CONCEPT DOCUMENT FOR IMPLEMENTATION OF ONE NATION ONE CARD

... driving low value payments

Abstract

This document talks about the National Common Mobility Card (NCMC) Program and RuPay based on this NCMC Program. This also covers the Standard Operating Procedure for its implementation by Transit Operators (e.g. Bus, Metro), Para-Transit (Toll, Parking etc.), and Smart Cities. Proliferation strategy for Transit, Retail, Smart City, and Para-transit segments has also been discussed in this document.

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1 Executive Summary

The digital penetration in retail segments is increasing gradually on card as well as mobile platforms with the holistic effort of financial institutions, customers, solution providers and government. However, the digital adoption is limited across low value payments in segments including retail, transit, toll, parking and smart cities.

Key Requirements of the ecosystem are

- Need for **offline transactions** in low value payments - **faster speed with near zero declines**
- Need of payment solution which is **independent of network connectivity**
- **Challenges in terms of existing banking infrastructure** to support huge surge in digital transaction on account of low value payments digitization

National Common Mobility Card (NCMC) program, as envisaged by MoHUA (Ministry of Housing & Urban Affairs), offers the above proposition and is proposed to be rolled out on RuPay Contactless Product.

This card may be used for all payment applications (low value – offline/high value – online) including transit, retail, toll, parking and smart cities. The stored value of the card offers the offline transaction proposition across all low value segments. The additional feature of service area on the card may be used for any merchant specific application e.g. season tickets etc. Further, it is also feasible to provide targeted government incentives e.g. medicines, books etc. through NCMC. The card may be issued as Debit/ Prepaid/Credit Card.

RuPay - NCMC implementation is aimed at providing a vendor and bank agnostic digital payment platform wherein customers may use RuPay NCMC cards issued by any bank for digital payments across various segments. The implementation should ensure multi-bank cards are accepted wherein the customers should be able to use RuPay cards issued by any bank including local or small banks.

The single most important factor in **proliferation of RuPay NCMC requires default issuance by key banks** in the country. In addition to that, it requires cohesive support from all stakeholders as below:-

Segments	Merchant/Operator	Banks	NPCI	Government
Transit and Smart Cities	NCMC implementation for all greenfield projects. Phase-wise upgradation for Brownfield projects	Issuance of RuPay - NCMCs as default Debit/Prepaid/Credit Cards to avoid any project specific issuance. Develop NCMC acceptance ecosystem across various merchants	Specification support to involved stakeholders including operators, bank and vendors to develop the ecosystem	Financial support for AFC/ETIMs and Transaction charges. Mandates through respective Ministries for implementation of open loop RuPay – NCMC
Retail	Acceptance of RuPay – NCMCs			Mandates to all banks for Issuance & acceptance for RuPay - NCMCs
Para-Transit	Acceptance of RuPay - NCMCs for Toll & Parking			Mandates for NCMC acceptance at cash lanes

NCMC has been inaugurated by Honorable Prime Minister as One Nation One Card in Ahmedabad on Mar 4th, 2019.

The adherence of RuPay NCMC standards by any card scheme may be presided over by an independent committee of regulator and the ministry and the specification support may be provided by NPCI.

2   Purpose of the Document

This document provides an overview of the National Common Mobility Card (NCMC) program, key features of NCMC specification, benefits to involved stakeholders and the use cases covering transit, toll, parking, smart cities and retail payments. This also covers various aspects related to NCMC implementation including sample implementation model, standard operating procedure (SOP) and roles & responsibilities of involved stakeholders. NCMC proliferation strategy has also been covered in this document to achieve higher adoption and penetration of the NCMC cards across all use cases; with the brand name of '**One Nation One Card – One Card for all Payments**'.

With the aim of digitizing the payments across each segments (low value as well as high value), a huge surge is expected in number of digital transactions which may have a challenge in view of existing banking infrastructure. This requires the offloading of low value transactions from real time processing by the bank. This will help to digitize the low value payments with near zero failures.

RUPAY - NCMC offers the additional feature of offline transactions for low value payments at a faster speed with near zero declines. This card may be used for all payment applications (low value as well as high value) including transit, retail, toll, parking and smart cities.

3 Background

3.1 Existing Payments Mechanisms

The banking industry has evolved gradually during the last 3-4 decades with various payment solutions to digitize the retail payments. These solution are mainly based on two platforms namely Card & Mobile. Card has been the preferred mode of payment in the physical space in view of the customer convenience, familiarity and consumer behaviour while the mobile platform has taken a significant leap during the last few years in the ecommerce channel.

Apart from retail, there are various other segments involving low value payment e.g. transit (bus, metro, suburban railways), toll, parking etc. which are highly dominated by cash based tickets. The customer takes paper ticket by paying cash either at ticket counters or during journey. Various operators of these segments have implemented closed loop/semi-close loop cards based digital payment collection system. The lifecycle of such cards is being managed by respective operators. Few operators have also adopted the mobile based solution for digital fare collection.

However, the digital adoption is very limited across these low value segments due to interoperability challenges of closed loop/semi-closed loop cards.

3.2 Challenges and Limitations

The existing cash based payments practice for low value payments across various segments has multiple challenges e.g. cash handling, revenue leakages, pilferages etc. The adopted digital payments practice suffers from the key challenge in terms of interoperability and other challenges as mentioned below:-

- Closed loop/Semi-closed loop cards have usability limited to specific merchant/operators and hence customers need to carry multiple cards for multiple use cases.

- Popularity of these cards among citizens is limited due to restricted usage of the card and hence lower digital penetration. Moreover operators/merchants need to bear extra cost for life cycle management of the cards.

- In context of Indian scenario, where network connectivity is a challenge, any mobile based payment collection system will have limited digital penetration.

- Low value payments pose a huge challenge of volume, where transit alone generates close to 10 crore transactions a day. Online authentication of such volumes can lead greater number of declines.

In view of the above challenges and the need to drive the digital payments adoption across all segments with high as well as low value payments, there is a requirement of a common card payment system wherein a single card may be used for all payment applications including transit, toll, parking, smart cities and retail.

4 National Common Mobility Card Program

4.1 Introduction

With vision of One Card for all Payment systems, Ministry of Housing & Urban Affairs (MoHUA) has come out with a National Common Mobility Card (NCMC) model to enable seamless payment for low value as well as high value payments across all use cases including travel by different metros and other transport systems across the country, retail shopping and purchases. A committee was formed with representatives of National Informatics Centre (NIC), Centre for Development of Advance Computing (C-DAC), Bureau of Indian Standards (BIS), National Payment Corporation of India (NPCI) and the Ministry of Finance.

After extensive study of various models being followed across the world, the Committee recommended the EMV Open Loop Card with stored value based model and the same was approved. This card meets travel needs based on stored value of money and can be used for all low value payments including travel by any means of transport, smart cities, toll, parking etc. and also enables account based retail applications. Accordingly, this card does away with the need of carrying separate cards for banking and transit requirements.

NPCI has been working with MoHUA, Government of India for implementation of National Common Mobility Card Program (NCMC). This specification is dual interface (contact & contactless) EMV card based specification and is interoperable based on open standards. This is aimed at low value payments for various segments e.g. Transit, Smart cities, Toll, Parking and other low value merchant payments in addition to the normal day to day retail payments. These specifications are capable of supporting not only payment products but also transit applications like monthly passes, season tickets & government applications such as social security, driving license, Id/access card etc. This results in increased customers convenience as it allows customers to use the same card for variety of needs.

4.2 NCMC Proposition: EMV Open Loop Card with Stored Value

The NCMC committee, as mentioned in above clause, identified the key requirements of this NCMC Card as Interoperability, Open Loop, EMV Chip, Offline transactions and minimum transaction time. Based on their requirements and study of international markets, the committee studied three models of proposition:

○ Model 1 - Closed Loop based Solution

○ Model 2 – EMV Open Loop Account based Solution

○ Model 3 – EMV Open Loop Card with Stored Value

The comparative analysis of these three model are as mentioned below:-

Particulars	Model 1 – Closed Loop	Model 2 – EMV Open Loop Account based	Model 3 – EMV Open Loop with Stored Value
Proposition	○ Issuance of closed loop cards by respective Operators to digitize the payments ○ Usage for services provided by the respective Operator	○ Usage of bank issued EMV cards which are linked to account ○ **Fare calculation as well as debit from account to be done at the backend** post processing of offline transactions by terminal	○ Usage of **bank issued EMV cards with stored value** on the card ○ **Supports offline transaction without financial risk** to Operator or Financial Institutions ○ Provision of season tickets on the card
Limitations	○ Lacks the key feature of interoperability ○ Restricted usability for services provided by the respective operator only ○ Extra cost to operators in maintaining the payments mechanism and card lifecycle management	○ **Risk of insufficient balance** on the card as the transactions are based on deferred authorization ○ Challenge in storing the season tickets on the card ○ **Increased capex and opex** due to manage the backend ○ **Challenge for Bank infrastructure** to manage the large volume of low value transactions on real time basis	-

Considering the Indian Transit scenario, available infrastructure for bank & operators, market dynamics, feedback from financial institutions and the customer behavior; Model 3 – EMV Open Loop Card with Stored Value was finalized as the ideal model for NCMC Card.

The Report of the committee for standards and specifications of National Common Mobility Card is available at link - http://mohua.gov.in/upload/uploadfiles/files/CommitteeReportofNCMC03.pdf.

The NCMC specification may be adopted by all Payment Scheme Networks operating in the country as communicated by RBI.

4.3 One Nation One Card – Brand Name for NCMC Cards

The NCMC program has been envisaged with a vision of 'One Card for all Payments'. In view of the same, the name of this card should portrait its usability across all segments for all types of payment

applications including retail, transit, toll, parking and smart cities. This will help in wider awareness and acceptance of NCMC cards across the country.

The payment cards (debit/prepaid/credit) issued based on NCMC specification is proposed to be with the brand name 'One Nation One Card'.

## 4.4 Advantages of NCMC Open Loop Smart Card over Closed Loop Variant

NCMC open loop smart card offers various advantages over the closed loop smart card in terms of various parameters including **customer experience, interoperability, infrastructure requirements, ease of implementation and vendor agnostic solutions**. The details are as enumerated in below mentioned table.

S. No.	Concern	Open Loop Smart Card	Closed Loop Smart Card
1	**Customer Friendly**	Customer may use the same card for Metro and Bus travel in all the City and States within the country.	Customer need to buy different cards for different public transport Systems.
2.	**Convenience**	Customers may use their bank issued NCMC card for fare payment rather than waiting in a queue for card/token/ticket issuance.	Customer may require to stand in queue for card issuance, Top up etc.
3.	**Loyalty Points**	Consumer may benefit from loyalty/reward points from partner banks, as provided in case of Debit and Credit cards.	No such provision. Any such loyalty and discount is a cost to the Public Transport Operators.
4.	**Minimum Infrastructure**	Public Transport Operators can minimize their cost involved in maintenance of infrastructure and manpower for card issuance, Top up, card replacement and refunds, as open loop cards can be issued by multiple partner banks.	Each Public Transport Operators need to bear the significant expense for maintenance of infrastructure and manpower for card issuance, Top up, card replacement and refunds.
5.	**Negotiating Power**	As open loop acceptance devices are based on open interoperable standards, there are multiple vendors available for payment acceptance devices, which provide an opportunity for cost and service negotiation.	Closed loop cards may be of proprietary standards, leading to vendor lock in for subsequent purchase and renewals of acceptance devices.
6.	**No vendor lock in**	Open standards based payment acceptance devices provides the freedom for subsequent purchase and renewals of devices.	Proprietary standards may lead to vendor lock in for subsequent purchase and renewals of acceptance devices.

7.	Ease of Implementation	Well standardized payment acceptance devices and availability of multiple vendors provides ease of implementation. Payments related scope of work to be taken care by partner bank and hence PTOs may focus on their key activities.	PTOs need to evaluate multiple proprietary specifications leading to difficulty in implementation.
8.	Fast Deployment	Due to similar implementation process, best practices and reference implementation guidelines, there will be standardized procurement practices, and RFPs. This considerably expedites the deployment of digital payments in Public Transport Operators.	Each deployment will have specific requirements and considerable expertise is required by each Public Transport Operators for selection of appropriate solution.
9.	Retail acceptance	NCMC open loop card offers acceptance at all the existing retail PoS devices.	Closed loop cards can only be accepted within their operating environments.

5 Vision of One Card Payment System with RuPay - NCMC

RuPay - NCMC offers the proposition of One Card for all Payment Systems wherein a single card may be used for all payment applications including transit, toll, parking, smart cities and retail.
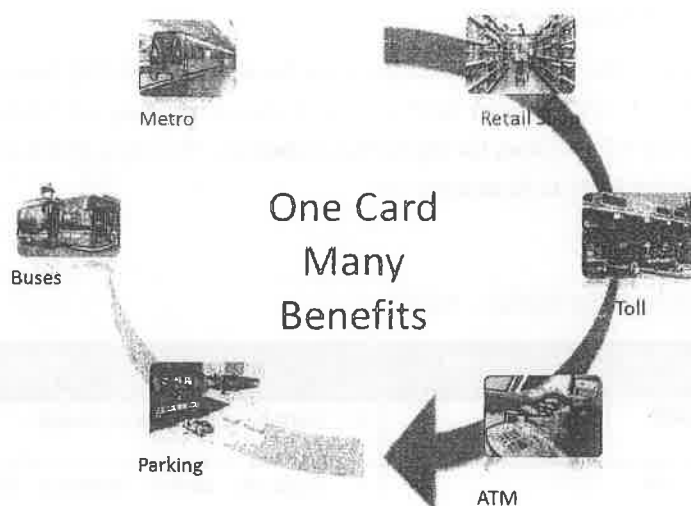
i. **Multi-Modal Transit**: RuPay - NCMCs may be used across all transit modes including Metros, buses, ferries, suburban railways etc. A citizen would not be required to be dependent on cash or operator specific various closed loop cards. He can use one card for fare payment across any mode of public transport.

ii. **Toll**: There are significant number of customers using cash lane at the toll plaza and making payment in cash. With the help of RuPay - NCMC, a citizen may pay the toll charges at toll booths by simply tap & pay. This will help to achieve higher digital penetration in toll segment for customers using cash lane.

iii. **Parking**: A citizen may use the RuPay - NCMCs at parking zones for making payments of parking charges. This will help to reduce the transaction time and increase the digital payments penetration.

iv. **Smart Cities**: Digital payments play a vital roles in smart cities projects. A common card payment system is the key proposition of smart cities to enable usage of one card for all sorts of payments including transit, civic as well as non-civic payments in the cities. RuPay - NCMCs offer the unique proposition for Common Card Payment System of smart cities.

v. **Retail**: RuPay - NCMCs may be used in contact as well as contactless mode for retail payments. The customer may use this card for low value payments as well as high value payments. As per RBI existing norms, 2nd factor authorization is not required for transaction below INR 2000. For such payments, the customer may make the payment by simply tap & pay. The offline transaction feature may also be leveraged to reduce the transaction time and eliminate the dependency of network connectivity for extreme low value payments under INR 200.

MoHUA issued an advisory, vide Advisory No. 9, dated June 8th, 2017, advising all smart cities to follow the NCMC standards for implementation of common card payment system. This card is envisaged to be accepted in all kinds of public transport, para transit and non-transit services and other merchant payments like utility bills, taxes, shopping etc. The copy of advisory note is enclosed here as **Annexure – A**.

Ministry of Electronics and Information Technology (MEITY) has also issued an advisory, vide No. 12(39)/2017 DPD, dated April 4th, 2018, recommending all Public Transport Operators to adopt open loop NCMC cards for digital fare collection. The copy of DO letter from Joint Secretary, MEITY is enclosed here as **Annexure – B**.

5.1 Key Features of RuPay - NCMC

Key Functionalities/Particulars	NCMC Proposition
Payment Model	o Card based payment model
Transaction Type	o Supports online (contact & contactless) & off-line (contactless) transactions
Stored Value	o Provision to store balance on card for offline payments
Provision for multiple service areas	o Multiple service areas (optional to use with mutual concurrence) to support acquirer/operator specific programs e.g. Passes / Season Tickets / Smart City Specific application / Loyalty points etc.
Card usage	o Same card to be used at ATMs, Merchant establishments & online (e-commerce) payments in addition to other areas of contactless payments viz., transit, toll, parking & other small value merchant payments

Card issuance	o Can be issued by any member authorized by RBI; On the platform of
	
	   o **Debit Cards**
	
	   o **Prepaid Cards**
	
	   o **Credit Cards**
	
	In future these cards may also be made available in various other form factors including wearables, stickers etc.

Topping up the stored value	o Provision of Topping up the stored value through any mode of payment viz. cash, account and online channels
Offline Transaction Risk	o Since the offline transaction is permitted against stored value on card, there is minimal risk of any loss to the bank or merchant
Security	o Underlying technology i.e. EMV is best available globally

Cost of providing contactless card to the customer	o RBI has mandated that effective Feb 01, 2016, all cards issued by banks in India would be EMV. Therefore, cost of providing contactless card to the customer will be only marginal as against steep increase in territories where mag-stripe ecosystem exists
Synergy with existing technology	o NCMC specifications can co-exist with the existing technology being used by acquirer/operator and migration to common standards may be achieved gradually to suit the convenience.

5.2 Value Proposition of RuPay - NCMC to Key Stakeholders

| Stakeholders	Value Proposition
Commuter/Consumer	o One card for all low & high value payments across various categories; No need to carry multiple cards for different usage
	o Super quick with contactless transactions enabled on the card
	o Digital trail for all transactions
	o No need to stand in a queue
	o Auto Top-up facility; need not to worry for recharge
	o Secured with EMV Technology; Gold standard of card payments
In vehicle Crew/ Counter Operators	o Low cash handling due to NCMC cards based fare collections
	o Efficient fare collection process with the minimal transaction time
	o Efficient crowd management
	o Increased productivity
PTOs/Merchants	o Unified cards to support offline and online transaction modes; contactless ability
	o Common standards for standardized operating cost
	o Fast deployment of digital payments due to standardized implementation process
	o Savings on card lifecycle management cost
	o Reduced operating cost on account of lower cash handling, infrastructure & manpower cost
	o Business intelligence with rich data insights aimed at business optimization and ROI based communication
	o May run proprietary loyalty and VAS schemes with high convenience and customer satisfaction
	o No vendor lock in due to open loop standard platform.

Banks	o Customer loyalty & stickiness
	o Additional revenue opportunities with large customer base
	o Savings on cost of servicing customers and cash handling
	o Increased usability of bank issued cards due to transit related use case
	o Improved brand image to offer value added products/services
	o Rich data insights with valuable customer data for data analytics and customized offers for customers
Retail Ecosystem	o Usability of one card for all payments would encourage customer for digital payment in retail
	o Cost on account of running loyalty cards may be reduced by leveraging the NCMC cards
	o Tap & pay to enable efficient payment during peak hours for low value purchases
	o Lifestyle experience to customers
Government	o NCMC would help in digitizing the low value payments, a key segment highly dominated by cash payments in India
	o Higher digital penetration to achieve the digital payments target
	o Reduced leakages across the value chain of the system
	o Reduced cash circulation in the economy
	o May be leveraged to provide targeted government incentives e.g. medicines, books, travel passes etc. through NCMC

6 RuPay - NCMC Implementation Model

6.1 Sample NCMC Implementation Model (Bus Transport)

The NCMC implementation is aimed at providing a Vendor and Bank agnostic digital fare collection platform wherein the customers may use RuPay - NCMCs (Debit/Prepaid/Credit Card) issued by any Bank for digital fare payments. This will help the customers to get associated with any bank as per their choice rather than being restricted to a single bank. The acceptance of RuPay - NCMCs issued by multiple banks will further help to get the higher digital penetration for fare collection.

A sample implementation model for State Road Transport Undertakings (SRTUs) – Bus Operators has been shown below for the reference purpose. The same concept will get extended across other segments including Metro, Toll, Parking and Smart Cities with modification as per their existing fare collection system.
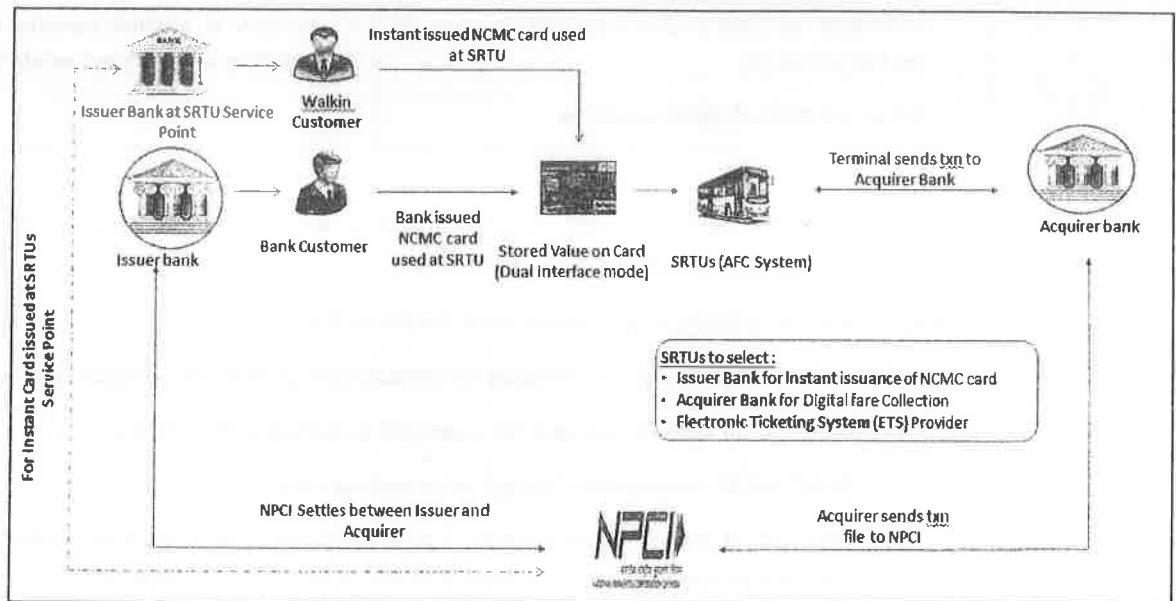
With the Multiple Issuance Open Loop model, there will be following key benefits to the operators:-

Tangible Benefits	Intangible Benefits

○ Significant reduction in OPEX associated with cash handling and leakages
 	
    ○ Even with a large adoption of closed loop smart card benefits are passed on as discounts for operator issued cards and thus negate the above savings
 	
○ Reduction in OPEX related with card life cycle management
 	
○ CAPEX savings on the infrastructure since it invalidates the need of large scale card issuance and top infrastructure
 	
○ Higher adoption of digital payments
	○ Consumers benefits the most as they need not block their balances for each operator
	
	    ○ A single prepaid account can work across all low value offline payments like bus, parking, retail
	
	    ○ The cards can be easily topped up with their existing accounts through BHIM and used without any dedicated need of balance check counters
	
	○ Industry as a whole benefits due to availability of standard solutions and vendors

The implementation model should ensure following key points to achieve the vision of interoperable, vendor/bank agnostic NCMC solution.

○ Segregation of Ticketing engagement from Payment RFP

○ Operators should approach AFC vendors for deployment of ticketing solution and application

    ○ Banks to be approached only for payment acquiring and settlement

    ○ Avoid CAPEX investment through an acquiring bank

    ○ The cost of the payment readers / gate validators may either be picked up by the operator or the banks may provide a rental model to the operator

○ As a short term option the acquiring bank may provide instant issuance of Rupay NCMC prepaid cards on a limited basis

    ○ Till such time every customer starts carrying an EMV open loop stored value card, acquiring bank may provide limited issuance

○ Some of the operators may need support to their existing business operation challenges

    ○ Particularly in bus environment, it may be prudent to develop a regional AFC hub for 4-5 operators combine

6.3 Required Activities for NCMC Implementation

S.No.	Activity	Description
1	AFC Deployment/Upgrade	o Upgrade of existing ETIMs with EMV devices certified as per NCMC specification o Level 1 (Hardware) to be certified as per EMVCo o Level 2 Kernel (Software) to be certified as per NCMC specs o Level 3 (Payment Application) to be certified as per NCMC specs o Complete back-office deployment to support Automatic fare Collection System
2	Selection of Issuer Bank for instant Issuance of RuPay - NCMCs at Service Delivery Points *(if required)*	o Responsible for issuance of NCMC Cards as per defined NCMC specification o Multi-Banks Acceptance Model wherein customers may use NCMC cards issued by any certified bank o The customers may get the NCMC cards from the bank of their own choice by visiting the respective branches or offices o To facilitate the card issuance at Operator/Authority service points e.g. bus stops, depots etc., PTO need to select an Issuer Bank for instant issuance of NCMC cards
3	Selection of Acquirer Bank for acquiring of digital transactions done using RuPay - NCMCs	o Responsible for acquiring of digital fare collection transactions done using NCMC cards issued by any certified Bank o Acquirer Bank may be single or multiple as decided by Operator
4	Commercial Aspects	o Commercial Model to ensure the vendor/bank agnostic solution and Multi-Banks acceptance scenario wherein the customers should be able to use NCMC cards issued by any Bank including the local or small banks. o As far as possible, the transaction charges should not be passed on to customer so that there is no resistance to digital adoption.

6.4 Roles & Responsibilities of Key Stakeholders

The roles & responsibilities of key stakeholders will be inclusive of but not limited to the following. It may vary as per the scope of work finalized by the Authority.

Stakeholders	Roles and Responsibilities
Issuer Bank	*Issuer Bank issuing the NCMC enabled Debit/Prepaid/Credit Cards from their Branch networks* o Issuance and end to end lifecycle management of NCMC cards as a part of day to day normal banking activities for the Issuer Bank o Shall provide various payment channels for the Card Top-up as per customer convenience o Undertake transaction settlement and reconciliation with Acquirer Bank & Payment Schemes

	Instant Issuer Bank issuing the NCMC Cards from PTO Service Delivery Points (if required)
	o Applicable only for cases wherein the Operators want to provide the NCMC cards instant issuance facility at Operator Service Delivery Points
	o Procurement, personalization, instant issuance of Contactless cards based on NCMC specification as per RBI guidelines
	o Shall provide various payment channels for the Card Top-up as per customer convenience
	o Provide necessary EMV PCI-DSS compliant hardware for instant issuance related applications as per requirements
	o Certifications & Compliances as per NCMC specification
	o Provide helpdesk to customers for addressing any grievance or providing support in card usage
	o Maintain entire life cycle management of NCMC cards issued by FI, card applications, payment scheme, card account management and card transactions
	o Marketing, Loyalty, Fraud and Risk Management
	o Admin console for Authority to access MIS reports etc.
	o Provide an e-payment gateway and portal, Mobile Applications and SMS facilities for self-service and card top-up
	o Undertake transaction settlement and reconciliation with Acquirer Bank & Payment Schemes
	o Field training, hardware maintenance and consumables
Acquirer Bank	o Acquiring the digital fare collection transactions done using NCMC cards issued by any certified Bank
	o Shall provide various payment channels for the Card Top-up on the web/mobile interface provided by the Authority/its vendor
	o Provide EMV as well as PCI-DSS compliant hardware for acquiring related applications as per NCMC specifications
	o Certifications & Compliances as per NCMC specification
	o Provide risk, fraud and dispute/chargeback capabilities
	o Provide NCMC Card dedicated support to Issuer Bank with reference to transaction dispute, refunds, chargeback and merchant account management as per RBI requirements
	o Provide Admin Console for Operators
	o Manage email/SMS for citizens and merchants
	o Undertake transaction settlement and reconciliation with Operators

Operators/Merchants	o Provide manpower to all its Service Points
	o Provide domain services and respective IT applications like ITMS, AFCS/ETIMs in collaboration with AFC vendor
	o Ensure necessary infrastructure development and reliable network connectivity to connect with FI ecosystem
	o Provide sufficient space at each depot and central control center for setting up the required infrastructure
AFC/ITMS Provider	o Supply and deployment of Electronic Ticketing System (ETS) to roll-out the NCMC solution
	o Provide ETIMs/validators on bus terminals, city bus, BRTS, etc.
	o Provide technical maintenance and support of the ETIM application software and hardware system over the contract period
	o Maintain the sufficient spare parts (of Handheld and other hardware parts) at depot (or any other location specified by the Authority) for maintenance of ETM and meeting the SLA
	o Provide NCMC Certified payment application for collection and settlement of fare against cash and NCMC card
	o Provision of all the consumable items like SIM, Monthly Charges of connectivity, paper roll (for paper tickets)
	o Backend hardware and hosting infrastructure for hosting the ETM backend
	o Web-Portal for various MIS and settlement report
Card Scheme	o Certification of Issuer and Acquirer Banks in line with NCMC Specification
	o Certification of cards & terminal vendors as per NCMC specification
	o Assistance to operators in conceptualization, roll-out and implementation of NCMC solution
	o Settlement of inter-bank transactions
	o Pricing for inter-bank transactions

8 Certifications & Compliances

The table below provides an overview of the certifications required for an Acquirer and Issuer Bank. These certifications will be done as per the latest specifications prevalent during the implementation.

8.1 Issuer Bank Certification Requirements

S. No.	Product/ System	Role in payment eco-system	Certification Type	Followed Guidelines
1	Card	Issuance	Physical Card	EMVCo
2			NCMC Application	NCMC
3			White Plastic Certification	NCMC
4	Issuer Host	Transaction processing by Issuer Bank	Issuer Host Certification	NCMC
5	Central Clearing House Certification (CCH)	Clearing and settlement	CCH Certification	NCMC

8.2 Acquirer Bank Certification Requirements

S.No	Product/ System	Role in payment eco-system	Certification Type	Followed Guidelines
1	Acquirer Host	Transaction processing by acquirer	Acquirer Host Certification	NCMC
2	Central Clearing House Certification (CCH)	Clearing and settlement	CCH Certification	NCMC

8.3 ETIM/Terminal Certification Requirements

S. No.	Product/ System	Role in payment eco-system	Certification Type	Followed Guidelines
1	Terminal	Acceptance	Hardware Level requirement (L1)	EMVCo
			Terminal Kernel- (Contact L2)	EMVCo
			Terminal Kernel- (Contactless L2)	NCMC
			Terminal Application (L3)	NCMC

9 Commercial Pricing

The commercial pricing structure for RuPay - NCMC will remain similar to any bank issued payment card. There are two types of transactions namely ON-US transaction and OFF-US transaction as described below:-

○ **ON-US Transaction** are transactions where Issuer and Acquirer Bank are same. Hence, these transactions are not routed via Payment Scheme switch.

○ **OFF-US Transaction** are transactions where Issuer and Acquirer Bank are different. These transactions are routed via Payment Scheme switch.

In case of OFF-US transaction, the commercial pricing structure will consist of following components:-

○ **Merchant Discount Rate (MDR)/Transaction Fee** payable by Merchant to Acquirer Bank is a fee charged by the Acquirer Bank to the Merchant for accepting payments from customers through credit/debit/prepaid card.

  It is to be noted that in case of debit card, RBI has defined the guidelines with upper limit on MDR. In case of credit and prepaid card, it is as per the individual negotiation between the Acquirer Bank and merchant.

○ **Interchange Fee** payable by Acquirer Bank to Issuer Bank is the fee paid by the Acquirer Bank to card Issuer Bank for each card transaction. This fee will be as per the prevalent circular floated by card scheme from time to time.

○ **Switching Fee** payable by Issuer and Acquirer to Payment Scheme is the fee charged by card scheme to facilitate the inter-bank transactions. This fee will be as per the prevalent circular floated by card scheme from time to time.
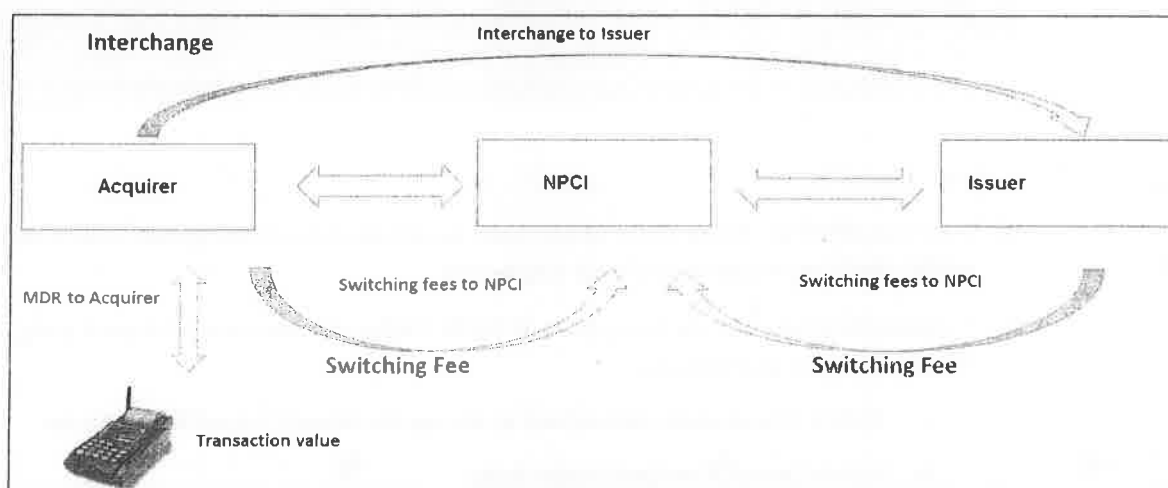
10 NCMC Ecosystem Pilot at Delhi Metro Rail Corporation (DMRC)

In order to showcase the entire NCMC ecosystem for digital fare collection along with indigenized Gates, AFC and Validators, the pilot has been done at Delhi Metro across few stations. The pilot at DMRC was initiated by MoHUA on Jan 31st, 2019. This has been done in collaboration with CDAC, BEL, NPCI and SBI (as an Acquirer Bank). Under this pilot, NCMC based Gates, Validators and AFC has been deployed across few stations of DMRC and RuPay Contactless Debit Cards with NCMC has been issued to a closed user group for testing. The settlement between Acquirer and Issuer Banks is being done by NPCI.

10.1 Roles & Responsibilities of Involved Stakeholders

The pilot implementation ecosystem consists of following stakeholders:-

Stakeholders	Roles and Responsibilities
DMRC	o DMRC is a public transport authority for implementing NCMC solution at identified metro stations in Delhi.
CDAC	o CDAC has provided the indigenous AFC system based on NCMC standards.
BEL	o BEL has provided the EMV compliant NCMC based validators and gates to support offline purchase transactions at metro station entry/exit gates.
Acquiring Bank	o SBI is the acquiring bank and responsible for presenting all online as well as offline transactions to NPCI for settlement.
Issuing Bank	o Issuing Banks are responsible for issuing cards through branches as per regular process.
NPCI	o NPCI is responsible for settlement of all the inter-bank transactions received from acquirer.

10.2 Key Highlights

a) Banks certified on RuPay Debit NCMC have issued cards to closed group users from CDAC, BEL, DMRC, NPCI and Issuer Banks' own employees.

b) Following transactions are being done at DMRC Metro stations under this pilot using NCMC cards issued by any certified banks:-

   o Online Money Add transactions to top-up the Stored Value/Offline Wallet

   o Online Service Creation transactions

   o Offline purchase transactions using Stored Value at Metro station

   o Offline balance enquiry to know the balance in Stored Value

10.3 Launch of One Nation One Card

Marking the beginning of a new era of payment segment, Hon'ble Prime Minister Narendra Modi launched 'One Nation One Card' as a part of NCMC Eco-system in Ahmedabad on 4th March, 2019.

This card is based on RuPay NCMC specification and aimed at providing seamless digital payments across various use cases including metro, bus, suburban railways, toll, parking, smart city, retail and other use cases.

11 RuPay – NCMC Proliferation Strategy

The first NCMC project went live in Jun 2017. Post that, many operators from Transit and Smart Cities segments have been on-boarded for NCMC based fare collection system or common card payment system. However, the penetration of NCMC card has not picked up significantly due to various challenges associated with involved stakeholders. In this regards, a holistic approach is required across target segments to enable the faster and higher penetrations of NCMC cards across India. With the key proposition of One Card for all Payments; the higher penetration of NCMC cards will help to drive the digital adoption in payment space across the country.

This section talks about the proliferation strategy in Transit, para-transit and retail segments to drive the adoption of RuPay - NCMCs at a faster pace in an effective manner. This requires the cohesive support from all involved stakeholders including Operators/Merchants, Financial Institutions, Payment Scheme Network and Government.

11.1 Transit Segments

This segment covers various public transport systems including metro, buses and suburban railways. As described in Section 6 of this document, NCMC implementation across these public transport systems include following key aspects:-

- o **AFC system including backend and Terminals/validators/ETIM devices as per NCMC specification** – Currently, Operators are managing the fare collection system either in-house or through AFC system provided by System Integrator. For operators managing the AFC system through System Integrator, the NCMC implementation requires required up-gradation as per NCMC specification. Whereas, for operators managing the AFC system in-house, the AFC system need to be developed accordingly and should support the transactions done using RuPay - NCMCs.

- o **NCMC certified partner banks** as an Acquirer Bank and Instant Issuer Bank (if required)

The roles & responsibilities of involved stakeholders for NCMC proliferation across Transit segments are as covered in this section.

11.1.1 Role of Operators

The approach of operators will be driven by the project type – Greenfield or Brownfield projects, as described below.

- o **Greenfield Projects** – These are new projects built from scratch and it does not have the constraints in terms of legacy infrastructure. These projects require fresh procurement of devices, software and fresh installation of set up. The upcoming BRTS/Urban mobility Projects are covered under such projects. For all such projects, the operator should directly go ahead with the implementation of digital fare collection in line with NCMC specification. This would enable the NCMC acceptance from day 1 and also avoid any financial implication to the operator on account of existing system up-gradation to NCMC based system at a later stage.

- o For Greenfield projects, the operator should procure the devices including terminal/validator/ETIM devices as per NCMC specification.

- o For acquiring and card issuing purpose, the operator should follow the multi-banks acceptance scenario (as described in Section 6) wherein the customers should be able to use RuPay - NCMCs issued by any bank.

o **Brownfield Projects** – Such projects are operational & carry the legacy of closed loop ecosystem. The NCMC implementation in such projects require the replacement/up-gradation of existing terminal/validator/ETIMs as per NCMC specification. This may involve certain investment on account of infrastructure up-gradation. Government support for such projects will help to expedite the NCMC proliferation in this segment.

- o **For all such projects, the future extensions should be done in line with NCMC specification.**

- o Operators should discuss with existing vendors for up-gradation of existing devices to enable NCMC acceptance. PTO may also consider the replacement of existing devices with NCMC compliant devices in phase wise manner with buyback of existing devices.

- o For acquiring and card issuing purpose, the operator should follow the multi-banks acceptance scenario (as described in Section 5) wherein the customers should be able to use RuPay - NCMCs issued by any bank.

o **Concept of Centralized/Zonal AFC** – At present, the operators have deployed the AFC infrastructure at the individual level. The AFC infrastructure deployment may not be possible for small scale operator on account of the cost involved. The provision for Centralized/Zonal AFC will help to enable the acceptance of RuPay - NCMCs across all public transport operators (small as well as large scale).

The model architecture for Centralized/Zonal AFC in case of SRTUs has been shown below.
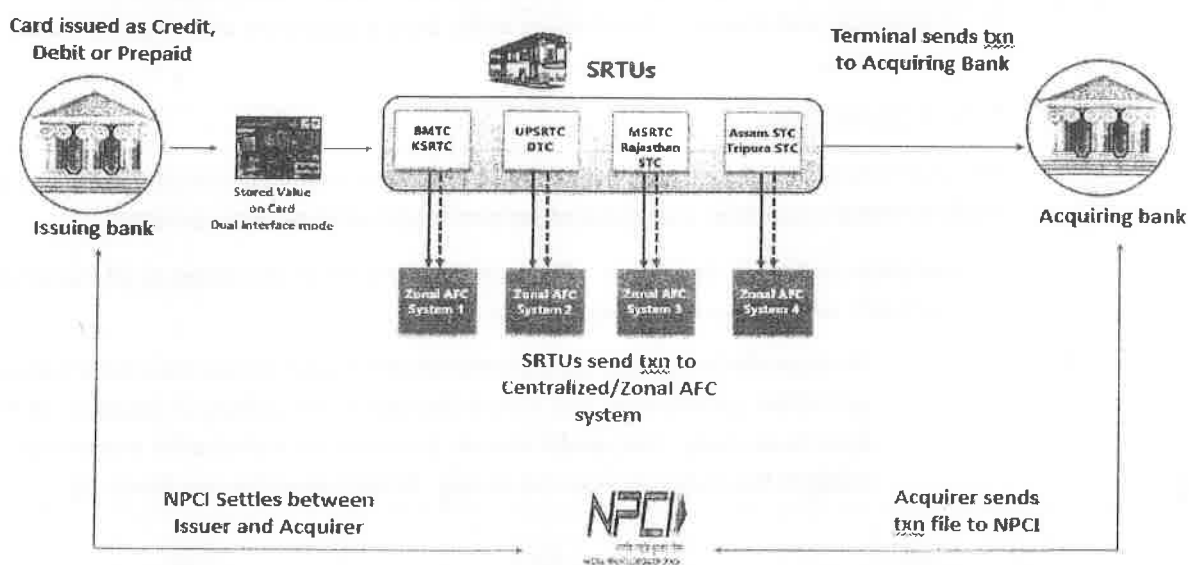
In case of Centralized AFC System, there will be a single AFC System across all SRTUs. This will act as a plug n play system for all SRTUs. In case of Zonal AFC System, the AFC System will be at the regional or zonal level. This will act as a plug n play system for all SRTUs under that region. This Zonal AFC System may be managed by a representative SRTU of the respective region.

Centralized/Zonal AFC model offers the savings on account of AFC system deployment cost by individual operators. This will also offer the matured system with best practices across various operators. This will further help in faster implementation of digital fare collection.

11.1.2 Role of Banks

All Banks need to support the vision of NCMC implementation from issuance and acquiring related aspects based on multi-banks acceptance scenario as detailed out in Section 5 of this document.

○ **Banks certified on NCMC platform should issue NCMC Debit/Credit cards as default debit/credit cards to the customers.** To start with, Bank should go ahead with RuPay debit/credit card issuance in cities where NCMC based transit projects are operational or under implementation. This needs to be further extended across all potential cities of India. This will help to eliminate the extra effort by PTO or partner bank on account of transit project specific card issuance.

○ The transaction charges payable by PTO to the Acquirer Banks should be nominal and in line with Industry practice. Customer should not be burdened with extra cost for issuance of cards.

11.1.3 Role of Card Scheme

The role of card Scheme will involve following key activities:-

○ Settlement of inter-bank transactions done using RuPay - NCMCs.
○ Provide hand-holding support to all operators for NCMC implementation.
○ Interaction with involver stakeholders in the transit ecosystem and onboard them for NCMC specification.

11.1.4 Role of Government

The government has a key role in enabling the NCMC proliferation across the country by providing implementation mandates and financial support to all transit project operators.

○ **Mandates to Transit Operators** – Government should issue **mandates to all transit operators for NCMC adoption** as mentioned below:-

   ○ For Greenfield projects, the operator should deploy all the required infrastructure as per NCMC specification and ensure the digital fare collection based on NCMC based open loop cards. The model should be based on multi-banks acceptance scenario wherein the customer may use RuPay - NCMCs issued by any Bank.

- For Brownfield projects, the operator should ensure the future extensions in line with NCMC specification. Also the up-gradation of existing system should be planned in a time-bound phase-wise manner.

o **Financial Support to Transit Operators** – In view of the financial conditions of operators across the country, the government should consider provision of the financial support to concerned operators to ensure the NCMC proliferation across the country. The financial support may be provided on following items:-

Particulars	Greenfield Projects	Brownfield Projects
AFC Deployment	-	o Required for operators managing the fare collection in-house and not having AFC system o Centralized/Zonal AFC system may be a potential solution for operators across the country
Terminal/Validator/ Device Up-gradation	-	o Cost involved in up-gradation/replacement of existing devices with NCMC compliant devices
Subsidy on MDR/ Transaction Charges payable by Operator to Acquirer Bank	o Subsidy on transaction charges payable by Operator to Acquirer Bank for transactions done using RuPay - NCMCs for a defined period	o Subsidy on transaction charges payable by Operator to Acquirer Bank for transactions done using RuPay - NCMCs for a defined period

o **RBI KYC norms for Transit Segments** – Basis the customer profile using the transit segments, there are significant number of customer who do not fulfill the criteria of Full KYC/Minimum KYC norms as per RBI regulation. Hence, the NCMC adoption is not getting proliferated across these customer segments. In view of the same, there is a need to relax the KYC norms for such customer segments. This segment may have a reduced upper limit on total transaction value as compared to that of minimal/full KYC customers. These customers may further get upgraded to minimum/full KYC based on applicable RBI KYC norms.

11.2 Retail Segments

With the proposition of 'One Card for all Payments', the RuPay NCMC has a huge potential for retail segment. As per RBI existing KYC norms, these cards may be used in contactless mode without 2nd