acquirer	Need of Common integration method for communication between terminal and Acquirer Host	<ul style="list-style-type: none"> • Defined file formats for communication between Acquirer, Switch and Issuer • Proprietary method for communication between Terminal and Acquirer host as per existing industry practice • Initiatives of CDAC to define this protocol
	Software modifications in POS terminal and Device L3 recertification in case of change in Acquirer Bank	<ul style="list-style-type: none"> • In case of change in Acquirer Bank, recertification to be done for Device L3 application • Payment Application and Transit Application to remain same. Only integration needs to be done. • Minimal effort due to standard set of NCMC transactions
	Simultaneous integration with multiple Acquirer Banks	<ul style="list-style-type: none"> • Integration with multiple Acquirer Banks may be done as per allocated stations basis
Integration of PTO Ticketing application for multiple banks card issuance from PTO Service Points	Integration for instant issuance of multiple banks' cards from PTO Service Points	<ul style="list-style-type: none"> • With the One Nation One Card vision, customers to have NCMC debit/credit cards issued through their bank branches • Instant issuance facility just to facilitate the prepaid card issuance in the meanwhile by the time every customer holds NCMC debit/credit card • Instant issuance of multiple banks' card not required. If required, it may be allocated based on stations
	Standard integration methods in view of effort required in case of change in Instant Issuing bank	<ul style="list-style-type: none"> • Issuance platform specific to Issuer Banks and hence common integration method not feasible • In case of change in Issuing Bank, the effort is limited to integration. Minimal effort due to standard set of NCMC transactions

Topic	Challenges	Resolutions
Integrated Metro-Bus or any other Multimodal Ticketing	Need of integrated ticketing between two or more operators	<ul style="list-style-type: none">• NCMC concept envisaged as one card for all payments; common ticketing across all PTOs and other use cases• Fares to be debited across each PTOs based on defined business rules on the terminal
	Discounts in usage of multi-modal transport based on business rules defined by PTOs	<ul style="list-style-type: none">• Discounts in usage of multi-modal transport to be processed as cashback through Acquirer Bank





Thank You

