

RFP for Selection of Financial Institution for Open Loop Smart Card Common City Payments System



**Surat
Municipal
Corporation**



Selection of Financial Institution for Providing Smart Card Based Eco System for Unified City Payments Including Mobility, Recreational and Amusement Areas of SMC, Municipal Bills, Utility Payments, Retail and Other Payments within Surat City

PART 2 – SCOPE OF SERVICES AND TECHNICAL SPECIFICATIONS



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EXECUTIVE SUMMARY

Surat Municipal Corporation (SMC) has a unique vision to empower residents and visitors of Surat city to look at a new paradigm of payment and identification. The project which was trialed earlier now is gaining momentum and under the 'Smart Cities' initiative from government of India, SMC wishes to showcase this project to the nation. The project named 'City Payment Card' is a unified payment and identification mechanism riding on the popularity of contactless card technology. It aims to simplify the life for all residents and visitors of the city by addressing common issues such as lack of proper change while making payments, high queuing times at public places to access amenities and the need to carry multiple cards for identification, membership etc.

The Co-branded card itself would be available in two broad categories –Prepaid card and debit / credit card. The prepaid cards can be non-personalized general cards or personalized cards. Further, there should be flexibility to ensure targeted benefits for groups such as students, senior citizens, Economic Weaker Section (EWS), SMC employees, tourists or other concession groups as defined by SMC from time to time. The card once issued would contain all pertinent information related to the cardholder and permit them to use the card for making payments and establishing identity and membership status at select facilities along with provision of mobile wallet for cashless electronic transfer and for card to card transfer using mobile wallet. SMC also envisages concepts like cashback and rewards to accelerate the acceptance of these cards in the city.

To provide the best of services to the residents and visitors, SMC wants to attract the best of talent from leading financial institutions who have rich experience in running similar initiatives. The implementation plans hence would be tendered and the party which meets all relevant requirements with the highest total financial score would be awarded the contract. The parties who respond to the RFP are expected to manage the entire program end-to-end including supply of manpower, related equipment such as printers, access control gates etc.

In the entire City Payment Card ecosystem, SMC is at the core of the structure as service provider. The Financial Institution along with their technology/ consortium partner(s) (if any) would act as card issuer and reload agent and would be the party which responds and wins this tender, referred to as FI throughout this document. IBM functioning as the Project Management Consultant (PMC) is the third and final member of the ecosystem. The Automated Fare Collection System (AFCS) for BRTS and city buses have been awarded to NEC Corporation and will be considered within SMC scope for this document.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
TABLE OF CONTENTS	2
TABLE OF FIGURES	4
1 INTRODUCTION	5
2 CITY PAYMENT CARD ECOSYSTEM	6
2.1 OVERARCHING PRINCIPLES	6
2.2 AS-IS SITUATION ASSESSMENT	8
2.3 TO-BE SITUATION ASSESSMENT	8
3 FUNCTIONAL SPECIFICATIONS	11
3.1 INITIAL ROLL-OUT AND ADOPTION	12
3.2 TYPES OF CARDS AVAILABLE FOR CITIZENS	13
3.3 VALIDATORS/POS TERMINAL TYPES	16
3.4 USAGE POINTS	17
3.4.1 <i>Unique Financial Applications</i>	17
3.4.2 <i>One-time entrance fee / charges</i>	17
3.4.3 <i>Merchant Financial Use Cases</i>	18
3.4.4 <i>Validation/Authentication only</i>	18
3.4.5 <i>Non-Functional Requirements</i>	19
3.4.6 <i>Card Data Migration Requirements</i>	20
3.4.7 <i>Scope of Work/Roles and Responsibilities</i>	20
4 KPIS AND MIS REQUIREMENTS	24
4.1 KEY PERFORMANCE INDICATORS	24
4.2 SERVICE LEVEL AGREEMENTS	26
4.3 MIS REQUIREMENTS	26
5 TECHNICAL SOLUTION	27
5.1 REFERENCE SYSTEM ARCHITECTURE	29
5.2 NETWORK & INFRASTRUCTURE REQUIREMENTS	30
5.3 INTEGRATION REQUIREMENTS WITH OTHER SYSTEM	32
6 PROJECT IMPACT	33
6.1 SOCIAL	33
6.2 ECONOMIC	34
6.3 ENVIRONMENTAL	34
7 ENDING NOTES	35
APPENDIX I	36
APPENDIX I.I - CARD ISSUANCE PROCESS	36
APPENDIX I.II - CARD LOADING PROCESS	40
APPENDIX I.III - AUTHENTICATION USAGE PROCESS	43
APPENDIX I.IV - PAY AND ACCESS USAGE PROCESS	45

APPENDIX I.V - BRTS CASH LOAD USAGE PROCESS.....	48
APPENDIX I.VI - BRTS USAGE PROCESS	51
APPENDIX I.VII - PAY ONLY USAGE PROCESS	54
APPENDIX I.VIII - MEMBERSHIP USAGE PROCESS	57
APPENDIX I.IX - TRANSPORT USAGE PROCESS	60
APPENDIX I.X - MOBILE USAGE (WI-FI) PROCESS	63
APPENDIX I.XI - MOBILE VALIDATOR USAGE PROCESS DIAGRAM	66
APPENDIX I.XII - CASHBACK SCENARIO PROCESS DIAGRAM	69
APPENDIX I.XIII – RETAIL PAYMENT PROCESS DIAGRAM	72
APPENDIX I.XIV – REFUND SCENARIO PROCESS DIAGRAM	75

TABLE OF FIGURES

FIGURE 1 - A SIMPLE CONTACTLESS CARD AND READER	5
FIGURE 2 - OVERARCHING PRINCIPLES	6
FIGURE 3 - ECOSYSTEM	7
FIGURE 4 - LIFECYCLE OF CARD USAGE FOR CITIZENS	11
FIGURE 5 - ADOPTION LIFECYCLE	12
FIGURE 6 - CITY PAYMENT CARD FRONT DESIGN	13
FIGURE 7 - GENERAL CITY PAYMENT CARD (GRAY IN COLOR)	14
FIGURE 8 - PERSONALIZED CITY PAYMENT CARD	15
FIGURE 9 - READERS AND VALIDATORS TYPES	16
FIGURE 10 - CITY PAYMENT CARD REFERENCE SYSTEM ARCHITECTURE	29
FIGURE 11 - CITY PAYMENT CARD INTEGRATION COMPONENTS	32
FIGURE 12 - SOCIAL IMPACT OF DIGITAL CURRENCY	33
FIGURE 13 - ECONOMIC IMPACT OF DIGITAL CURRENCY	34
FIGURE 14 - ENVIRONMENTAL IMPACT OF DIGITAL CURRENCY	34
FIGURE 15 - PHASED APPROACH	35
FIGURE 16 - CARD ISSUANCE PROCESS	36
FIGURE 17 - CARD LOADING PROCESS DIAGRAM	40
FIGURE 18 - AUTHENTICATION USAGE PROCESS DIAGRAM	43
FIGURE 19 - PAY AND ACCESS USAGE PROCESS DIAGRAM	45
FIGURE 20 - BRTS CASH LOAD USAGE PROCESS DIAGRAM	48
FIGURE 21 - BRTS USAGE PROCESS DIAGRAM	51
FIGURE 22 - PAY ONLY USAGE PROCESS DIAGRAM	54
FIGURE 23 - MEMBERSHIP USAGE PROCESS DIAGRAM	57
FIGURE 24 - TRANSPORT USAGE PROCESS DIAGRAM	60
FIGURE 25 - MOBILE USAGE (WI-FI) PROCESS DIAGRAM	63
FIGURE 26 - MOBILE VALIDATOR USAGE PROCESS DIAGRAM	66
FIGURE 27 - CASHBACK SCENARIO PROCESS DIAGRAM	69
FIGURE 28 - RETAIL PAYMENT PROCESS DIAGRAM	72
FIGURE 29 - REFUND SCENARIO PROCESS DIAGRAM	75

1 INTRODUCTION

Surat Municipal Corporation (referred to as SMC henceforth), has a unique vision of digitizing their city-wide services. Payment digitization is one of the first and most important steps involved in empowering their citizens to experience world-class facilities where the said payment instrument can be used in multiple locations. The system is envisaged to bring significant ease to citizens by way of paying electronically using a smart card for all city services including transport, municipal services like library, swimming pool, community hall, entertainment and amusement park, parking, bill payments, utility payments, etc.

The overarching idea of the City Payment Card is to use a single payment instrument for all city-wide services. This would also facilitate to integrate mobility systems across the city with other services.

The end-to-end ecosystem associated with City Payment Card is captured and the key entities and processes associated with the program are documented. The City Payment Card would work at designated touch points in conjunction with a contactless card reader. When the customer waves the card at the reader, the transaction is performed in a matter of a few seconds and this would help prevent queuing up at the usage points.



Figure 1 - A simple contactless card and reader

The concept of City Payment Card is 'EMV based open loop payment cards' which are interoperable owing to widespread usage and reliability of EMV standards.

The underlying specifications for the card would be EMV-compliant cards on ISO 14443/ISO18092/ISO7816 standards.

2 CITY PAYMENT CARD ECOSYSTEM

2.1 Overarching Principles

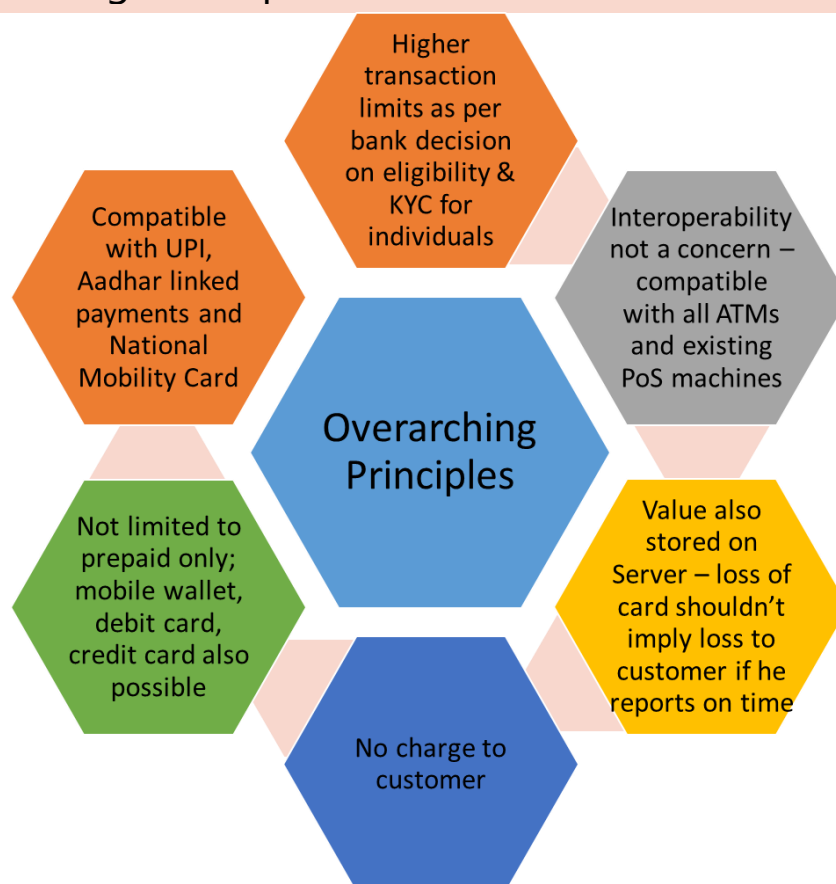


Figure 2 - Overarching Principles

By opting for an open loop payment processing, the cards will become cash accessible, the card holder may be able to access funds through an ATM or at a PoS (Point of Sale). Multi-purpose cards may be anonymous or personalized. It simplifies the purchasing processes with minimum credit risk to the card holder.

- 1) Interoperability - Being open standard based, the cards can be used across all transit modes along with other municipal services like tax payments, library/ swimming pool membership, one-time entrance fees, etc. These are solutions where cards are issued to card holders by multiple issuing entities and are accepted at multiple locations not necessarily belonging to SMC only. The solution provides interoperability amongst the members who subscribe to this solution and becomes a part of the payment network.
- 2) No loss to personalized card holders if the card is lost as the value is also stored on server if customer reports the loss on time to financial institution to block the card.
- 3) The cards are provided free of cost to customers without any recurring monthly or annual charges.

- 4) The eco system to include Prepaid Cards, co-branded debit/credit card, mobile wallets and NFC enabled mobile payments, thus future-proofing the solution.
- 5) With RuPay as the preferred scheme, the solution to be compatible with UPI, Aadhar linked payments and National Mobility Card initiatives.
- 6) Higher transaction limits as regulated by RBI or any other regulating agency norms based on the type of.

The following diagram illustrates the City Payment Card ecosystem and the various players involved in it.

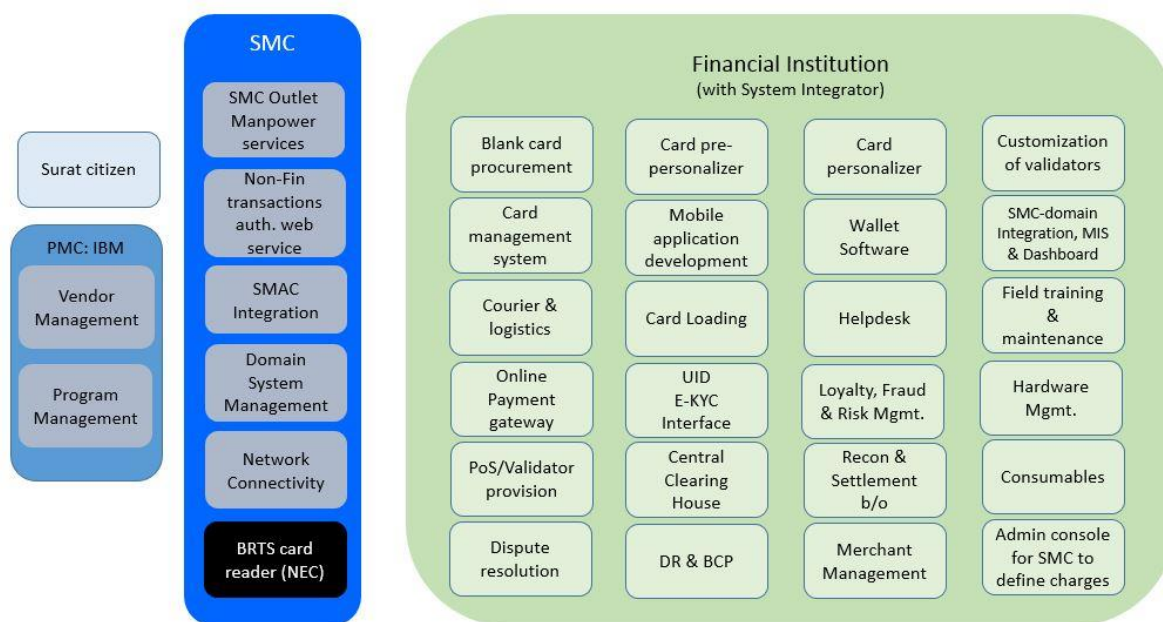


Figure 3 - Ecosystem

SMC intends to tender out the entire system to a qualified financial institution. The operating model involved is 'Build – Operate – Transfer'. The selected vendor would be entirely responsible for running the program with a SMC appointed PMC to oversee the operations and manage the evolutionary progress of the ecosystem. The FI shall design, develop and maintain the open loop smart card top-up channels and e-payment services. The FI shall design, develop and be responsible for the maintenance and management of required systems.

It is envisaged that the rollout of the cards and associated services would be staggered to gain a steady and confident approach amongst card users. Financial Institution envisaged will be responsible for activities mentioned under its purview.

2.2 As-is situation assessment

As of October, 2016, the ecosystem for smart cards does not exist as the tendering process is still in works. SMC has decided to go for the open loop card system consistent with MoUD approach towards National Mobility Card system. The AFCS contract has been awarded to NEC Corporation which will be responsible to develop the AFCS ecosystem at SMC BRTS and city bus.

2.3 To-be situation assessment

The following are the processes defined for the City Payment Card ecosystem:

I. Card Issuance

The customer can request for a new card. This is the first step where the customer approaches the designated City Payment Card issuance outlet and applies for the card. General cards are issued without personalization at FI outlets, retail outlets and BRTS terminals. Personalized cards to be issued by FI from both SMC premises as well self-managed outlets. FI to capture details as per standard KYC norms and will also capture other information as finalized by SMC like property tenement ID, library membership number, swimming pool membership number, etc. for personalized cards as and when required. All the personalized cards need to be mandatorily linked to Aadhar card (UID/KYC). Only one personalized card to be issued per customer. Lost/ Damage cases need to be handled by FI as per its standard practices for reissuing of personalized cards. The manpower for such tasks would be managed by FI.

II. Card Loading

This is the process which defines how customer loads money into the card by approaching loading points (operated by FI/its affiliates or SMC/SMC affiliates). The manpower for such tasks would be managed by FI or SMC/SMC affiliates.

III. Authentication Usage

When required, one of the use cases for the City Payment Card is authentication like attendance in SMC premises. The FI will enable storing the employee number on the card and will provide necessary access mechanism so that the attendance devices to be placed by SMC can read the employee no. while card is tapped.

IV. Pay and Access Usage

This process deals with customers using facilities like Aquarium or Science Centers and paying for the same with their City Payment Cards.

V. BRTS Cash Load Usage

This process is different from what is mentioned in (ii) because here the cash is collected by BRTS employees (SMC) and not FI/retailers. This cash needs to be accounted for at the backend with FI.

VI. BRTS Usage

One of the use cases where the process flow relies on validators procured from AFC vendor. The centralized FI software would need to communicate with these validators. The certification of these validators would be a joint responsibility of FI along with AFC vendor. FI should comply with the business rules set by AFCS.

VII. Pay Only Usage

This process exists in scenarios where only payments are made without the need for any doors to be opened or entries and exits to be recorded. Typical scenario is payment of taxes/bills at civic centers.

VIII. Membership Usage

This process is mainly for pre-paid membership services such as library, swimming pools, etc.

IX. Transport Usage

This business process would be defined by AFCS service provider and the FI's system should integrate with AFCS. Typical use case scenario is a city bus which does not have a regulated path like BRTS.

X. Mobile Usage (Wi-Fi)

This process pertains to users who want Wi-Fi access codes and can pay for the same using City Payment Cards/e-wallet.

XI. Mobile Validator Usage

This process is for enforcement agents appointed by SMC who have a mobile device to check the card for usage at designated spots and levy fines should a situation arise.

XII. Cashback Scenario

This process defines the cashback scenario where customers get money back into their cards. Similar to cashback scenario, loyalty points to be accumulated in card account of the customer.

XIII. Retail Payment

This process defines end-user availing cash-free shopping service using City Payment Card.

XIV. Refund Scenario

This process defines end-user returns his card and wants to get the amount refunded to him in his card linked bank account/cash.

These process flows have been discussed in detail in Appendix-I to serve as guidance to FI. Implemented process flows should be flexible to incorporate changing business requirements.

The principal point to be noted are as follows:

- 1) Authorized financial institution will be responsible for issuing the personalized City Payment Cards. Financial institution will develop, operate and maintain card management system to cover card procurement, card pre-personalization, personalization, issuance, dispatch & delivery.
- 2) Financial Institution to be also responsible for supplying general cards (non-personalized) to the people in Surat. These cards would be available at various touch-points in the city. Additionally, financial institution to ensure that these cards are present at all BRTS terminals along with other major PoS in Surat. This would ensure widespread adoption of the ecosystem.
- 3) Financial institution to be responsible for cash management, reconciliation and settlement activities, provision, and customization of validators. Customization of validators to be done by FI jointly with the AFCS service provider.
- 4) Financial institution to be central and focal point for all activities/card operations – both payment and non-payment transactions. Financial institution will be responsible to develop an authentication mechanism and maintaining MIS for all non-payment transactions and extend access to non-financial transactions data to SMC for its employee attendance record or any other purpose as and when asked by SMC.
- 5) Financial institution to be responsible for developing the retail ecosystem for City Payment Card at a healthy pace. FI will be responsible to take decisions related to declaration of loyalty programs and various schemes for City Payment Card on time-to-time basis throughout the contract period.
- 6) The financial institution will also deploy their resources in the project as required. This includes managing helpdesk for card issuance, dispatch and delivery, field training, hardware management, fraud and dispute management.

3 FUNCTIONAL SPECIFICATIONS

The City Payment Card initiative aims to provide the citizens of Surat with an easy to use payment instrument with the convenience of “tap and go”. The underlying technology being considered is contactless smart card. At the same time, the City Payment Card initiative intends to include mobile wallets, NFC enabled smartphones and co-branded contactless cards which ride on popular schemes such as RuPay (preferred), MasterCard and Visa.

The illustration below shows the concept at a high level:

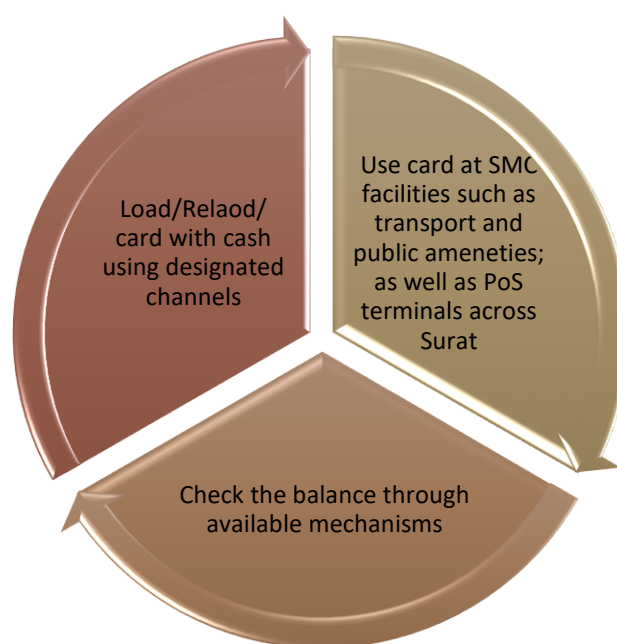


Figure 4 - Lifecycle of card usage for citizens

Financial Institution will be the primary issuer of the card in association with other relevant stakeholders as detailed in the document. Financial institute will be responsible for card management system and it will be backbone of all activities associated with payment activities within SMC limits.

The last but most important point for the City Payment Card/wallet/co-branded cards is that personalized cards would only be issued to citizens who are already enrolled in government of India's UID initiative. In other words, the personalized card would only be issued to customers who currently possess a valid Aadhaar card.

Customers who do not have an Aadhaar card (UID) would have to use a general card (non-personalized) or apply for the Aadhaar card at SMC/designated government department.

3.1 Initial roll-out and adoption

The City Payment Card project is expected to be a build-operate-transfer model awarded to the most deserving vendor. Once the vendor completes the build and goes live, customers would start getting on-boarded on the new platform. The graph below depicts the scenario for adoption.

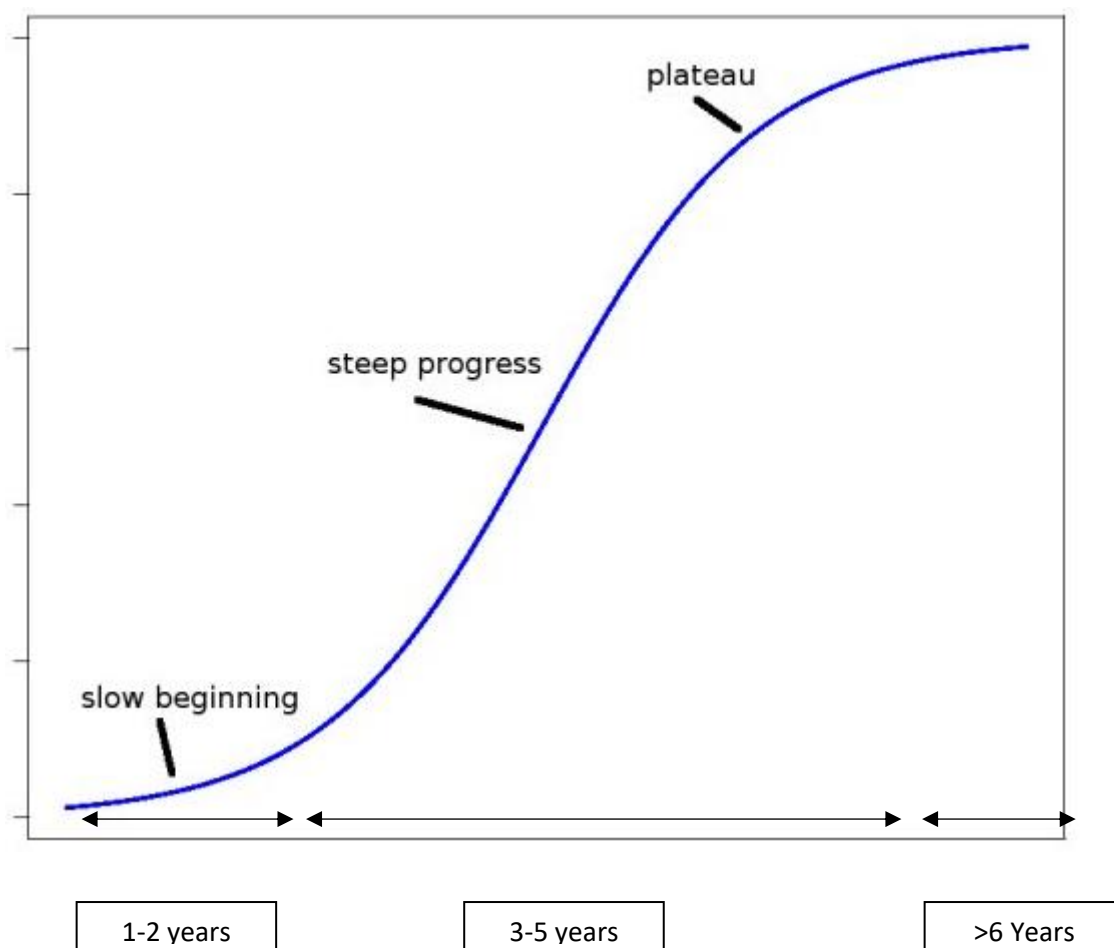


Figure 5 - Adoption Lifecycle

The expected coverage at the end of 5 years from the launch is around 85% of the households in Surat City. This pertains only to personalized cards for family members in the households. General cards would be issued by FI in parallel. The expected growth rate of card adoption is expected to overtake the population growth rate during the 'steep progress' phase.

3.2 Types of cards available for citizens

The City Payment Card and the add-ons such as mobile wallets, NFC enabled mobile phones and co-branded debit and credit cards would be available in the following flavors to the citizens of Surat. A possible construct of the card is given below along with the basic elements, to be finalized by FI with SMC:



Figure 6 - City Payment Card front design

- | | |
|--|--|
| A – Type of card placeholder | B – Card No. of the cardholder |
| C – Name of the cardholder (N/A for general cards) | D – Card expiry MM/YY |
| E – Contactless card symbol | F – Photograph of cardholder (N/A for general cards) |
| G – Banking partner logo | H – SMC logo |

The length of card number for all City Payment Cards will be defined by FI. The number scheme should have provision to segregate City Payment Card users.

The back of the card which includes magnetic stripe will be designed by the financial institution as per their standard practices like terms and conditions, customer service call, toll free number, etc. and submitted to SMC for approval.

General/ Non-Personalized Cards:

a) On-Spot cards

These cards are issued to temporary residents of Surat who wish to access some of the common facilities such as public transport and parking infrastructure within the city. Complete list of services accessible by City Payment Cards and support for various cards would be documented in section 4.4 of this document.

The primary difference between the general and other cards is that the general card is not personalized for any individual and can be issued instantly at the designated outlets in Surat City.

For the <CATEGORY> entry, ON-SPOT will be printed in this card.



Figure 7 - General City Payment Card
(Gray in color)

b) Tourist Cards

Specialized general cards are also being envisaged where a variant would be available for tourists/visitors. These cards are issued to tourists and temporary visitors of Surat who wish to access SMC services, public transport and parking infrastructure. CMS system should be able to handle card validity for a daily/weekly cards issued to visitors and also able to support bundled offers like 2 visit to science museum, 3-day pass for BRT and city bus, one visit to nature park, one visit to amusement park for an assumed bundled value of 500. To promote tourist cards in Surat aligned with Gujarat Tourism objective, financial institution has to come up with combo offers and marketing schemes in accordance with guidance from SMC.

For the <CATEGORY> entry, TOURIST will be printed in this card.

Personalized Cards:**a) Standard cards**

The standard card and three other cards detailed below come under the category of "personalized cards". These cards cannot be issued instantly to the customer. Instead, the customer data is captured at the touch-points and the citizens would receive the cards after a pre-defined period of time.

The standard cards are issued to citizens who are above the age of 18. These cards would serve as a general card and most of the services would be availed by the cardholders at the prescribed rates.

For the <CATEGORY> entry, STANDARD will be printed in this card.



Figure 8 - Personalized City Payment Card

b) Child/Youth Cards

These cards are issued to residents of Surat who are below the age of 18. The holders of this card would be eligible for certain special prices at all the available access points. This will ensure that once the cardholder turns 18, they would be prompted to acquire an adult card from FI touch points. For the <CATEGORY> entry, CHILD/YOUTH will be printed in this card.

c) Senior Cards

These cards are issued to residents of Surat who are above the age of 60. This card would give the cardholders special rates at most of the touch points including buses, public libraries, and venues such as science centers, etc. For the <CATEGORY> entry, SENIOR will be printed in this card.

d) Concession Cards

These cards are issued to residents of Surat who meet a certain criterion such as 'Lower Income group'. The aim of this card would be to bring social inclusion for the cardholders along with the ability to offer differential pricing on a regular basis. This card can also be issued to especially-abled citizens. For the <CATEGORY> entry, CONCESSION will be printed in this card.

Further, there should be algorithms embedded to ensure targeted benefits for groups such as students, senior citizens, EWS, SMC employees, tourists or other concession groups as defined by SMC from time to time.

Note: All personalized cards to be issued subsequent to standard KYC by bank along with Aadhaar authentication. Aadhaar authentication will also help determine the age of the applicant to check eligibility for issuance of Child/Youth Card or Senior Card.

3.3 Validators/PoS Terminal types

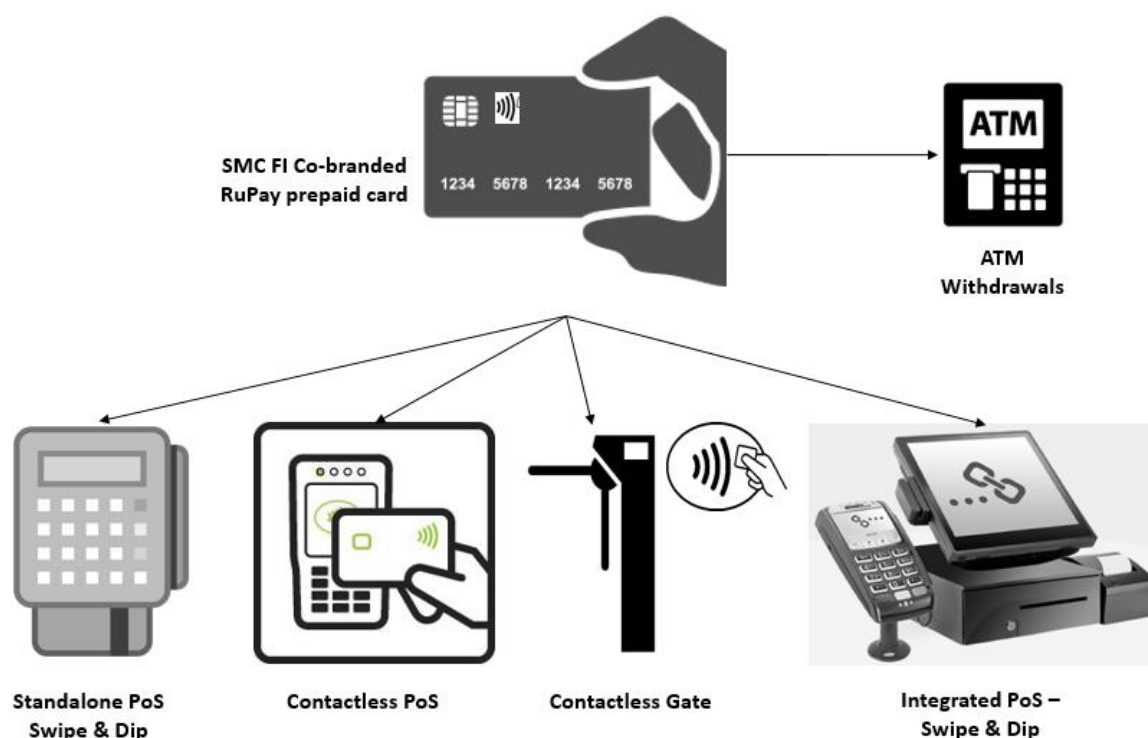


Figure 9 - Readers and Validators types

Standalone PoS Swipe & Dip/ PoS machines for add value, card issuance

Traditional PoS terminal which can have swipe and dip functionality for EMV cards. Connects to bank switch via mobile data or landline telephone (modem based). Can be loaded with custom applications for supporting non-payment transactions similar to loyalty points enquiry, etc.

Contactless PoS

The bank to issue a three-in-one POS to accept contactless payments in addition to contact and Magstripe modes. However, in certain situations, only contactless payments make it more efficient to handle transactions (limit for PIN-less transactions is INR 2000 per RBI). Battery operated PoS have to be used. These are used for ticketing in city bus, nature park, science museum and can be extended to auto rickshaws and taxis too.

Contactless Gate

These validators would sit on turnstiles for public transport and one time entrance fee payments like Science Centre, Nature Park, Aquarium, etc. The validators to have provision to read QR-code based tickets along with City Payment Cards.

Integrated PoS – Swipe & Dip

These do not require separate key-in of amount on PoS as the amount would flow directly from billing software to machine. They can also be used for non-financial transactions such as library and swimming pool. Turnaround time is lot quicker here. May accept contact, Contactless and Magstripe transactions.

3.4 Usage Points

The usage points are classified into the following categories:

- Unique Financial Applications
- One-Time Entrance fee
- Merchant Financial Use Cases
- Validation/Authentication only

3.4.1 UNIQUE FINANCIAL APPLICATIONS

Sr. No.	Type of Application / Location	Cards permitted
1	Library and swimming pool membership	Personalized only
2	BRTS	Both personalized and general cards
3	Multi-level Parking & other Pay & Parks	Both personalized and general cards
4	City Bus	Both personalized and general cards
5	City Civic Centre, Integrated Ward Office, Mobile Van & Field Payment Collection	Both personalized and general cards
6	Affordable Housing	Personalized cards

The process diagrams for these applications will be in accordance to Appendix-I.

3.4.2 ONE-TIME ENTRANCE FEE / CHARGES

Sr. No.	Type of Application / Location	Cards permitted
1	Gardens	Both personalized and general cards
2	Nature Park	Both personalized and general cards
3	Gopitalav	Both personalized and general cards
4	Science Centre	Both personalized and general cards
5	Water Sports	Both personalized and general cards
6	Auditorium	Both personalized and general cards
7	Aquarium	Both personalized and general cards
8	Amusement Park	Both personalized and general cards
9	Surat Wi-Fi	Personalized cards
10	Hospitals and Urban Health Centres	Both personalized and general cards

The process diagrams for these applications will be in accordance to Appendix-I. Swimming pool can have a 'pay-as-you-use' model or a membership based model. Both should be accommodated in the card management system of the financial institution.

3.4.3 MERCHANT FINANCIAL USE CASES

Sr. No.	Type of Application / Location	Cards permitted
1	Hotels	Both personalized and general cards
2	Hawkers	Both personalized and general cards
3	Shops & Malls	Both personalized and general cards
4	Auto-Rickshaw	Both personalized and general cards

The process diagrams for these applications will be in accordance to Appendix I. The given list is extendible to include more use cases in future.

3.4.4 VALIDATION/AUTHENTICATION ONLY

Sr. No.	Type of Application / Location	Cards permitted
1	SMC Employees	Personalized only
2	School Teacher	Personalized only
3	SAFAL	Personalized only
4	Anganwadi	Personalized only

The process diagrams for these applications will be in accordance to Appendix I.

3.4.5 NON-FUNCTIONAL REQUIREMENTS

The card management system of FI should be able to sustain the Non-functional Requirements like:

3.4.5.1 Security Requirement

- All security breach detections shall be confidential, and accessible only to users of the appropriate class and reported immediately to SMC.
- The system security shall provide features to maintain data integrity, including error checking, error monitoring, error handling and encryption.
- Validator-to-Smart Card communication shall be secured using multiple security keys and layers of information protection or encryption to mitigate risk against the possibility of being “hacked” or read by an unauthorized device. Vendor to provide information on proposed security methods in their Proposal submission.

3.4.5.2 System Resilience

- All equipment like Readers / Validators, ETMs, etc. should be reliable.
- Mean time between failures (MTBF) in operational hours
Minimum MTBF for On-board equipment
 - Validator - 10000 hours
 - Electronic Ticketing Machine (including printer) - 7000 hours
 - POS terminal - 7000 hours
- Service Support
 - Maximum time for providing support at site - 2 hours
 - Mean time to repair (MTTR) for all equipment - max up to 2 hours after which the equipment has to be replaced from the buffer stock.
 - Buffer Stock for all devices to be maintained at 10-12% of the requirements.

3.4.5.3 System Monitoring Requirement

- FI shall implement all necessary tools to monitor SLA parameters and generate reports (example availability, performance, downtime, usage, etc.) accordingly accessible to authorized SMC users.
- The system should be able to generate all types of reports which will be used to track status of Deployment, Technical and Operational SLA including parameters like Correctness of deployment, Capacity of Application, Transfer of transactions, etc. for monitoring of SLA.
- Application should have a web console which can be displayed in SMC command center (SMAC) and can be used by SMC operators for monitoring actions taken by FI on incidents.
- The FI should provide the following helpdesk performance monitoring reports:
 - a) Details of Calls logged on weekly, monthly or any other duration as specified by SMC
 - b) Numeric and graphical representation of calls logged at Helpdesk

3.4.6 CARD DATA MIGRATION REQUIREMENTS

A very important aspect which needs to be fulfilled by FI is Card Data Migration. Since the tendering process is expected to take time, AFCS intends to kick-start the project with QR code tickets or passes. Once the FI is identified and awarded the contract, they are expected to migrate the existing data from AFCS onto the new platform and issue the new City Payment Cards so that the experience is seamless for the customers.

3.4.7 SCOPE OF WORK/ROLES AND RESPONSIBILITIES

3.4.7.1 Roles and Responsibilities of Financial Institution will include:

The roles & responsibility of FI will be inclusive but not limited to the following. The FI will be required to carry out all activities and perform roles & responsibility to meet the objective of the Open Loop Smart Card Common City Payment System.

3.4.7.1.1 Contactless EMV complaint Card Issuance:

- Card Procurement, pre-personalize, personalize
 - The card should be complaint with ISO standards (like ISO 14443/ISO 18092/ISO 7816/ISO 10373) as per RBI guidelines for smart card, debit card, credit card in terms of dimensions, resistance, etc.
 - SMC to approve the card design before proceeding to printing by FI
- Issue cards as per FI's KYC Norms
 - Linking of Aadhar card with personalized card
 - FI has to collect tenement ID, library membership ID, swimming pool membership ID with card application or at a later date for mapping
 - Personalized cards with nomenclature for different types such as senior citizen, Adult, Youth, Concession cards, EWS, SMC employees, etc. or other concession groups as defined by SMC from time to time
 - Non-Personalized cards for general users and tourists
 - FI must automatically issue new cards on change of card type
 - FI to offer its existing customers in Surat to upgrade to City Payment Cards
- Card courier and dispatch
 - FI shall undertake supply/distribution of City Payment Card to all designated locations.
 - FI shall make provisions for delivery of the personalized cards to the individuals at their doorstep.
 - FI should maintain City Payment Cards in a secure location and with security guidelines as per PCI guidelines and EMV guidelines (MasterCard, Visa and RuPay standard for key management, personalization etc. should be followed).

3.4.7.1.2 Card Loading:

- Cash loading through cash, ATM, online transfer through various channels
- Mobile App based wallet with Auto top-up feature
- Provide facility to automate top-up of card from any bank account in case of low balance
- Card-to-card mobile/online transfer
- Financial Institution (FI) to tie-up with retailers for loading points

3.4.7.1.3 Hardware provisioning:

- Provide necessary hardware for all required applications:
 - The service delivery points (approximately 1000+) shall be located at various locations across the city. The purpose of providing such touch points is to ensure that all services mentioned as part of this RFP can be availed by citizens at a walkable distance of not more than 500 metres
 - Payments – standard PoS transactions through SMC amenities such as Civic Centers, Science Museum, Nature Park, Gardens, online, etc.
 - BRTS and city bus validators to be provided by AFC vendor, FI to develop L2 kernel application followed by certification of devices jointly with AFCS service provider to ensure seamless transaction processing
 - Non-Payment – Identification, attendance, membership details such as library, SMC offices and swimming pool
- Certify devices, cards, etc. as per EMV and PCI-DSS standards

3.4.7.1.4 Merchant Management:

- FI to ensure retailers display City Payment Card symbol prominently
- FI will facilitate following through retailers:
 - Card loading and issue cards as per given process (in case of general cards)
 - For personalize cards acceptance new forms from customer and submit to FI
 - Activation of new cards as per FI's norms
 - Bill payments
 - FI to maintain inventory of prepaid general cards
 - Cash withdraw from card at any PoS
 - Help end users / customers about use of cards

3.4.7.1.5 Card Management System:

- Manage the entire smart card life cycle management of open standards card specifications, card applications, payment scheme, card account management and card transactions
 - FI to maintain entire life cycle indicative activities of City Payment Card such as Issuance, Activation/Deactivation, Blockage, Blacklisting, Decommissioning, Re-load /Reuse, Lost/Found, etc.
- FI to ensure inter-operability of cards across all use cases as mentioned in section 3.4
- FI to provide exclusive Intellectual Property Rights (IPR) of City Payment Card data format and standards to SMC
- For any non-financial transaction, bank gateway will communicate with SMC API for authorization and authentication

3.4.7.1.6 Cash Management:

- Cash management for field loading points (on behalf of the FI)
- FI shall collect the cash at SMC Premises at the end of the day and/or the amount received from card based transactions and deposit into SMC's Merchant account on T+2 day (settlement). Where 'T' is date on which money collected

3.4.7.1.7 Reconciliation and Settlement:

- Account maintenance – Pool account, Merchant accounts, etc.
- Perform transaction clearing, reconciliation, and settlement for all participants in the eco system
- Regular reporting on behalf of FI on agreed parameters
- Central Clearing House (CCH)
 - CCH should track and account the fare deduction based on unique identification of Smartcard
 - FI shall settle all the transactions done up to 11:00 PM daily. The share of transactions so settled shall be transferred to account of SMC Merchants in T+2 day
 - CCH should auto share or upload MIS all payment scroll done by City Payment Card commuter to AFCS system
 - CCH should calculate and transfer the SMC revenue share on non-SMC payment transaction charges

3.4.7.1.8 Non-payment Usage:

- FI to ensure all non-payment use cases are met and necessary integration with SMC domain systems are completed
- SMC may appoint 3rd party agency to certify the data formats and standards used by FI for terminal interface

3.4.7.1.9 Marketing, Loyalty, fraud and risk Management:

- Marketing Activities
 - Marketing and promotions of card - to come up with innovative marketing strategies time-to-time and expedite adoption of cards across Surat city
 - FI should market Co-branded card with IEC materials through multiple channels such as (web adds, FM, radio, TV, Posters, brochures) with FI own cost
- Provide risk, fraud and dispute/chargeback capabilities including KEY management
- Provide Loyalty management capabilities (co-branded with SMC)

3.4.7.1.10 Helpdesk and Dispute Management:

- Provide central toll-free helpdesk/ IVRS to handle customer grievances
- Helpdesk/customer care management
 - Provide City Payment Card dedicated card customer support over Phone, Internet and at bank branch level for card issuance, renewal, refunds, customer and merchant account management and customer support with payment gateway and authentication services as per RBI requirements
 - FI to maintain separate helpdesk /call center to handle calls of SMC

3.4.7.1.11 Admin console for SMC:

- Admin console for SMC to define charges or concession groups
- To access MIS reports as defined in section 4.3
- SMC foresees the need for implementing changes during the contract period (e.g. generation of new MIS reports, provision to upload additional formats, modify reconciliation logic, etc.). This may also include incorporation of new modes of payment along with the current modes of payment. FI to provide the above with no additional cost to SMC

3.4.7.1.12 Field Training, Hardware maintenance and consumables:

- FI should have a local technical team set-up in Surat for operations and support.
- Provide training to retailers in Gujarati/ Hindi/ English for citizen-friendly operations
- Arrange for field training and maintenance of the validators/PoS Terminals
- FI should provide training material and user manuals on usage of Smart card validator, Ticket vending machines and Ticket Value machines
- FI should provide training on the FI related MIS report and fund reconciliation
- Manage hardware on field including requests for adding new hardware
- Manage consumables such as printer role and spares in case of faults in the machine

3.4.7.1.13 SMS and e-mail gateway:

- Manage email/SMS for citizens and merchants
- Check balance through SMS

3.4.7.1.14 e-Payment gateway, Mobile application and web-portal, wallet software:

- Augment wallet to the prepaid instruments
- Provide an e-payment gateway and portal for self-service and loading
- Mobile application (Android/iOS/Windows) connected to mobile wallet to be developed for all user services like secure QR based tickets, app based payments for parking, etc.
- Supports standard Internet security including, but not limited to Digital Certificates, Various levels of encryption, Secure Socket Layers (SSL), Secure Hypertext Transfer Protocol (HTTPS)

3.4.7.1.15 Data Recovery and Business Continuity Plan

3.4.7.1.16 Integration with SMC's domain system, command centre:

- Provide MIS integration points for SMC
- Provide APIs for mobile apps and web applications for public
- Facilitate integration between with SMAC (SMC Command Center) and MIS dashboard requirements

3.4.7.2 Roles and Responsibilities of SMC

- Provide manpower to all its management outlets like civic center, zoo, library

- SMC APIs will communicate with respective domain systems eg. LMS to verify the membership validity mapped to tapped City Payment Card
- With help of MIS and alerts provided by FI, SMC to configure use cases on SMAC center
- Domain services and respective IT applications like LMS, Property Tax, ITMS, AFCS
- SMC to ensure necessary infrastructure development and reliable network connectivity for validators/ PoS within SMC premises to connect with FI ecosystem
- AFC vendor to provide validators on bus terminals, city bus, BRTS, etc.

3.4.7.3 Exit Management

The exit process would start at the beginning of the last two quarters of seventh year (i.e. from the date of signing of the contract) in case contract is not extended further. At the beginning of the last quarter of the end of the contract period or in the event of termination of contract, the FI is required to provide necessary handholding and transition support, which shall include but not limited to, conducting detailed walkthrough and demos/drills for FI Services system, project documentation, etc., and addressing the queries/clarifications of new FI selected by SMC.

The incumbent FI shall prepare proper books of accounts for all transactions and specifically provide clear details of pending to be fund transfer. FI shall also deposit the cash collected and amount of transaction settled to SMC.

FI shall provide support in terms of smooth handing over of database. The ownership of the data generated upon usage of the system, at any point of time during the contract or expiry or termination of the contract, shall vest with SMC. At the end of the License Period or earlier Termination of Contract due to FI Event of Default, the FI shall transfer ownership of all Hardware, database, Standard third party software Licenses, source code, APIs, customized software developed for City Payment Card Project except its proprietary Hardware and Software to Authority at no cost to Authority.

During the contract period, the FI shall ensure that all the documentation including policies, procedures, etc. are kept up to date and the same are handed over to SMC during the Exit management process.

4 KPIS AND MIS REQUIREMENTS

The FI who is awarded the contract will be measured on certain KPIs and SLAs. This is to ensure that they are accountable for their tasks and only get compensated if their work is of high quality and bears maximum efficiency. Some basic parameters in KPI and SLA are mentioned below.

4.1 Key Performance Indicators

Below are KPIs which can be finalized with the successful FI in consultation with SSCDL. Critical KPIs can have back-to-back measurements and successive lapses can lead to financial penalty for the FI.

No.	Performance Indicator	Below Acceptable Levels	At Acceptable Levels	Above Acceptable Levels
1	Customer Satisfaction Index	<=70%	70-90%	= >90%
2	Logistical errors in card personalization (wrong dispatch)	>4.00%	1.00-4.00%	<1.00%
3	Incorrect/Failed personalization – Citizen Inconvenience	>2%	0.2%-2%	<0.2%
4	Card validators/readers not accepting cards	>1% occurrences in a calendar month	0.2%-1%	<0.2%
5	Errors in cashback/reward point calculations and reporting to SMC	>0.5% of monthly throughput	0.1%-0.5%	<0.1%
6	Percentage of cards issued within agreed hours of completing the card application process	<=90%	90-95%	>=95%

Reporting at regular intervals has to be made available by successful FI for SMC monitoring using automated tools to calculate the total penalties arising due to non-compliance of the SLA.

How KPIs would be measured?

No.	Performance Indicator	Measurement Methods
1	Customer Satisfaction Index	At every customer touch point, a customer feedback needs to be recorded. The solution for this would be provided by the FI and discussed with SMC. In parallel, SMC may conduct independent customer survey.
2	Logistical errors in card personalization (wrong dispatch)	Customer complaints system would pass the information to the KPI measurement system.
3	Incorrect/Failed personalization – Citizen Inconvenience	If the wrong card is printed by FI, count of reprints need to be captured. Sum total of such reprints can be used to monitor incorrect personalization.
4	Card validators/readers not accepting cards	Based on customer complaints, this information should be fed into the KPI measurement system.
5	Errors in cashback/reward point calculations and reporting to SMC	Recon reports and verification mechanisms deployed.
6	Percentage of cards issued within agreed hours of	Card issuance reports and customer complaints

	completing the card application process	
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4.2 Service Level Agreements

The FI shall develop an SLA and KPI Measurement and Monitoring System (SMMS) for measuring and reporting the SLAs and KPIs. All SLA and KPI measurement and calculation of penalties shall be automated. Manual intervention for measurement of SLAs and KPIs shall be after prior approval of SMC.

Severity and service/enhancement levels will be defined after freezing the process flows and application complexity by successful FI in agreement with SSCDL.

4.3 MIS requirements

Apart from the financial reconciliation reports which need to be generated by the system every day at a pre-agreed cut-off time, the card management system of FI should be able to generate all of the below items on an ad-hoc as well as a real-time basis for a given date range apart from standard periods like Today, This Week, Last Week, This Month, Last Month, This Quarter, Last Quarter, Month to date, year to date, launch to date.

1. How many people applied for cards with categorical breakup
2. How many people successfully cleared e-KYC
3. How many people did not clear e-KYC
4. PoS terminal wise reports
 - a. Applications
 - b. Foot falls
 - c. Collections
 - d. Revenue generated
 - e. Attendance/staff position
 - f. Warning on low or no stationary, consumables etc.
5. How many cards per category issued
 - a. Adult
 - b. Youth/children
 - c. Senior citizen
 - d. Concession
 - e. How many General/Tourist cards are being issued by all participating outlets?
6. How many cards are loaded with cash
 - a. Cash position in bank – reconciled as of n-1 day
 - b. Shortfall if any
7. How many cards are dormant (with cash loaded) for
 - a. 1 month
 - b. 3 months
 - c. 6 months
 - d. 9 months
8. How many cards are being used for cash transactions - outlet information

9. How many cards are being used at SMC for non-payment use cases - e.g. library, etc.
10. How many online top-ups are being done
11. How many customers have linked their Savings bank account to the card account
12. How many customers availed auto top-up facility and top-up patterns as per amount and mode of payment
13. User demographics and popular travel destination
14. Most travelled routes and peak hours in BRTS, city bus
15. The FI website shall provide MIS view of Bank Statements without any limitation on the period
16. MIS Dashboard - The Bank shall provide MIS dashboard displaying the following
 - a. Closing Balance in each Account
 - b. Amount eligible to be withdrawn
 - c. No. of Transactions + Value of transactions (mode-wise) for last 7 days
 - d. No. of EMDs refunded + total value for last 7 days
 - e. Status of Payment Scrolls

Note: These are not exhaustive. Provisions should be kept to fulfill ad-hoc report requests from SMC.

5 TECHNICAL SOLUTION

The entire City Payment Card system (shown in the next section) would be managed by financial institution. This system is a combination of application and database layers which is accessed by all users of the system through standard web-browsers. It would be the pivotal part of the eco-system and centrally communicate to all the parties involved. On one end of the spectrum, there would be the cardholders who would approach validators/card readers in various form factors. These validators/readers would communicate through one or more mediums to the financial institution. On the other end, FI will communicate to all parties as required such as Unique Identity Database (UID), SMAC, E-mail and SMS gateways, AFCS, etc.

The financial institution may have following core modules within itself which deal with specific functionality. Necessary audit trail to be maintained. Some of the most important ones are:

1) User rights management: This module would maintain a repository of all users and manage their credentials, complexity of passwords, expiry dates of such passwords and also maintain their access privileges.

2) Card validation: This module would perform various types of card authentication for both payment and non-payment transaction categories. The validators would primarily communicate with this module and get a response on the next state accordingly. This module would have an integrated fraud and risk management module which would work on defined business rules to ensure that social miscreants do not game the system.

3) Printing services: This pertains to the card personalization (both exterior and interior) before it can be sent to the customer. The input for this stage is a pre-personalized card and the output is a finished card which has the customer's photograph, card number, validity date and Name. Though the module is present in the FI, it may be accessed at a remote printing site where bulk printing is carried out.

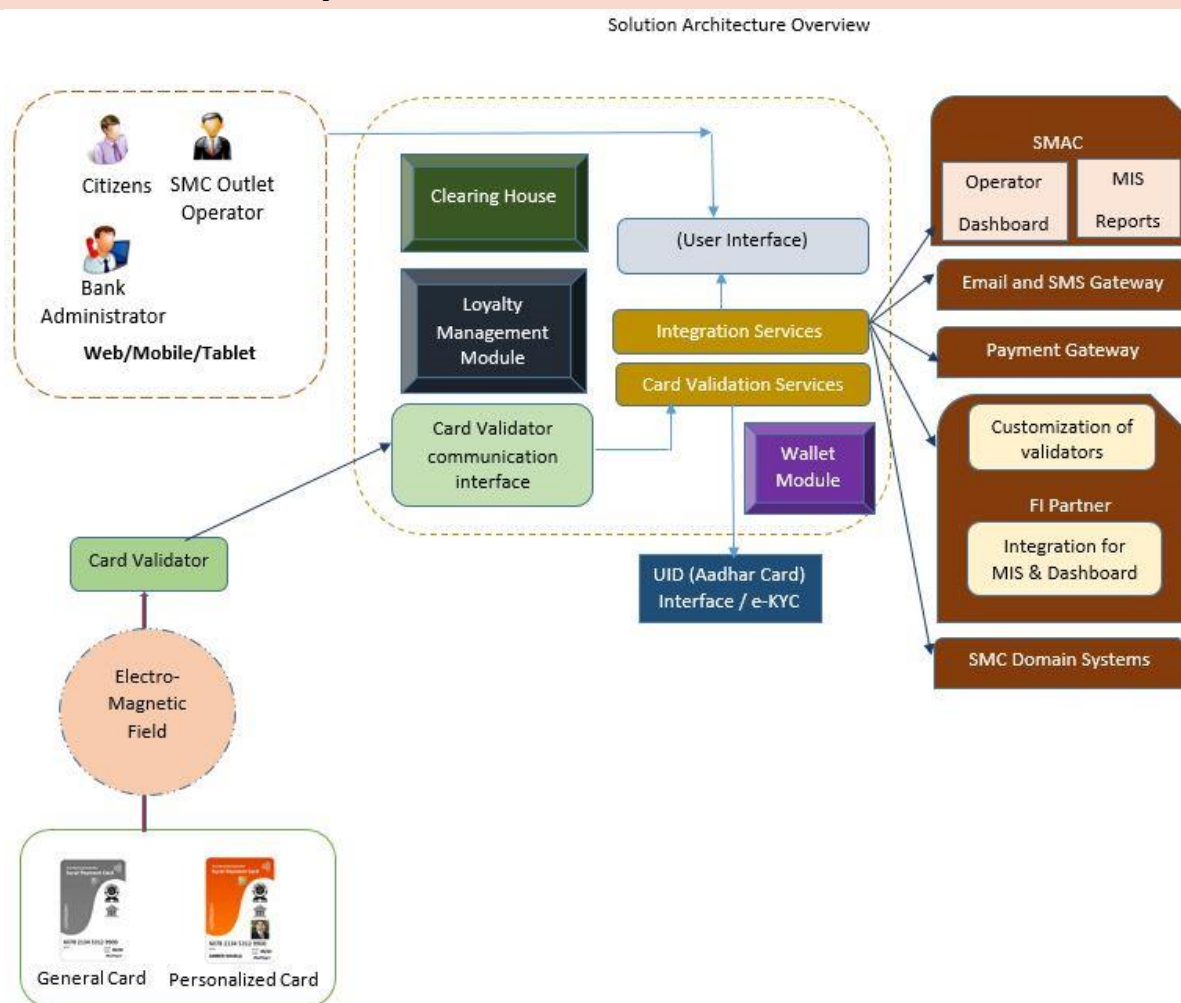
4) Courier & Logistics module: Customers can get cards home-delivered free of charge. This module would give a tracking feature which can be accessed by anyone who has access to the web portal.

5) Supply Chain module: The sourcing of cards, maintaining inventory and predicting the demand for future procurement are all handled by this module. This module would work on analysis of past data and have a manual override feature to ensure that only adequate quantities of supplies such as blank cards, printer parts etc. are ordered and maintained. This will also take care of auto-invoicing, payments to vendors and all related processes.

6) Security key management module: All smart card keys are maintained in this secure module and can only be retrieved by key custodians. The module will manage a pair of custodians. In this case, the two parties could be one each from FI and one from SMC/ AFC vendor as designated.

7) Customer care module: This is solely responsible for handling all customer queries and tracking their grievances. This is accessible both by customers and helpdesk agents.

5.1 Reference System architecture



Legends: -

Financial Institution



Figure 10 - City Payment Card reference system architecture

Notes:

1. UID/FI's e-KYC interface is used during card application process as well as attendance process for validation
2. All services will reside on financial institute's server. Even in case of cloud solutions, the physical location of cloud servers should lie within geographical boundaries of India and should not be accessible from outside India.
3. Entire technology ecosystem will have a primary server (database, application server and webserver) as well as secondary server. FI will be in clustered environment where data synchronization will happen at real-time. In addition to clustered environment there will be Disaster recovery site.

4. Above is a reference system architecture for FI. FI should detail out the system architecture it would incorporate to meet RFP requirements.

5.2 Network & Infrastructure requirements

SSCDL would evaluate the responses and select a qualified vendor who would then be awarded the contract. In the response stage, the vendor would come up with a comprehensive application architecture and solution.

Since the network and infrastructure designs will vary from one vendor solution to another, the requirements cannot be defined now. The optimum selection would depend on various factors such as total cost of ownership, robustness of the solution architecture and previous implementation track record.

The proposed solution should have all adequate failsafe mechanisms so that it does not cause inconvenience to the users of City Payment Cards. At no point, should users experience issues due to network and infrastructure failure. Below are general expectations from system w.r.t. network and infrastructure.

Infrastructure Requirements

- The solution hardware and software architecture should be able to meet the requirements to process 500 concurrent transactions per second initially, and vertically scalable up to 2000 with an expected growth of 20% every year.
- System should be capable of expanding and scaling up to 20% with additional deployment of required hardware and necessary amendments to software for smooth operation of City Payment Card system.
- Server uptime more than 99.98%.
- Guarantee more than 99% availability of services.
- Sufficient data storage to maintain six months' transaction data and eighteen months' summarized reports available on-line for analysis, reporting and investigation.
- Three years' complete data Backup to be available onsite.
- System shall support 1200-1500 concurrent users, readers / validators for total services with at least 30% scalability.

Performance Requirements

The proposed system shall meet the following essential performance specifications:

a) Speed of Operation (Maximum times allowed)

Speed of Providing Service to Commuters

- Point of Sale Terminals (providing a non-registered SMART CARD across the counter) – 1 min per customer
- All types of readers for reading / writing from/to the card & capturing a transaction – 1 s
- Electronic Ticketing Machine for capturing a transaction and print out the ticket – 1 s
- Printer to print out the ticket/receipt – 4 s

Speed of Transfer of Transactions and Important Data

- From POS terminal to backend & vice-versa - Maximum 1 sec after a transaction is made on either side (in the quickest possible setting)
- From Validator to backend and vice-versa - less than 1 min after a transaction is made on either side (in the quickest possible setting)
- From backend, transfer of information like fare tables, blacklist, etc. to validators, ETMs, POS terminals – within 15 min of initiating this transfer of data from backend

Speed of Generation of MIS reports

- Maximum time after 'firing' a report to the time of report generation – 30 sec to 90 sec (depending on the size of report)

Additionally, the network and infrastructure requirements to meet the functional and non-functional requirements are stated in section 3.4.5.

5.3 Integration requirements with other system

Component Overview

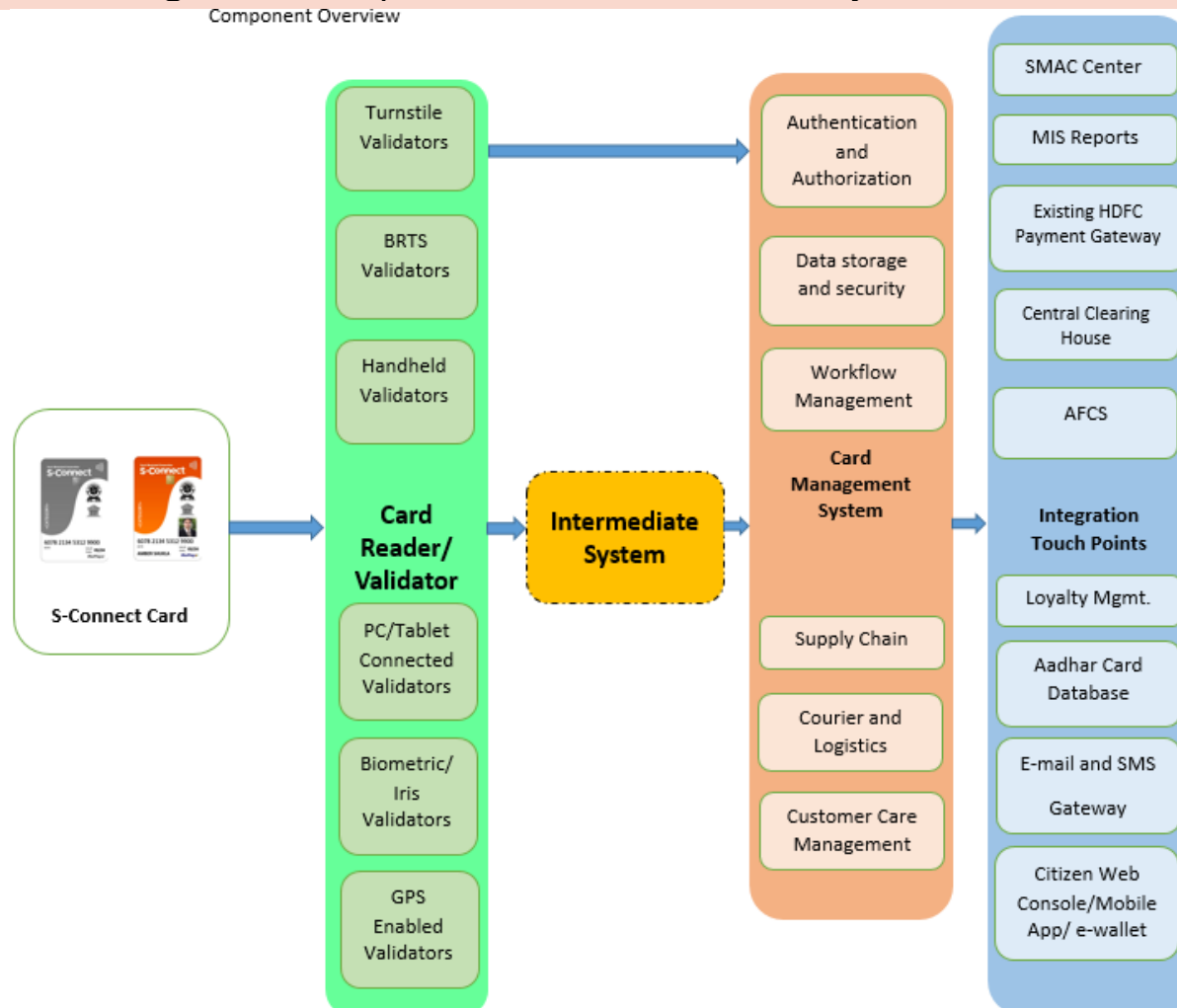


Figure 11 - City Payment Card Integration Components

The concept of City Payment Card revolves heavily around communications between various disparate systems offered/provided by third parties. The diagram above shows the integration touch points in detail. Some of them are internal to SMC (SMAC Center, MIS reports, Citizen Web Console/Mobile App) whilst others are clearly offered by third parties (like UID, FI, E-mail and SMS)

Solution integration would follow common published protocols for most of the systems. Once the details emerge, SMC and FI will decide upon the communication mechanism and protocol and the same would have to be implemented by FI Consortium.

Note: Integration of FI / validator with domain systems would be responsibility of FI during the operation period of 7 years. In case the domain systems are changed, the integration support would be provided by the financial institution as and when required.

6 PROJECT IMPACT

A project with the far-reaching effects such as City Payment Card initiative will have impact on various parts of the socio-economic fabric. A move towards digital currency has seen tremendous advantages in the developed countries where such a concept is stable and in mainstream approach. The road to adoption would not be very smooth, but once a critical mass is achieved, the system would become self-sustaining. There are three primary areas where impact would be seen. Both the positives and negatives in each case are assessed.

6.1 Social

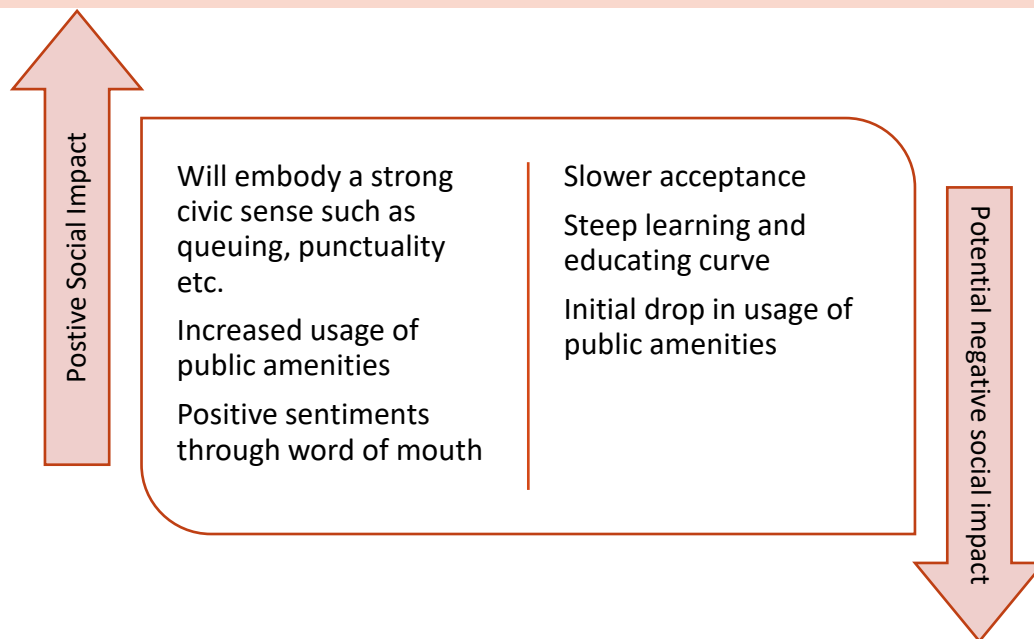


Figure 12 - Social impact of digital currency

6.2 Economic

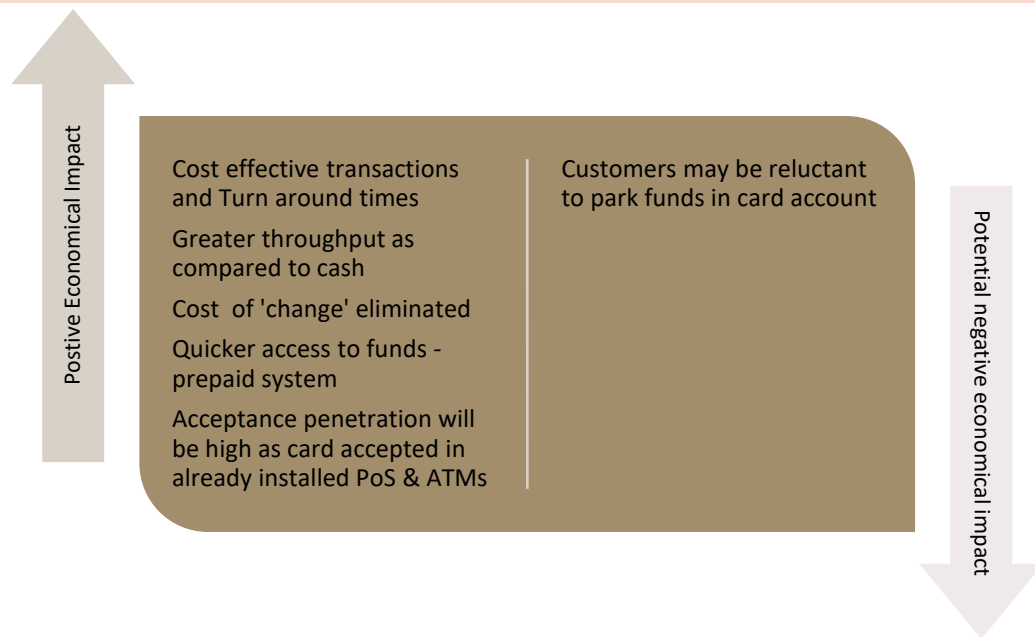


Figure 13 - Economic impact of digital currency

6.3 Environmental

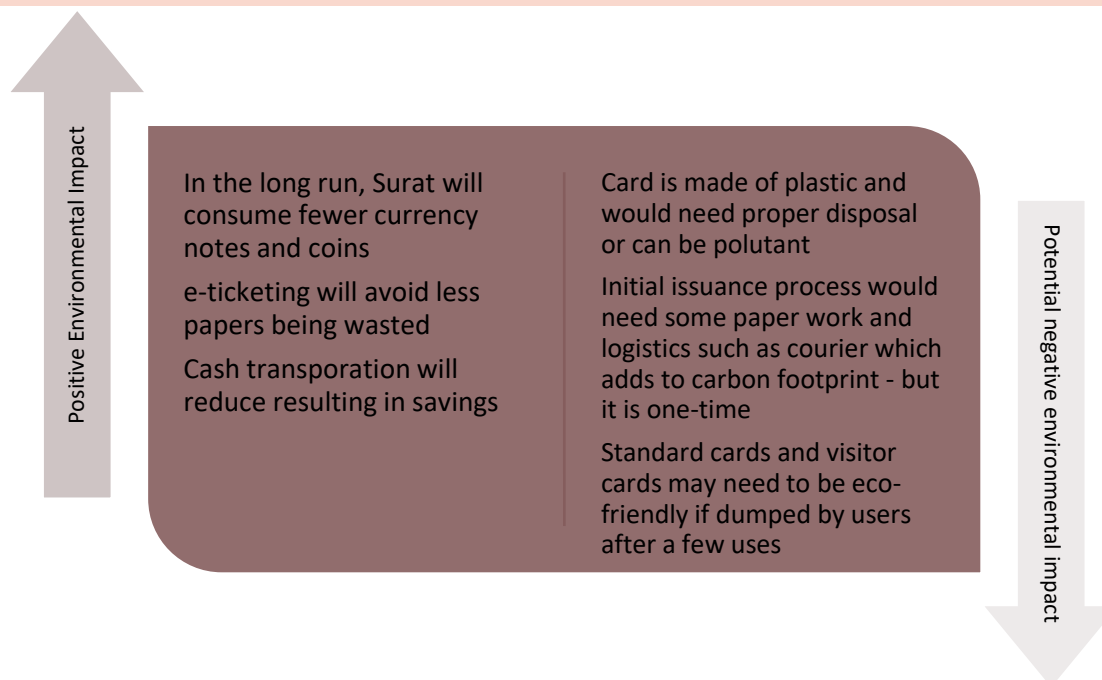


Figure 14 - Environmental impact of digital currency

7 ENDING NOTES

With absolute clarity on the approach vis-à-vis tendering the entire gamut of services to financial institution, SMC would like to take a phased approach.

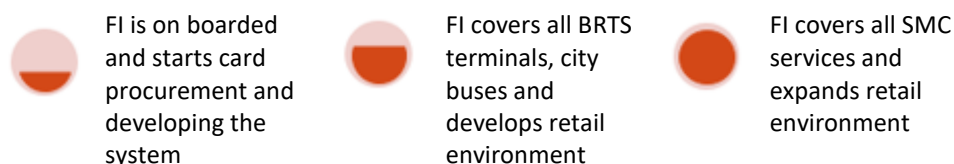


Figure 15 - Phased approach

In the **first phase**, SMC and Financial Institution will launch a limited pilot to ensure that the cards are issued and start reaching customers. Then as part of phase 1, since BRTS & City Bus AFCS is already work in progress with pilot implementation using QR-based ticketing planned, these cards to be used in all BRTS terminals and city buses. The maximum expected timeline for pilot implementation is **2 months** and Phase-1 completion is **6 months** from signing of agreement.

In **second phase**, the FI is expected to cover all other use cases for SMC services. The maximum expected timeline for Phase-2 completion is **12 months** from signing of agreement.

The usage of cards at non-SMC services including merchant payments in retail outlet environment will be developed by financial institution in parallel along both the phases and comes under FI's purview.

The application' security policy should be aligned to standard industry practices and RBI or any applicable regulating agency's guidelines. Both application and the underlying infrastructure operations/physical environments should employ security frameworks that span multiple standards, including the ISO 27000 family of standards, NIST 800, and others.

The security framework is recommended to be based on ISO 27001/27018 which would enable FI to meet or exceed security standards and implementation guidelines. ISO 27001 defines how to implement, monitor, maintain, and continually improve the Information Security Management System (ISMS).

The underlying information security policy is also recommended to be aligned with ISO 27002. ISO 27002 is not a certification but provides a suggested set of suitable controls for the Information Security Management System.

APPENDIX I

Appendix I.1 - Card Issuance Process

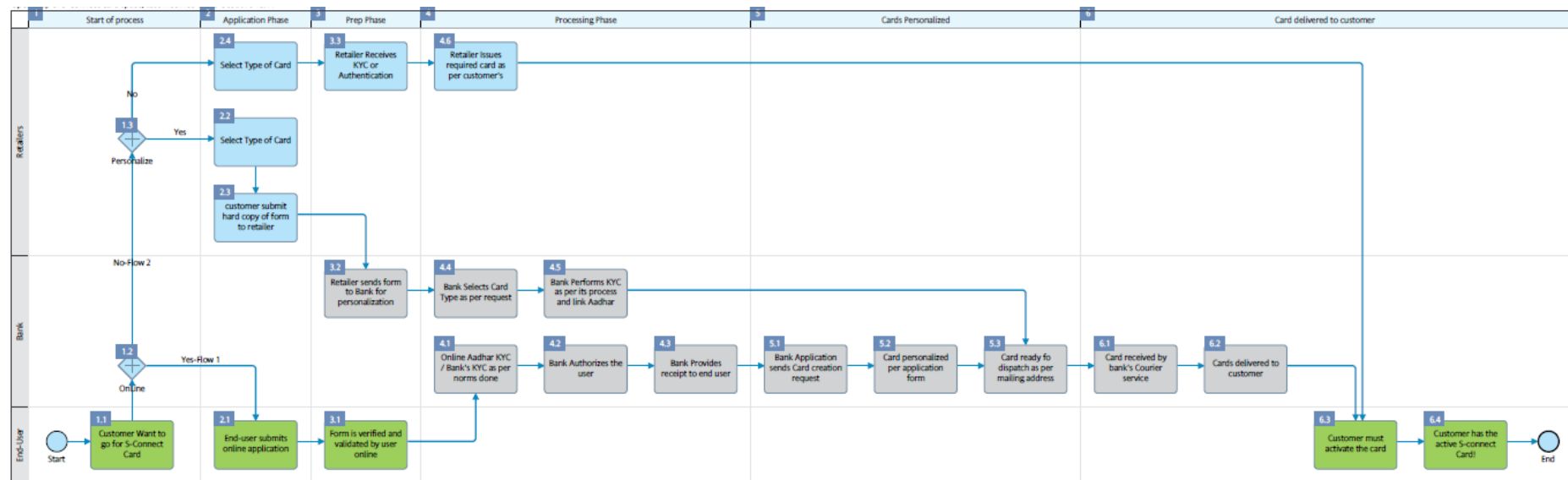


Figure 16 - Card Issuance Process

Step no.	Description	Participants
1. Start of process		
1.1. Customer Want to Purchase City Payment Card	The card issuance process starts with the need of the customer to possess a City Payment Card.	End-User
1.2. Online	The application for card issuance can be done via online or offline methods.	
	One is 'self-service model' where the customer fills a card application form online via web / mobile. Also, he has to upload a passport size coloured photograph with white background onto the application. The other is the 'outlet model' where the customer submits hard copy of application at the outlet.	
1.3. Personalize	On receipt of application, the retailer has the option to issue personalized or non-personalized / general card basis application.	
2. Application Phase		
2.1. End-user submits online application	Before taking up the process, he must ensure that he possesses Aadhar Card for identification purpose. Else, he can apply for Aadhar Card at the Surat Municipal Corporation. The customer fills an online application and submits the form.	End-User
2.2. Select Type of Card	On the basis of application, the retailer chooses to issue personalized cards as adult, child / youth, senior, or concession card.	Retailers
2.3. Submit hard copy of form	The retailer submits hard copy of form to the FI for the issuance process.	Retailers
2.4. Select Type of Card	For non-personalized or general cards, the same will be treated as an Adult card.	Retailers
3. Prep Phase		
3.1. Form is verified and validated by user online	It is the responsibility of user to verify and validate the details entered by him in the online form. SMC or FI shall take no responsibility whatsoever in factual errors.	End-User
3.2. Retailer sends form to FI for personalization	The cards are pre-personalized according to different Card types like non-personalized and personalized. FI receives the hard copy of form from the retailer.	FI

3.3. Vendor Receives KYC or Authentication details & updates form	The KYC or authentication details submitted by the customer is received by the vendor for updating the form.	Retailers
4. Processing Phase		
4.1. Online Aadhar KYC / FI's KYC as per norms done	The customer needs to do e-KYC or FI's KYC as per norms for personalized card.	FI
4.2. FI Authorizes the user	After successful validation of KYC, the FI authorizes the customer. Else, a failure message is sent to the customer.	FI
4.3. FI Provides receipt to end user	The customer is given receipt of successful authorization to the customer for his records.	FI
4.4. FI Selects Card Type as per request	FI validates the form submitted and select card type.	FI
4.5. FI Performs KYC as per its process	FI performs KYC as per standard norms for personalization.	FI
4.6. Retailer Issues required card	The FI has to maintain monthly stock of cards with the retailer.	Retailers
5. Cards Personalized		
5.1. FI Application sends Card creation request	In the personalization stage, the FI application sends card creation request to card personalization team.	FI
5.2. Cards personalized per orders from FO	As per orders from Front Office, cards are personalized at Back Office with card type, name of the card holder, card number, logos and card validity. The other card details to be printed on the card are as per SMC's and FI's discussions.	FI
5.3. Cards ready for personalization as per input provided in the form	The personalization includes writing the internal memory of the card with the customer's data including Aadhar number, coloured photo on white background and KYC data by the personalization team. The hardware and software data is aligned and the card is ready for despatch.	FI

6. Card delivered to customer		
6.1. Card received by FI Courier	The printed cards are received at the FI's despatch team for courier to the customer.	FI
6.2. Cards delivered to customer	The ready cards can be collected by the customer at his doorstep through FI's courier.	FI
6.3. Customer must activate the card	As per FI's described process, customer has to visit the nearest FI or retailer to activate the card.	End-User
6.4. Customer has the active City Payment Card!	Customer can now load the card as per defined rules.	End-User

Note: End of the day issuance and activation log count is required to be displayed on a dashboard for SMC analysis. Option has to be given to citizen to put any another mobile number also for verification when doing Aadhar verification. FI to follow government mandate to store all customer data in servers located within India only.

Appendix I.II - Card Loading Process

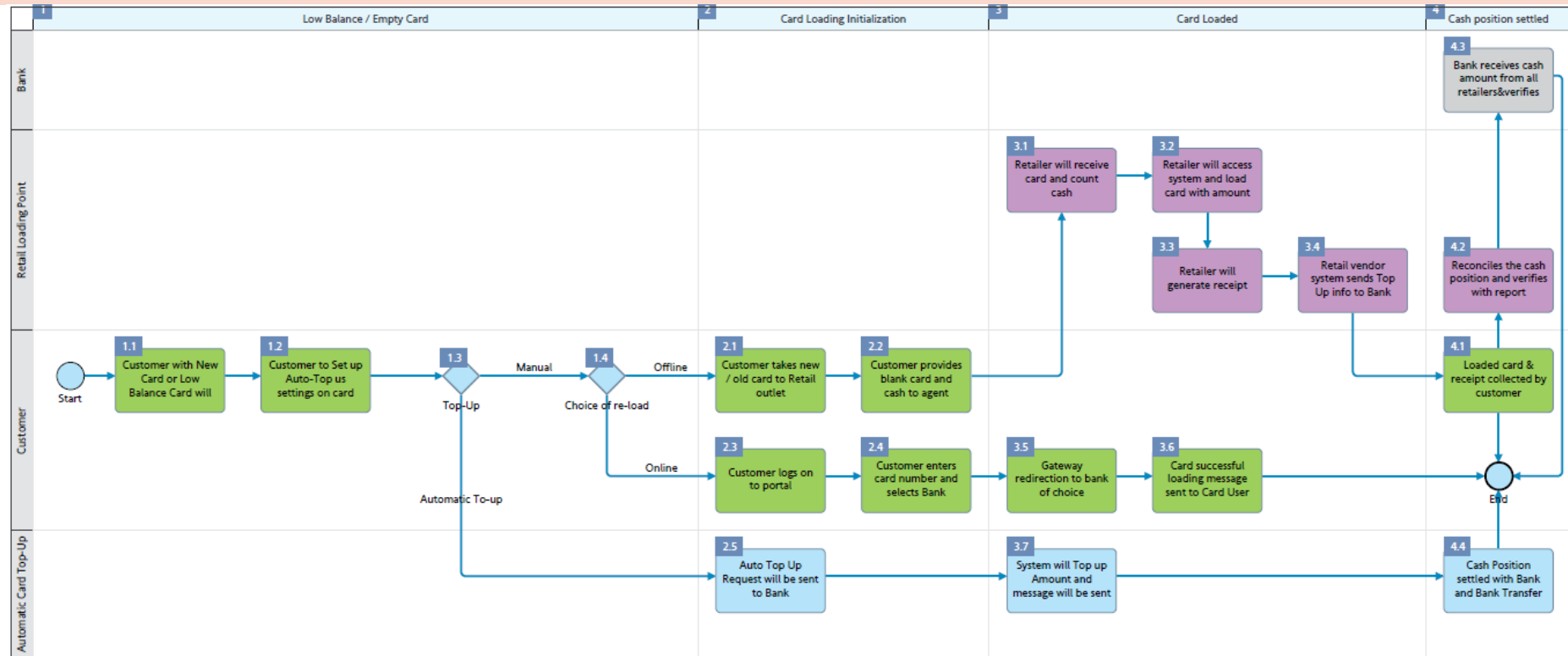


Figure 17 - Card loading process diagram

Step no.	Description	Participants
1. Low Balance / Empty Card		
1.1. Customer with New Card or Low Balance Card will start top up process	Once a customer receives a new card, he needs to load the card. Also, in case of low balance, the customer needs to load the card for further usage. The maximum top-up limit is as per defined rules.	Customer
1.2. Top-Up	The customer has the option to do manual top-up or automatic top-up. The automatic top-up is as per standing instructions given to the FI.	
1.3. Choice of re-load	In manual top-up, the customer has the option to go for online or offline methods.	
2. Card Loading Initialization		
2.1. Customer takes new / old card to Retail outlet	For initialization of card loading, in manual offline process, the customer needs to visit any retail outlet with the card.	Customer
2.2. Customer provides blank card and cash to agent	The customer needs to hand over his card and cash to the retailer to load his card with respective amount. Here, it is to be noted that the customer has only payment via cash option at the retailer.	Customer
2.3. Customer logs on to portal	For online loading of card, the customer needs to log into the app portal or website.	Customer
2.4. Customer enters card number and selects FI gateway	On the portal, the customer enters his card details, the amount of recharge required and the FI's gateway for payment.	Customer
2.5. Auto Top Up Request will be sent to FI	The customer has to give one-time standing instruction to the FI to activate auto top up his card.	Automatic Card Top-Up
2.6. Customer to set Auto top up amount (One time)	The amount of top-up the customer wishes to activate can be chosen by the customer as per options given by the FI.	Customer
3. Card Loaded		
3.1. Retailer will receive card and count cash	In the card loading stage, the retailer counts and confirms the cash amount received from the customer along with card.	Retail Loading Point
3.2. Retailer will access system and load card with amount	FI's validator is accessed by the retailer to write the card with the given cash amount.	Retail Loading Point

3.3. Retailer will generate receipt	A receipt of the same transaction is generated by the retailer through a validator for the customer.	Retail Loading Point
3.4. Retail vendor system sends Top Up info to FI	The given transaction details are synced by the vendor system to the FI.	Retail Loading Point
3.5. Gateway redirection to FI of choice	The payment gateway of the card is redirected to any FI of choice of customer.	Customer
3.6. Card successful loading message sent to Card User	If the card gets loaded successfully, a message is sent by the FI portal to the customer. If the transaction fails, a failed transaction message is displayed and the user tries again.	Customer
3.7. Card loaded upon next touch on validator	The updated balance on FI server is synced with the card and written on it upon next touch on validator.	Customer
3.8. System will Top up Amount and message will be sent to user	Automatic card top-up system will top up the asked amount from the customer's FI account and transaction message will be sent to the customer.	Automatic Card Top-Up
4. Cash position settled		
4.1. Loaded card & receipt collected by customer	Upon syncing of retail vendor system and FI, customer collects the loaded card and transaction receipt from the retailer.	Customer
4.2. Reconciles the cash position and verifies with report	Retailer counts the cash in hand and matches it with the report generated to check for any discrepancies.	Retail Loading Point
4.3. FI receives cash amount from all retailers & verifies	FI receives the cash amount from all retailers and verifies the transactions as per standards.	FI
4.4. Cash Position settled with FI and FI Transfer amount to card account	As per FI's standards, cash position is settled by the FI system and FI transfers amount to card account.	Automatic Card Top-Up

Appendix I.III - Authentication Usage Process

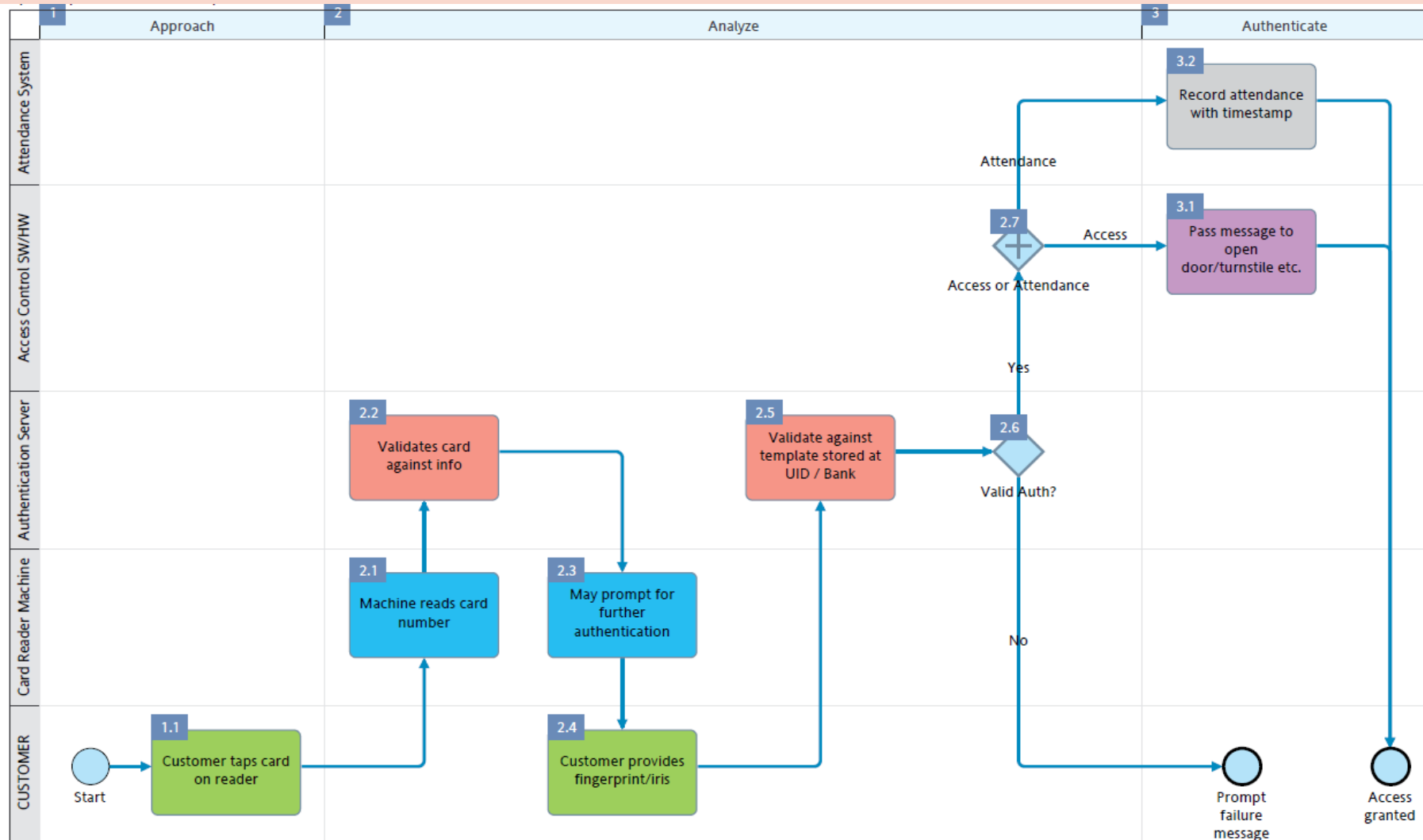


Figure 18 - Authentication Usage process diagram

Step no.	Description	Participants
1. Approach		
1.1. Customer taps card on reader	The readers are placed at the entrance of services provided by SMC where authentication is required for entrance. The customer needs to tap his card on the reader to enter the premises.	Customer
2. Analyze		
2.1. Machine reads card number	The card reader machine reads the card number stored in the contactless card.	Card Reader Machine
2.2. Validates card against info	The authentication server checks the card number against the information stored in its database and validates the same.	Authentication Server
2.3. May prompt for further authentication	If further authentication is required, the same is prompted by the server to the customer through the card reader machine. For example, at some service areas, biometric verification may be required at future stage.	Card Reader Machine
2.4. Customer provides fingerprint/iris	When prompted by the card reader machine, the customer provides his fingerprint to the scanner machine or does his iris scanning for the system to process.	Customer
2.5. Validate against template stored at UID / FI	The online template is the e-KYC data of Aadhar database or the through FI server. The authentication server matches the biometric data credentials against an online stored template database.	Authentication Server
2.6. Valid Authorization?	Authorization check is done and validation success or failure result is prompted by the authentication server.	
2.7. Access or Attendance	The authorization message is passed on to the Access Control system and the Attendance system as required.	
3. Authenticate		
3.1. Pass message to open door/turnstile etc.	For a successful validation, the Access Control system gives the instruction to open the door/turnstile, display green light signal or buzzer for the customer. If there is a validation failure, a failure message is prompted for the customer with a red light signal or buzzer.	Access Control SW/HW
3.2. Record attendance with timestamp	Attendance along with timestamp is recorded by Attendance System upon entrance of the customer in the SMC service premise.	Attendance System

Appendix I.IV - Pay and Access Usage Process

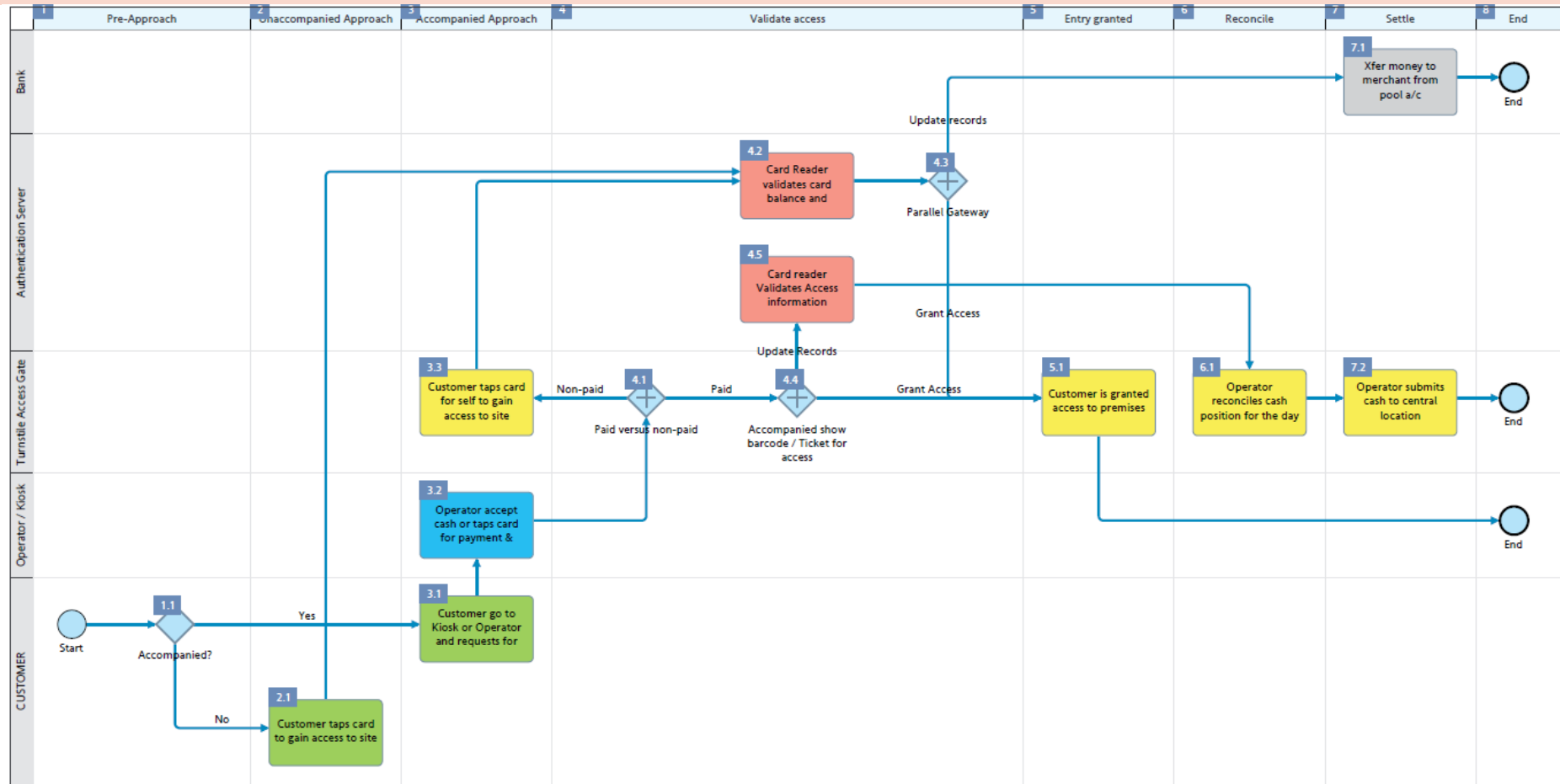


Figure 19 - Pay and Access usage process diagram

Step no.	Description	Participants
1. Pre-Approach		
1.1. Accompanied?	When the customer approaches an SMC premise, there are two possibilities: either he is alone or he brings guest(s)/family member(s) and requests the ticket operator at the premise to let them all enter on his card only.	
2. Unaccompanied Approach		
2.1. Customer taps card to gain access to site	If the customer is alone, he taps his card against a card reader installed at the turnstile gate entrance of the premise.	Customer
3. Accompanied Approach		
3.1. Customer go to Kiosk or Operator and requests for additional tickets	If the customer is accompanied by someone, he requests the ticket operator additional tickets to be issued on his card only. This helps in the convenience of those whom he accompanies and also other people standing in that queue.	Customer
3.2. Operator accept cash or taps card for payment & issues additional tickets	Ticket operator takes the card from the customer and taps it on the card reader to deduct the amount for him as well as his companions. A barcode/additional tickets is/are generated and handed over to the customer which contains access for his companions.	Operator / Kiosk
3.3. Customer taps card for self to gain access to site	At the turnstile access gate, the customer taps his own card and gets access.	Turnstile Access Gate
4. Validate access		
4.1. Paid versus non-paid	At the turnstile gate access, the customer can pay the amount upfront using cash or choose to use his card for payment.	
4.2. Card Reader validates card balance and deducts fee	If the customer chooses to pay the amount using his City Payment Card, the authentication server validates card balance and deducts the amount from his card. The balance is written on the card using the card reader.	Authentication Server
4.3. Parallel Gateway	On successful deduction of payment fees, at the front end, the customer is granted access. And on the back end, authentication server interacts with FI.	

4.4. Accompanied show barcode / Ticket for access	If the payment has already been done by the customer, the accompanied just need to show the barcode/tickets to get access at the turnstile access gate at the front end. While at the backend, information is passed on to FI server.	
4.5. Card reader Validates Access information	For the accompanied, FI server records payment of fees amount.	Authentication Server
5. Entry granted		
5.1. Customer is granted access to premises	The turnstile access gate opens for the customer and his accompanied. No further gates are then present for them.	Turnstile Access Gate
6. Reconcile		
6.1. Operator reconciles cash position for the day	For cash payments done by customers, the operator reconciles cash position at the end of day and matches it with transaction records report.	Turnstile Access Gate
7. Settle		
7.1. Transfer money to merchant from pool account	At FI, settlement is done end of the day where it transfers amounts from pool accounts of customers to the merchant which here is the service provided by SMC.	FI
7.2. Operator submits cash to central location	The collected cash is then submitted to a central location of SMC by the operator.	Turnstile Access Gate
8. End	The operator is free from his duty. All records are updated in FI systems and settlements are done in FI.	

Appendix I.V - BRTS Cash Load Usage Process

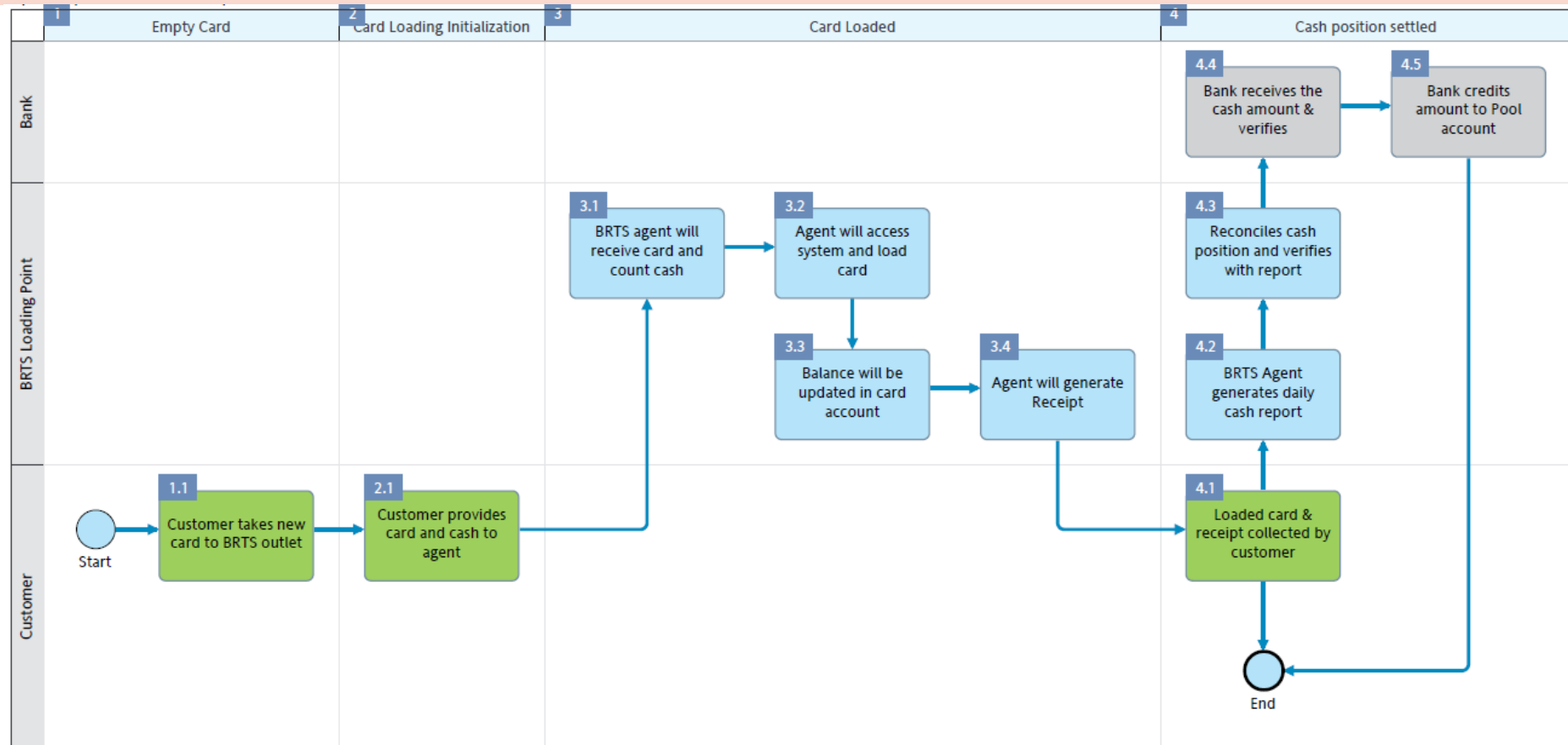


Figure 20 - BRTS Cash Load usage process diagram

Step no.	Description	Participants
1. Empty Card		
1.1. Customer takes new card to BRTS outlet	For offline loading of card, the customer needs to visit the outlet installed at various BRTS stations in Surat.	Customer
2. Card Loading Initialization		
2.1. Customer provides card and cash to agent	The customer needs to hand over his City Payment Card and cash to the agent to load his card with desired amount subject to a maximum as per rules.	Customer
3. Card Loaded		
3.1. BRTS agent will receive card and count cash	The BRTS agent receives the card and the cash from the customer. He confirms the cash amount.	BRTS Loading Point
3.2. Agent will access PoS terminal and load card	PoS terminal is accessed by the agent to write the card with the given cash amount.	BRTS Loading Point
3.3. Balance will be updated in card account	The given transaction details are synced by the PoS terminal with the FI system at specified intervals.	BRTS Loading Point
3.4. Agent will generate Receipt	A receipt of the same transaction is generated by the agent through a validator.	BRTS Loading Point
4. Cash position settled		
4.1. Loaded card & receipt collected by customer	Upon settlement of cash position, customer collects the loaded cash and cash receipt from the BRTS agent.	Customer
4.2. BRTS Agent generates daily cash report	At the BRTS loading point, the agent generates a daily cash report end-of-day to check all the transactions that happened.	BRTS Loading Point
4.3. Reconciles cash position and verifies with report	He counts the cash in hand and matches it with the report generated to check for any discrepancies to complete his duty for the day.	BRTS Loading Point
4.4. FI receives the cash amount & verifies	EOD FI receives the cash amount from all BRTS agents and verifies the transactions.	FI

4.5. FI credits amount to Pool account	Now, FI loads individual pool accounts of services for such transactions to complete the transactions for the day.	FI
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Appendix I.VI - BRTS Usage Process

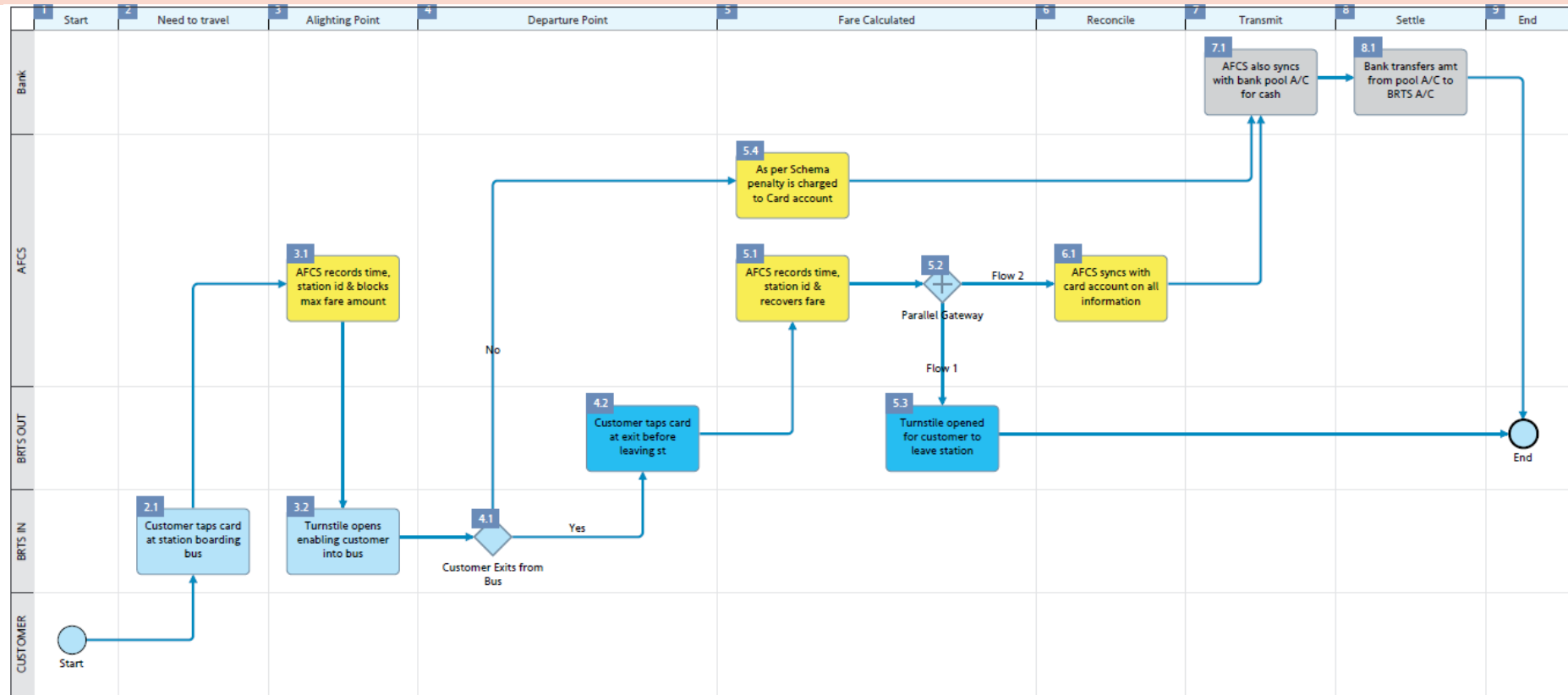


Figure 21 - BRTS Usage Process Diagram

Step no.	Description	Participants
1. Start		
2. Need to travel		
2.1. Customer taps card at station boarding bus	For using the BRTS, the customer taps his card against a card reader installed at the entrance of the boarding bus station.	BRTS IN
3. Alighting Point		
3.1. AFCS records time, station id & blocks max fare amount	AFCS records time, station ID and blocks full fare amount from his card from boarding point till last stop after validating cash present in his card. Else, a failure message is prompted that he has insufficient cash to travel. For this, card loading points are also installed at all BRTS stations for convenience of passengers.	AFCS
3.2. Turnstile opens enabling customer into bus	Turnstile access gate opens for the customer to enter the bus.	BRTS IN
4. Departure Point		
4.1. Customer Exits from Bus	At the desired exit point, a customer may or may not exit the bus.	
4.2. Customer taps card at exit before leaving station	When the customer wants to end his journey, he taps his card at the card reader again at the leaving station.	BRTS OUT
5. Fare Calculated		
5.1. AFCS records time, station id & recovers fare	For calculation of fare for the journey, AFCS records time, station ID and unblocks all the amount on his card minus the fare amount.	AFCS
5.2. Parallel Gateway	At the front end, the customer can now head towards the turnstile access gate. While at the back end, AFCS interacts with FI.	
5.3. Turnstile opened for customer to leave station	The customer can now leave the bus safely when the turnstile gate opens for him.	BRTS OUT
5.4. As per Schema penalty is charged to Card account	If the customer does not exit the bus at his departure point, a penalty is charged to the card account in addition to the fare amount.	AFCS

6. Reconcile		
6.1. AFCS syncs with card account on all information	AFCS syncs with card account server for all the information retrieved from the card and also time, station ID and fare deducted from the customer.	AFCS
7. Transmit		
7.1. AFCS also syncs with FI pool account for cash reconciliation	While at the same time, AFCS also syncs with FI server for cash transaction.	FI
8. Settle		
8.1. FI transfers amount from pool account to BRTS account	FI checks the transactions that happened and transfers respective amounts from pool accounts in name of individual customers (card holders) to BRTS account of SMC to complete settlement at the end of the day.	FI
9. End		

Appendix I.VII - Pay Only Usage Process

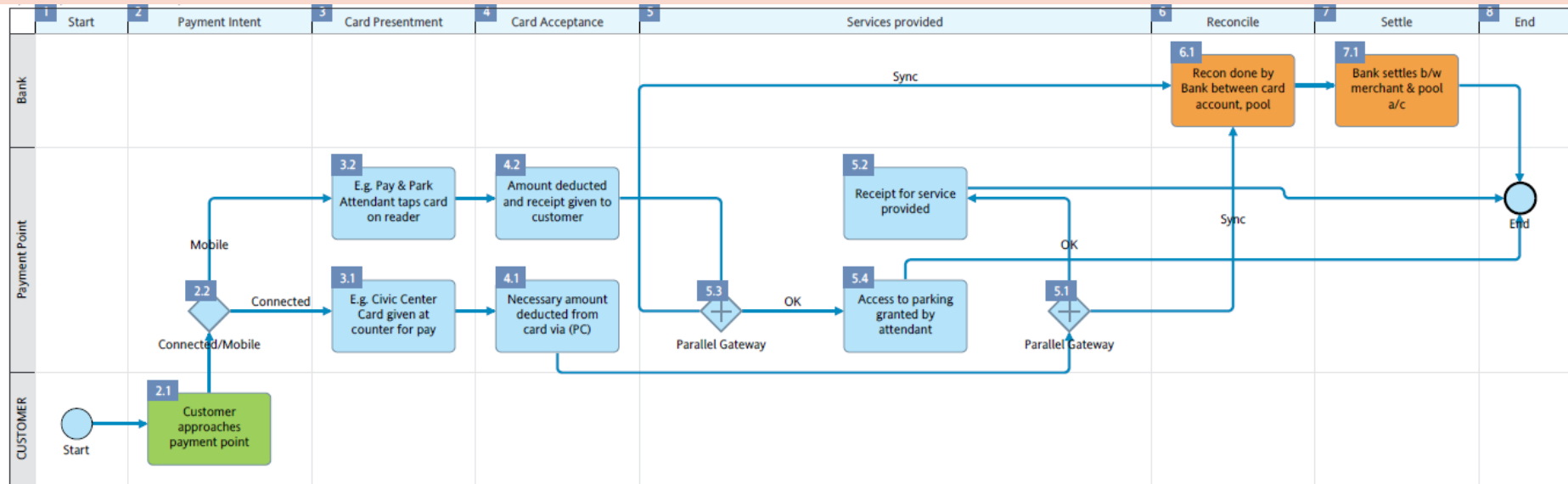


Figure 22 - Pay Only Usage Process Diagram

Step no.	Description	Participants
1. Start		
2. Payment Intent		
2.1. Customer approaches payment point	For pay only usage, customer approaches payment points installed on premises entry gates.	Customer
2.2. Connected/Mobile	The payment points can be connected where the touch point is connected to a tablet / PC via wired network. Or, it can be mobile where it is installed wirelessly.	
3. Card Presentment		
3.1. E.g. Civic Center Card given at counter for pay	The connected payment point includes civic center card given at the counter for payment.	Payment Point
3.2. Multi-level Parking & other Pay & Park Attendant taps card on reader	The mobile payment point example is where pay and park attendant taps customer card on a reader.	Payment Point
4. Card Acceptance		
4.1. Necessary amount deducted from card via (PC)	When a card is accepted at a connected payment point, the necessary amount is deducted from card via a PC / tablet. Payment can also be done in cash. If the required amount is not present on the card account, an insufficient funds message is prompted and the customer is requested to top up his card. For his convenience, card loading points are also present on the service area.	Payment Point
4.2. Amount deducted and receipt given to customer	Receipt is given to the customer upon successful payment made for his records.	Payment Point
5. Services provided		
5.1. Parallel Gateway	After successful deduction of amount from the customer card, at the front end, a signal goes to receipt generation, and at the back end, validator interacts with CMS.	

5.2. Receipt for service provided	For financial transaction made, a receipt is provided to the customer by the payment point operator.	Payment Point
5.3. Parallel Gateway	At the front end, the customer can now enter the premise. And on the back end, payment point interacts with FI.	
5.4. Access to parking granted by attendant	The attendant allows the customer to park his vehicle in the parking area.	Payment Point
6. Reconcile		
6.1. Recon done by FI between card account, pool account and utility account of SMC	At the end of the day, reconciliation is done by FI between all individual card accounts, all pool accounts and all utility accounts of SMC.	FI
7. Settle		
7.1. FI settles between merchant & pool account	FI checks all the financial transactions made in the day and does settlements between merchants and pool accounts in name of individual customers.	FI
8. End		

Appendix I.VIII - Membership Usage Process

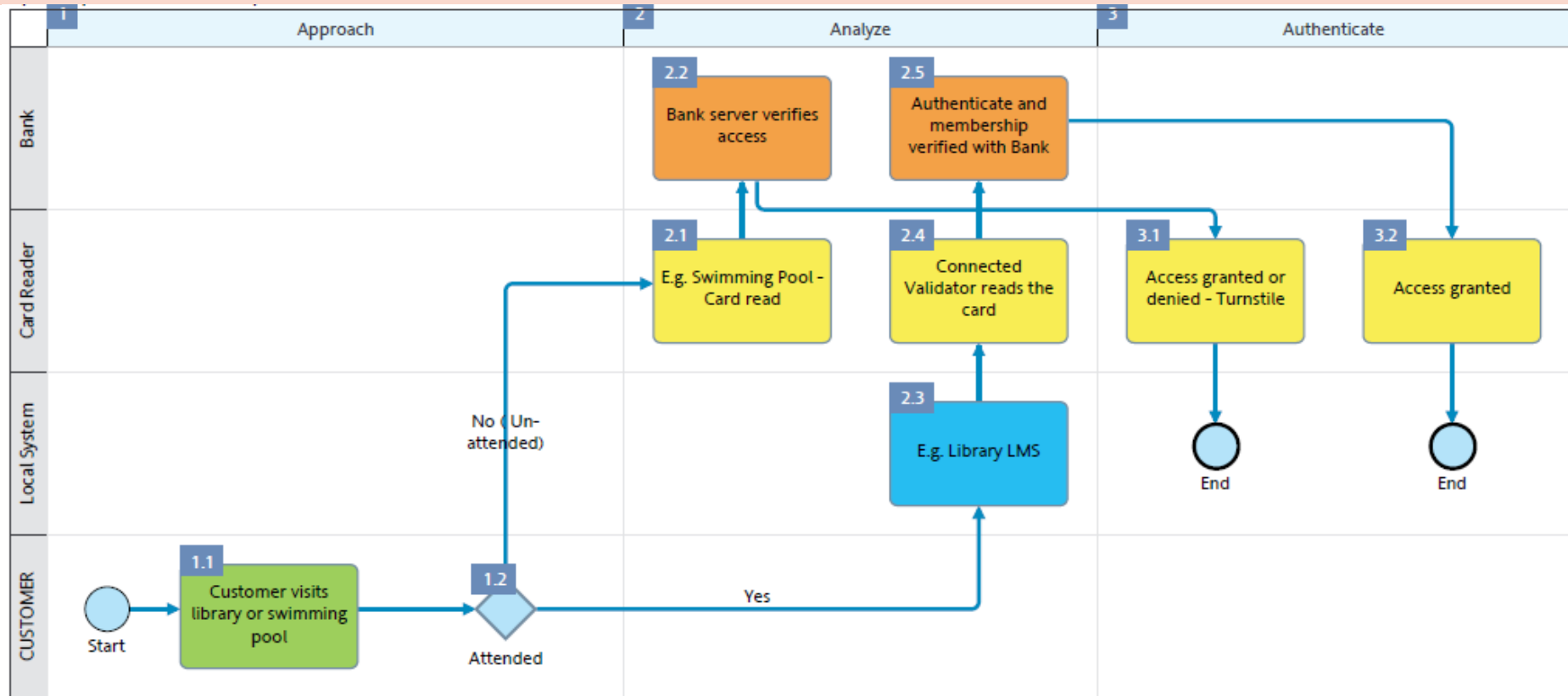


Figure 23 - Membership Usage Process Diagram

Step no.	Description	Participants
1. Approach		
1.1. Customer visits library or swimming pool	Customer visits SMC service premises where membership is desired. Eg. Library, swimming pool	Customer
1.2. Attended	At some premises, an operator will be present where a connected system is present. While for mobile connection, presence of operator is not mandatory where card reader is installed at the entry gate.	
2. Analyze		
2.1. E.g. Swimming Pool - Card read	The card reader machine at the entry reads the card number stored in the contactless card.	Card Reader
2.2. FI server verifies access	The FI server checks the card number against the information stored in its database and validates the same.	FI
2.3. E.g. Library LMS	For attended system, an operator sits with a connected system like Library Management System (LMS) to accept card from the customer.	Local System
2.4. Connected Validator reads the card	A connected validator reads the card and sends information to LMS to retrieve data of the customer stored in it. Eg. Previous books issued, books returned, pending books, discounts to be given, any dues left, etc.	Card Reader
2.5. Authenticate and membership verified with FI System	Current information retrieved from customer card is synced with FI system at the back end from LMS.	FI
3. Authenticate	LMS gives authentication to the customer.	
3.1. Access granted or denied - Turnstile	Access is granted or denied based on the information received from FI system and manual verification.	Card Reader
3.2. Access granted	FI system verifies membership details of the customer, updates its card account records and sends back information to LMS.	Card Reader

Note: Swimming pool process mentioned above assumes that it is completely automated. The access is enabled using a turnstile and an operator can be positioned at the pool to assist in case the card does not opens the turnstile for any reason.

Appendix I.IX - Transport Usage Process

Below is a possible process flow diagram which FI needs to confirm with AFCS service provider during implementation based on business rules defined within AFCS.

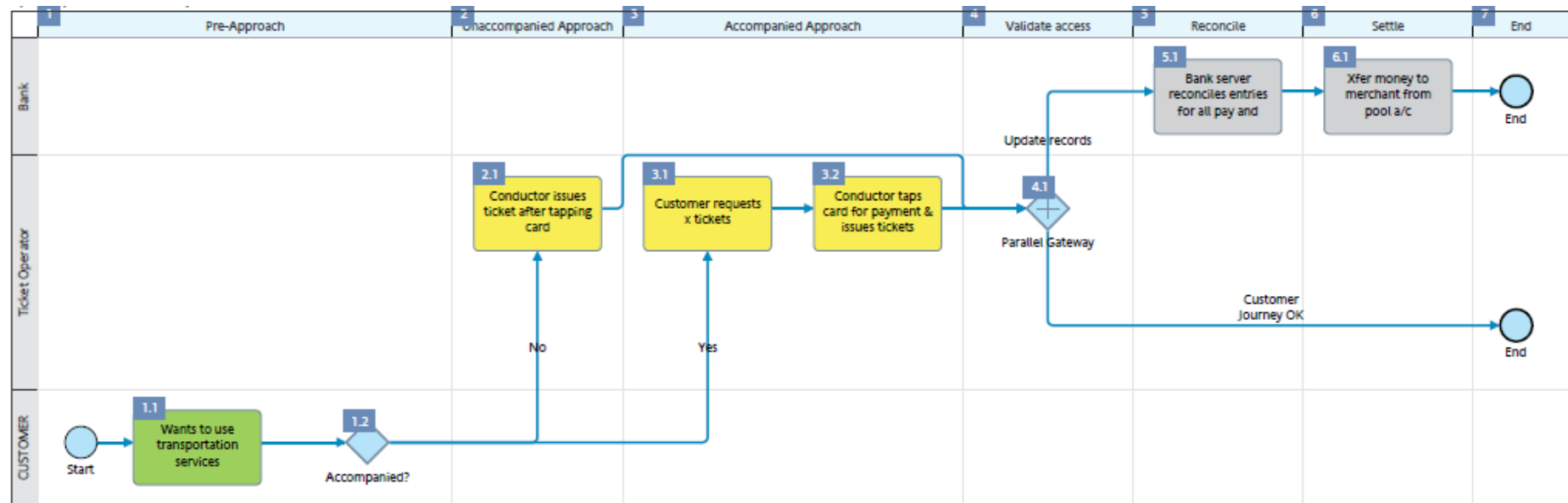


Figure 24 - Transport Usage Process Diagram

Step no.	Description	Participants
1. Pre-Approach		
1.1. Wants to use transportation services	In this stage, a customer who wants to use transportation service boards it.	Customer
1.2. Accompanied?	When the customer approaches for transport usage, there are two possibilities: either he is alone or he is accompanied by someone and requests the ticket operator at the premise to let them all enter on his card only.	
2. Unaccompanied Approach		
2.1. Conductor issues ticket after tapping card	The conductor issues a ticket to the customer based on his boarding point A to his alightment point B. The machine has built-in fare system and a ticket printer which works as a receipt for the customer. The machine deducts the fare amount from the card when the customer taps his card on it.	Ticket Operator
3. Accompanied Approach		
3.1. Customer requests x tickets	If the customer is accompanied by someone, he requests the ticket operator additional tickets to be issued on his card only. This helps in the convenience of those whom he accompanies and also other people in the transport vehicle.	Ticket Operator
3.2. Conductor taps card for payment & issues tickets	Ticket operator takes the card from the customer and taps it on the card reader to deduct the amount for him as well as those who accompany him based on his alightment point seen on his machine and exit point told by the customer. The built-in fare system calculates the fare and deducts the fare amount for all of these passengers from the customer's card upon tapping on it.	Ticket Operator
4. Validate access		
4.1. Parallel Gateway	At the front end, customer ticketing is done while at the back end ticket operator machine interacts with FI server.	
5. Reconcile		

5.1. FI server reconciles entries for all pay and merchants	At end of the day, FI server reconciles all the financial transactions for the day for all pay and merchants.	FI
6. Settle		
6.1. Transfer money to merchant from pool account	FI checks the transactions that happened and transfers respective amounts from individual card accounts to merchant to complete all settlements for the day.	FI
7. End		

Appendix I.X - Mobile Usage (Wi-Fi) Process

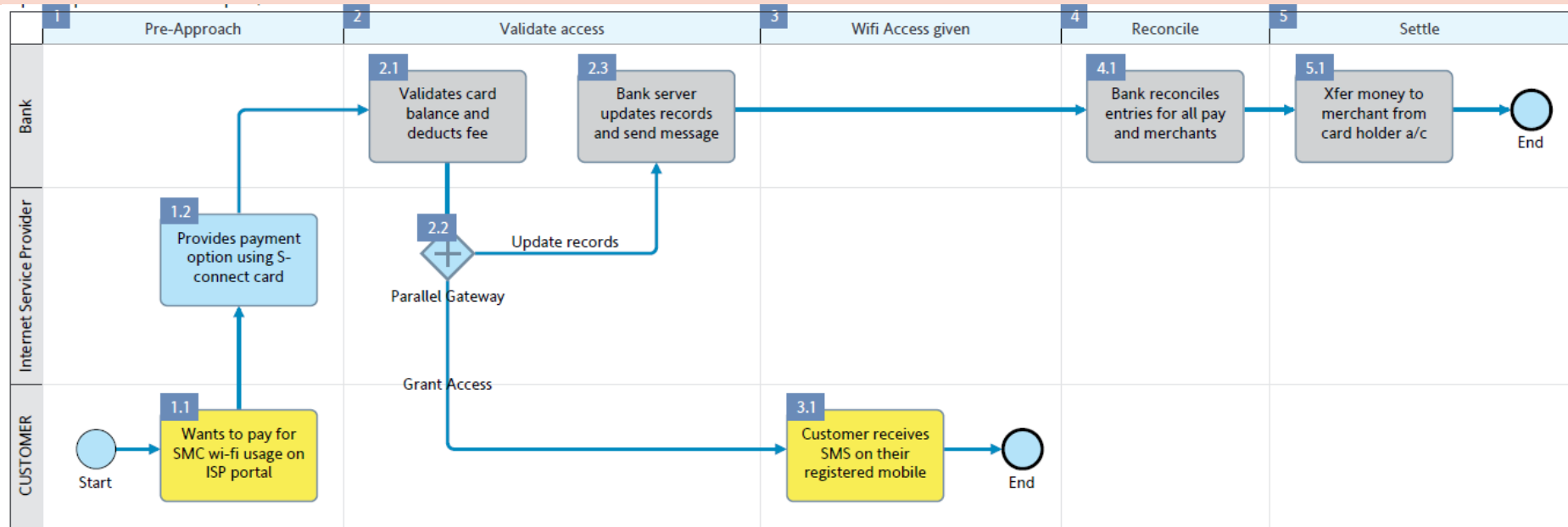


Figure 25 - Mobile Usage (Wi-Fi) Process Diagram

Step no.	Description	Participants
1. Pre-Approach		
1.1. Wants to pay for SMC wi-fi usage on ISP portal	For S-WiFi access, customer selects wifi and logs into portal using his mobile number. This enables him to get an OTP from ISP authentication server for confirmation.	Customer
1.2 Provides payment option using City Payment Card	One of the payment options for customer to be given by ISP is through wallet of City Payment Card account.	Internet Service Provider
2. Validate access		
2.1. Validates card balance and deducts fee	FI's server validates the card account details and also its balance, deducts required fees from it and sends a message to the customer mobile. For initial 30 minutes, the wi-fi access is free. While for further usage, a fixed amount is to be deducted on a per hour basis as per pre-defined rules of ISP.	FI
2.2. Parallel Gateway	At the front end, customer is sent a message from ISP. While at the back end, ISP interacts with FI server for financial transaction made.	
2.3. FI server updates records and send message to user	FI server receives transaction details from the authentication server and updates its records at the end of the day. It also sends a message to the customer for the transaction.	FI
3. Wifi Access given		
3.1. Customer receives SMS on his registered mobile	A confirmation SMS is sent to customer for the transaction made and his internet usage validity. The internet will be switched off for him from authentication server when the validity expires.	Customer
4. Reconcile		
4.1. FI reconciles entries for all pay and merchants	At the end of the day, FI reconciles all the financial transactions for the day from all pay and merchants.	FI

5. Settle		
5.1. Transfer money to merchant from card holder account	FI checks the transactions that happened and transfers respective amounts from individual card accounts to merchants to complete settlements for the day.	FI
6. End		

Note: This model above is contingent upon SMC's arrangement with Reliance Jio Telecom or another equivalent internet service provider.

Appendix I.XI - Mobile Validator Usage Process Diagram

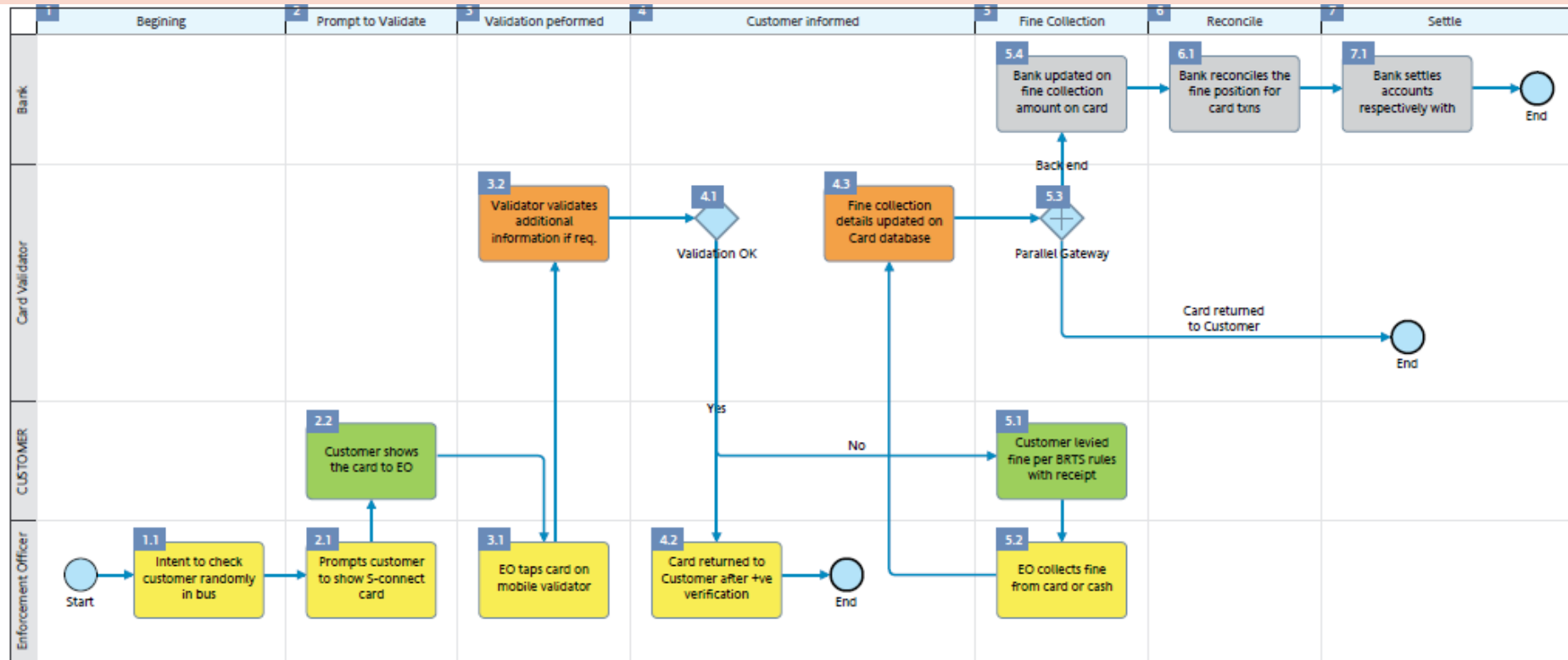


Figure 26 - Mobile Validator Usage Process Diagram

Step no.	Description	Participants
1. Beginning		
1.1. Intent to check customer randomly in bus	This provision is made to check customer randomly in bus for having tickets with him at all times at the current bus and also having paid for previous transactions made by him.	Enforcement Officer
2. Prompt to Validate		
2.1. Prompts customer to show City Payment Card	The enforcement officer asks customer to hand over his City Payment Card. The City Payment Cards stores last 10 financial transactions. However, this information is to be sent to FI server to check for previous records also.	Enforcement Officer
2.2. Customer shows the card to EO	Customer hands over his card to the EO.	Customer
3. Validation performed		
3.1. EO taps card on mobile validator	EO taps the card on a mobile validator which retrieves all information stored in the card.	Enforcement Officer
3.2. Validator validates additional information if required	Validator system also checks for any additional information if required of the customer from FI server.	Card Validator
4. Customer informed		
4.1. Validation OK	The validation check by FI server sends message back to the card validator.	
4.2. Card returned to Customer after positive verification	If the validation is OK, the customer is handed over the card back from EO.	Enforcement Officer
4.3. Fine collection details updated on Card database	However, if the validation fails, FI updates its records of the customer in card account database.	Card Validator
5. Fine Collection		
5.1. Customer levied fine per BRTS rules with receipt	Usage of bus without a valid ticket is a crime and the customer is levied fine as per BRTS rules with receipt upon payment.	Customer

5.2. EO collects fine from card or cash	The customer has the option to pay the fine amount using his card or through cash.	Enforcement Officer
5.3. Parallel Gateway	At the front end, the customer is returned the card after payment of fine. At the back end, card validator system interacts with FI.	
5.4. FI updated on fine collection amount on card database	FI updates its record on the financial transaction made in customer's card account.	FI
6. Reconcile		
6.1. FI reconciles the fine position for card transactions	At the end of the day, FI reconciles all the financial transactions for the day from all buses.	FI
7. Settle		
7.1. FI settles accounts respectively with BRTS / SMC and card account	FI checks the transactions that happened and transfers respective amounts from individual card accounts to bus account to complete settlements for the day.	FI

Note: The enforcement officers will be sent at SMC's discretion to cover its other premises also. Fine calculation will be dependent on rules decided by SMC for that premise.

Appendix I.XII - Cashback Scenario Process Diagram

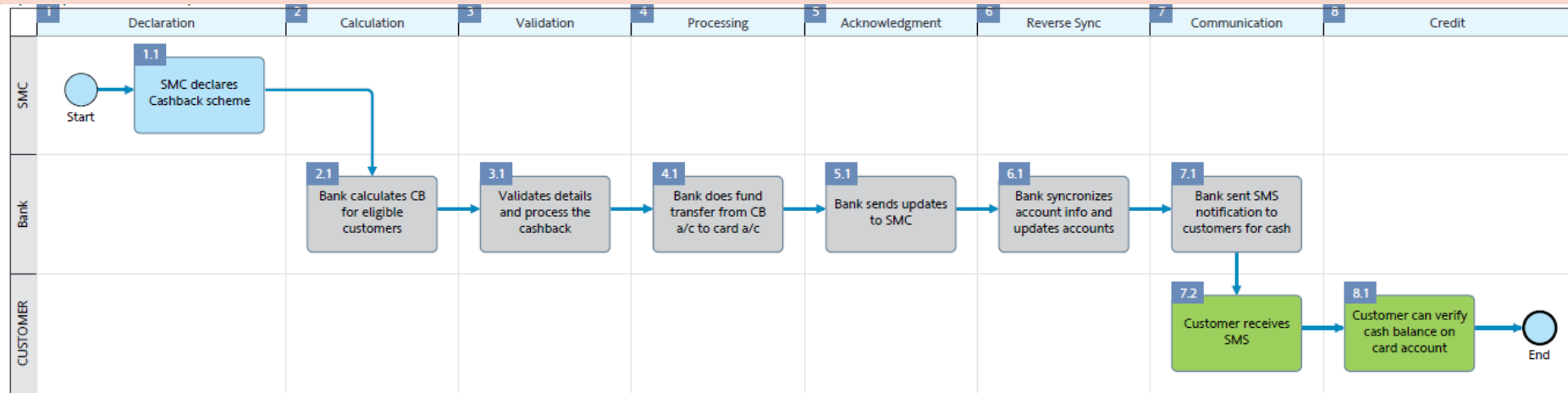


Figure 27 - Cashback Scenario Process Diagram

Step no.	Description	Participants
1. Declaration		
1.1. SMC declares Cashback scheme	To promote usage of City Payment Card and its various services, FI & SMC in consultation with each other, declare various innovative cashback schemes for citizens.	SMC
2. Calculation		
2.1. FI calculates CB for eligible customers	FI calculates cashback for eligible customers on a pre-defined frequency and set of cashback rules set with discussion with SMC.	FI
3. Validation		
3.1. Validates details and process the cashback	FI verifies details from its financial records and starts the cashback process.	FI
4. Processing		
4.1. FI does fund transfer from CB account to card account	FI checks its records and transfers the amount from cashback account to individual card holder account.	FI
5. Acknowledgment		
5.1. FI sends updates to SMC	After successful transfer of amounts in the accounts, FI sends updates to Surat Municipal Corporation to declare update for citizens.	FI
6. Reverse Sync		
6.1. FI synchronizes account info and updates accounts	FI updates its records that the list of customers have received the amounts.	FI
7. Communication		
7.1. FI sent SMS notification to customers for cash back credits are completed to their card	An SMS is sent to all the customers in the eligible list that they have received cashback from SMC in their City Payment Card.	FI

7.2. Customer receives SMS	Customer receives SMS in his registered mobile number.	Customer
8. Credit		
8.1. Customer can verify cash balance on card account	When customer checks the cash balance on his card account, he sees the updated balance!	Customer

Appendix I.XIII – Retail Payment Process Diagram

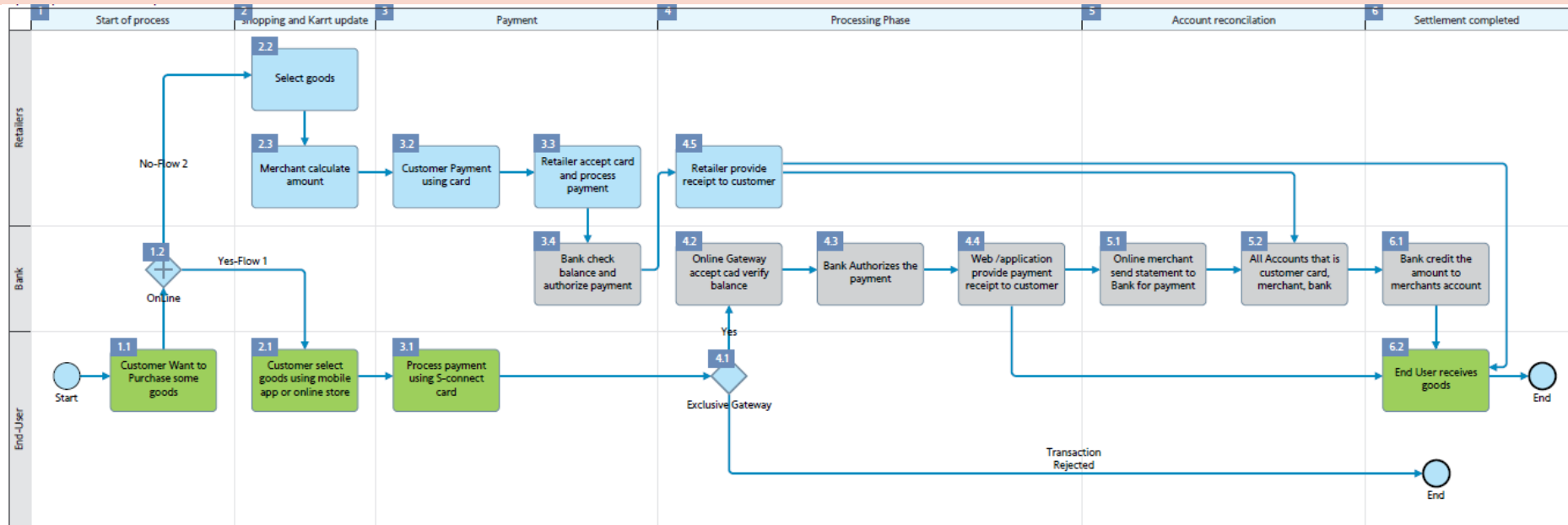


Figure 28 - Retail Payment Process Diagram

Step no.	Description	Participants
1. Start of process		
1.1. Customer wants to purchase some goods	Retail payment process starts with customer want to purchase goods.	End-User
1.2. Online	The retail mode can be chosen online.	
2. Shopping and Cart update		
2.1. Customer select goods using mobile app or online store and add them to cart	Using a mobile portal or a website, the customer selects goods and adds them to his cart before checkout and payment.	End-User
2.2. Select goods	At the retailer end, if the customer chooses offline mode for payment, he needs to select the goods.	Retailers
2.3. Merchant calculate amount	Based on the items selected by customer, merchant calculates the amount to be paid.	Retailers
3. Payment		
3.1. Process payment using City Payment Card	The customer can pay using various options like net Fling, credit/debit card, e-wallets, etc. This flow explains the process payment using City Payment Card.	End-User
3.2. Customer Payment using card	The customer can pay using cash or card. Here, he presents his City Payment Card to the merchant.	Retailers
3.3. Retailer accept card and process payment	The retailer accepts the City Payment Card at his PoS terminal and processes the payment by typing in the amount to the terminal.	Retailers
3.4. FI check balance and authorize payment	Before authorizing the payment, the customer validates the amount he is paying for his assurance.	FI
4. Processing Phase		
4.1. Exclusive Gateway	In the processing stage, either the card has sufficient balance or not. If sufficient balance is not available in the card, the transaction fails and a message pops up in the PoS terminal. The customer is asked for another mode of payment or to top-up his City Payment Card balance.	

4.2. Online Gateway accept card verify balance	If the card has sufficient balance, the online payment gateway processes further.	FI
4.3. FI Authorizes the payment	FI authorizes the payment after validation of account details.	FI
4.4. Web /application provide payment receipt to customer	After successful fund transfer, a payment receipt is provided to the customer.	FI
4.5. Retailer provide receipt to customer	Retailer gives the items and the payment receipt to the customer for his records.	Retailers
5. Account reconciliation		
5.1. Online merchant send statement to FI for payment	In the reconciliation stage, merchant sends statement to FI for payment.	FI
5.2. All Accounts that is customer card, merchant, FI pool account are reconcile	The given accounts reconciliation is done by the FI. Settlements are validated.	FI
6. Settlement completed		
6.1. FI credit the amount to merchants account	FI does required settlements.	FI
6.2. End User receives goods	The retail payment journey is completed for the customer and he walks away with the goods and the cash receipt.	End-User

Appendix I.XIV – Refund Scenario Process Diagram

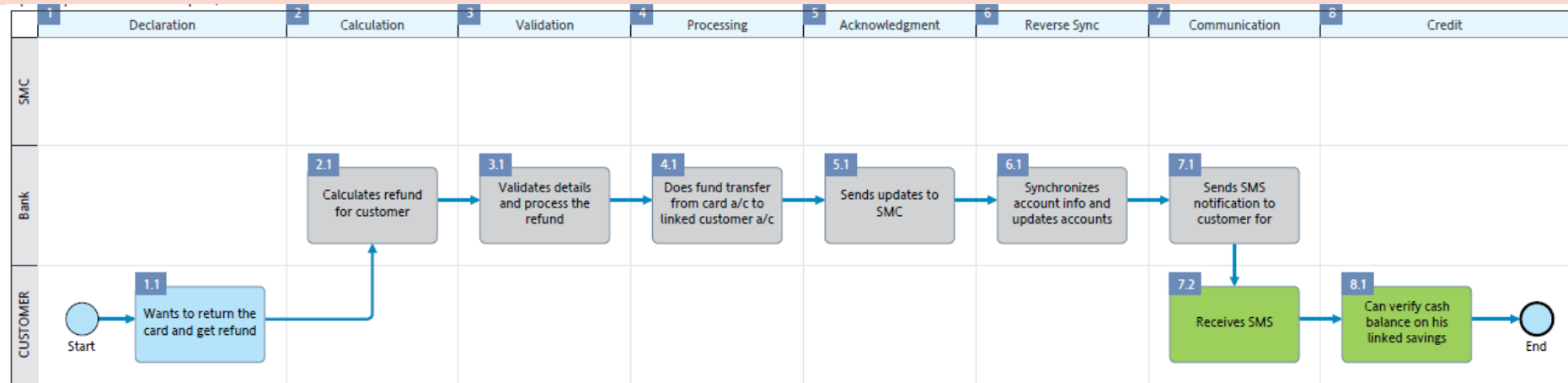


Figure 29 - Refund Scenario Process Diagram

Step no.	Description	Participants
1. Declaration		
1.1. Wants to return the card and get refund	In this scenario, the customer goes to the FI outlet to return the card to get a refund. This may happen when the customer no longer wishes to avail City Payment Card benefits due to personal / business reasons.	Customer
2. Calculation		
2.1. Calculates refund for customer	The FI agent accepts the card. FI calculates refund for customer based on the amount on the card, the security deposit and deductions if any.	FI
3. Validation		
3.1. Validates details and process the refund	The calculated amount is validated and the refund is processed.	FI
4. Processing		
4.1. Does fund transfer from card a/c to linked customer a/c or cash settlement	The FI does necessary settlements for the customer. The card account balance is transferred to the linked FI savings account of customer if any, or through cash settlement.	FI
5. Acknowledgment		
5.1. Sends updates to SMC	After successful transfer of amounts in the accounts or via cash, FI sends updates to Surat Municipal Corporation.	FI
6. Reverse Sync		
6.1. Synchronizes account info and updates accounts	FI updates its records for the customer after he has received the balance amount.	FI
7. Communication		

7.1. Sends SMS notification to customer for refund credit	An SMS is sent to the customer in the eligible list that he has received refund from FI in their savings account or cash.	FI
7.2. Receives SMS	Customer receives SMS in his registered mobile number.	Customer
8. Credit		
8.1. Can verify cash balance on his linked savings account or cash received	When customer checks the cash balance on his linked savings FI account, he sees the updated balance. Or, he checks the cash amount received from the FI agent and refund process gets over for him.	Customer

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