J CARD

Automatic Fare Collection System for Public Transport in Jabalpur City.

FARE COLLECTION SYSTEM

Electronic Ticketing Machine

Bus conductor using ETM and handling cash

Drawbacks

➤ Revenue Leakage
➤ Inconvenient
➤ User Inacceptance
➤ Duplication of Passes

PVC Passes

Pass for distinctly able person

Our intervention-

A New Fare Collection System is required for Public Transportation in Jabalpur.

VISION OF THE PROJECT

Introducing AFC in public transportation system of city.

OBJECTIVES OF PROJECT

- Introduction of stage based automatic fare collection system in city buses.
- Introduction of card based parking fee collection in city.
- To make it a multi modal mobility card for the city.
- Making J card versatile and can be used to make payments and identity card for residents of Jabalpur

DIFFERENT FARE COLLECTION SYSTEMS AROUND THE WORLD

AUTOMATIC FARE COLLECTION SYSTEM OF HONGKONG

OCTOPUS

CASE STUDY- HONGKONG

Mass Transit Railway Cooperation Limited

↓

Magnetic plastic card for AFC

↓

KCRC, KMBC, small scale non-transport applications

Benefits
- Reduced cash handling.
- Reduced faulty cash handling.
- Reduced card recycling cost.
- Improvement in overall service quality.
- Positive public acceptance.

Limitation
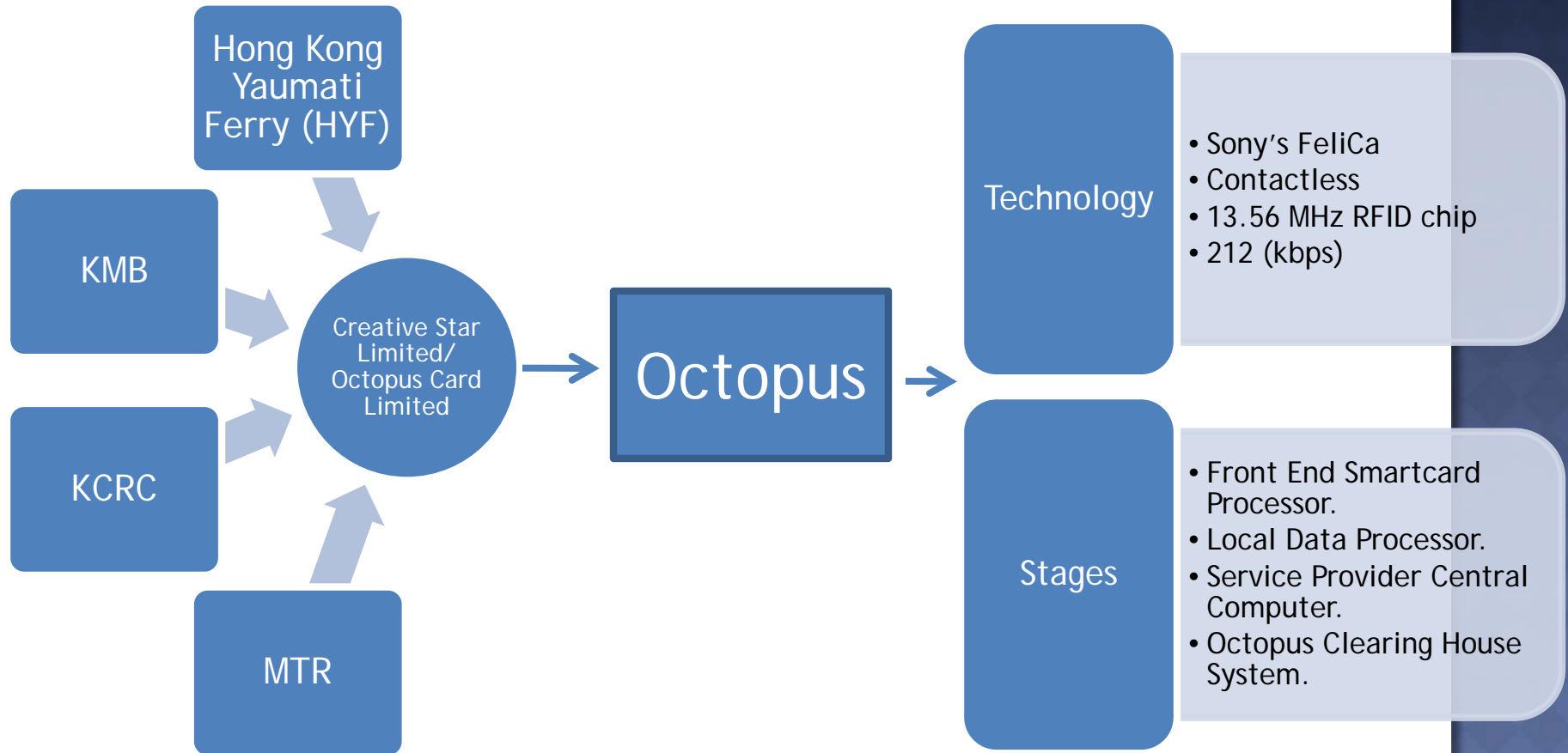- Limited data capacity - inadequate for further service improvements

Solution
- Contactless smart card
- Integrated AFC

Contactless Smart Card – All Public Transportation

↓

Octopus

CASE STUDY- HONGKONG

Hong Kong Yaumati Ferry (HYF)

KMB

KCRC

MTR

Creative Star Limited/ Octopus Card Limited

Octopus

Technology
- Sony's FeliCa
- Contactless
- 13.56 MHz RFID chip
- 212 (kbps)

Stages
- Front End Smartcard Processor.
- Local Data Processor.
- Service Provider Central Computer.
- Octopus Clearing House System.

AUTOMATIC FARE COLLECTION SYSTEM OF LONDON

OYSTER

CASE STUDY- LONDON

↓

Oyster

RFID, cloud based, off board smart card AFC system

OUTCOME OF CASE STUDY

LEARNING	REQUIREMENT

LEARNING

- Cost-effective and Convenient.
- Very Fast.
- Contactless.
- Fully integrated.
- Easy to use and versatile.
- Stage based financial settlement.
- Beneficial not only for the PT user but also for the PT operators.

REQUIREMENT

- High degree of planning and co-ordination
- Consistent design standards and user interfaces
- Flexibility to ensure the particular business requirements of the Operator
- Extensive hardware and software development

DIFFERENT TECHNOLOGIES

	Magnetic Strip Card System	Mobile Phone System	Contactless Cards	Server based contactless cards	Cloud Based contactless cards
Data storage	Travel product and available balance	Travel product	Travel Product and data for fare	All data stored in a central server system.	All data is stored in cloud.
Data updated	Contact with magnetic card writer	Contactless, mobile network	Card Writer	NFC device	NFC device
Validation	Contact with magnetic card reader	Bar code and QR code validator	Card Reader	Card Reader	Card Reader
A nti counterfeiting	Security against counterfeiting	vulnerable to counterfeiting	Can be protected with some additional features	effective counterfeiting protection	effective counterfeiting protection

DIFFERENT SYSTEMS

Closed System

- Allows commuters to pay a fare and validates their access to travel
- Specific and only valid on that transit system.
- Data is predominately stored on the cards.
- Lack flexibility
- Funds are locked up and dormant until needed to pay for a ticket
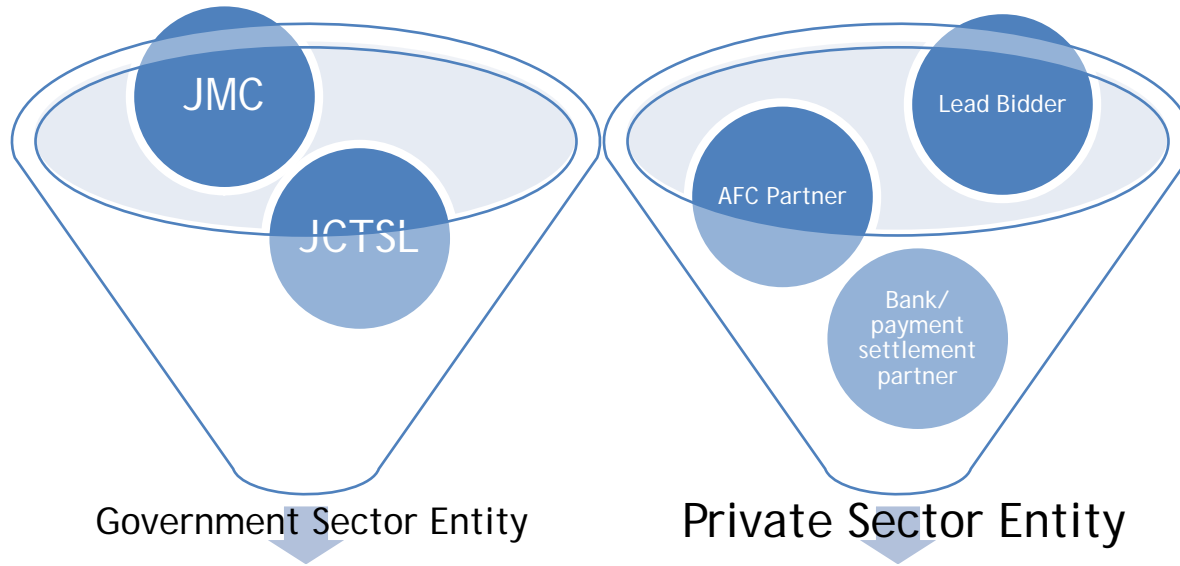- Secure, easy to use and have reduced operating costs compared with paper tickets

Semi-Closed System

- Allows commuters to pay a fare, validates their access to travel and also to make purchases.
- Versatile.
- Data is stored on either server or cloud .
- Flexible
- Funds are can be used to make various types of payments.
- Flexible secure, easy to use and have reduced operating costs compared.

Open System

- Allow the user to pay for their travel using their existing credit, debit or pre-paid cards, mobile devices or any other enabled payment media.
- No need for commuters to carry a transit specific card.
- Back office account-based fare calculation.
- More flexible.
- Funds are never locked up and can be used to make variety of payment.
- Flexible, secure, easy to use, lower operational and capital cost.

PPP STRUCTURE

JMC

JCTSL

Lead Bidder

AFC Partner

Bank/ payment settlement partner

Government Sector Entity

Private Sector Entity

➢Principal facilitator
➢Co-branding partner
➢Advocacy with citizens and various establishments like offices, factories, apartments
➢Support use of cards for various tax payments, water charges, recreation / library facilities, pay&park, etc
➢Promote use of cards through publicity means at its disposal.

Technology Service Provider: Manage, as a technology service provider, end-to-end cloud based implémentation, operations and maintenance of Prepaid Semi-Closed Payment Instrument ecosystem – including software implementation on cards, front end devices, middleware, back-end system, reporting, MIS.
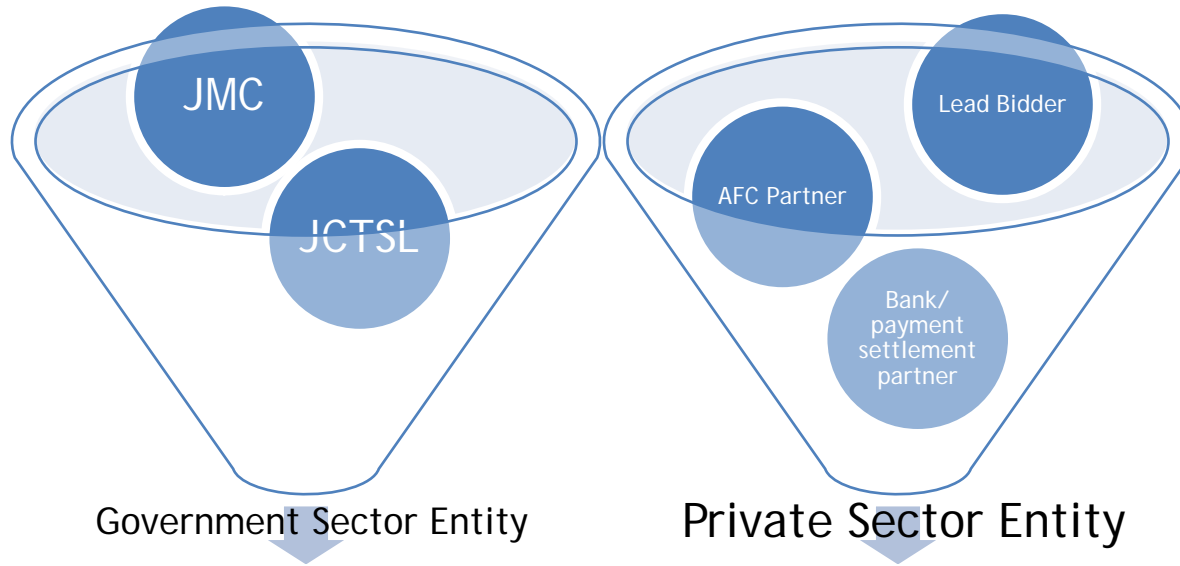
PPP STRUCTURE
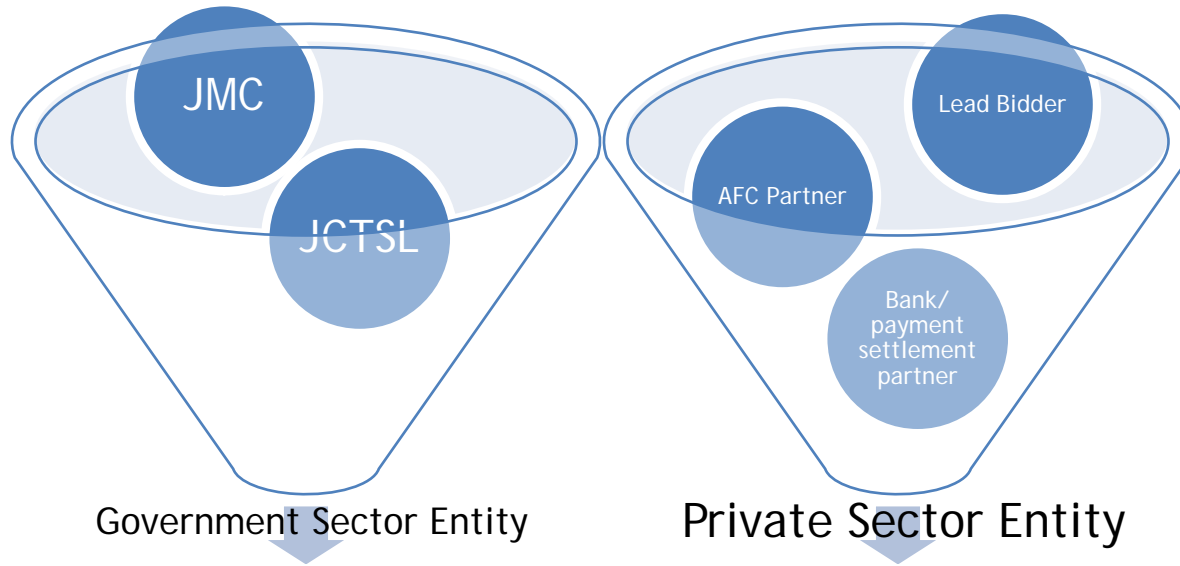
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pay&park, etc
➤Promote use of cards through
publicity means at its disposal.

Private Sector Entity

Lead Bidder

AFC Partner

Bank/ payment settlement partner

➤Merchant Aggregator.
➤Manage Non-Financial Use
Cases.
➤Invest in the front-end
ecosystem.
➤Distribution & Marketing.
➤Service Outlets.

PPP STRUCTURE

JMC

JCTSL

Lead Bidder

AFC Partner

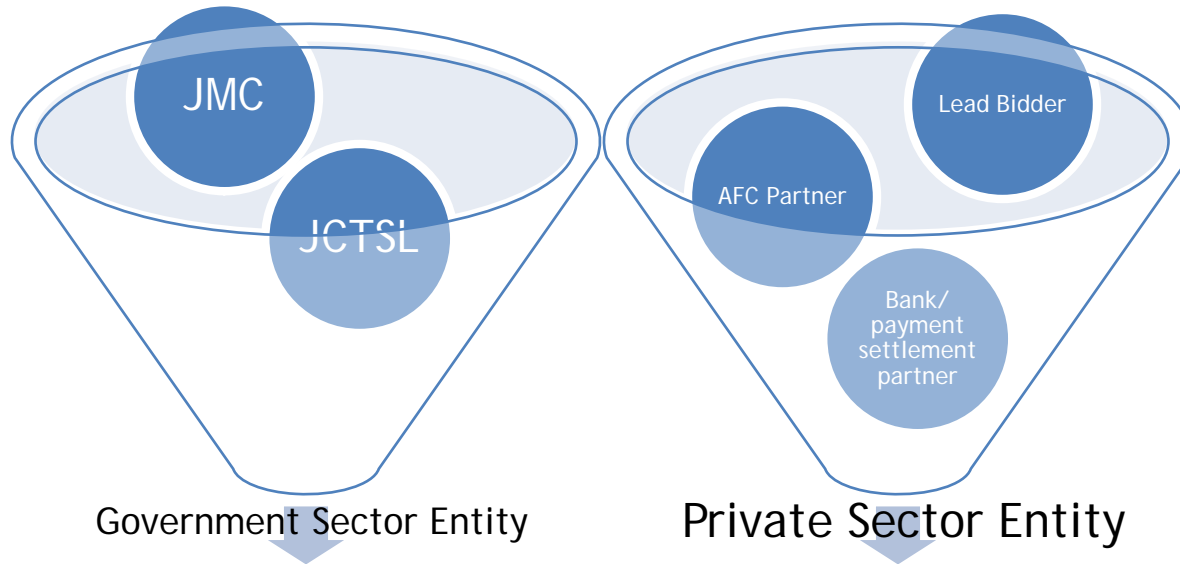**Bank/ payment settlement partner**

Government Sector Entity

Private Sector Entity

➢Principal user via city buses.
➢Provide 10% discount to customers to encourage use of cashless payments via J-Card RFID cards vs. use of cash based tickets.
➢Take financial responsibility for damage to AFC installations due to vandalism or acts of god or acts of its staff / employees.
➢Ensure all passes are only on J-Card cards.

➢Principal Issuer of financial value on semi-closed prepaid instrument
➢Principal Acquirer of transactions on various devices in system.
➢Settlement of funds (T+1).
➢Facilitate opening of required CBS accounts against proper KYC.
➢Payment Gateway services for load of card against credit / debit / prepaid / wallets.

PPP STRUCTURE

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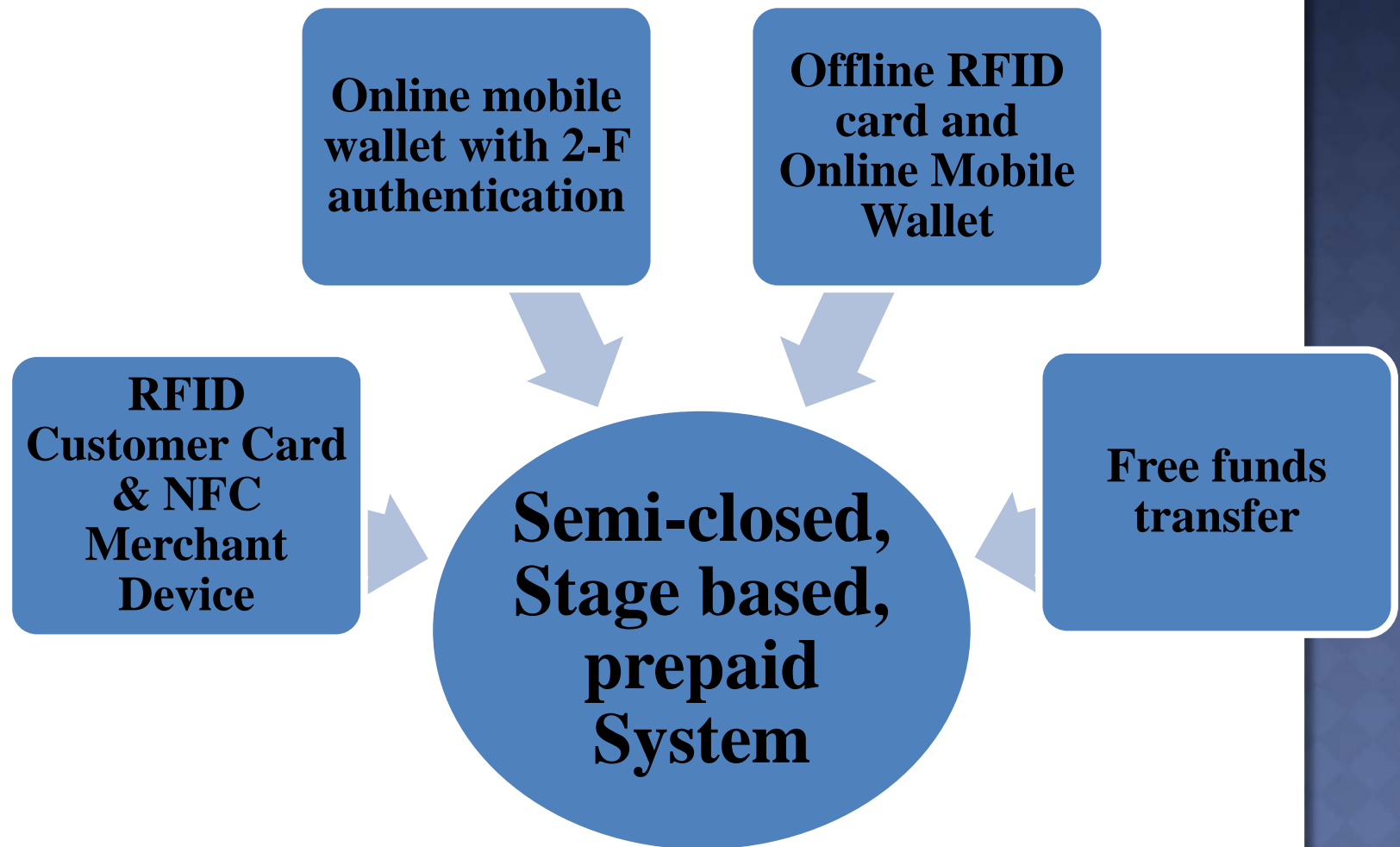
Private Sector Entity

Public Private Partnership

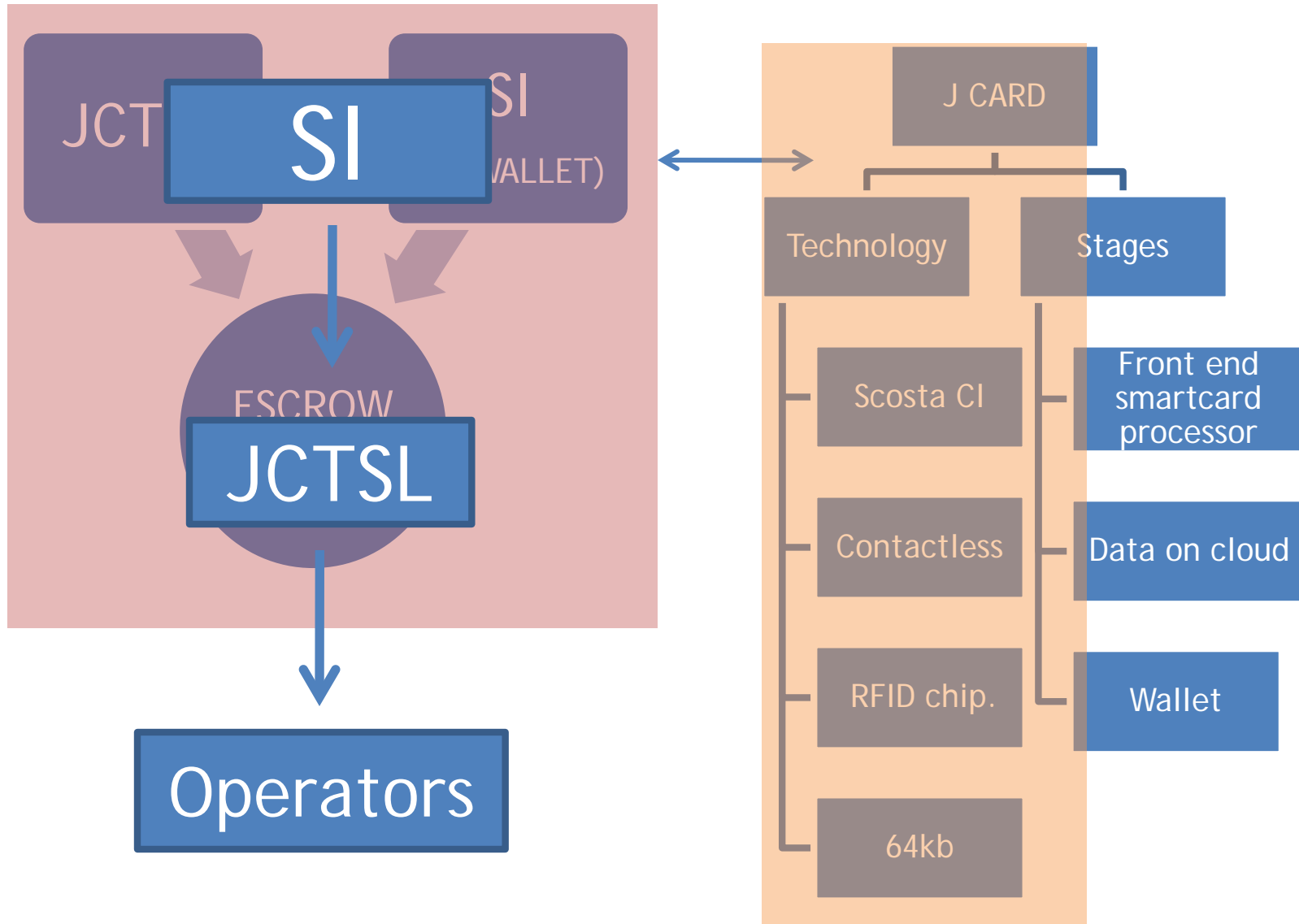User Fee Based Built , Operate and Transfer type.

Public Service:

1. Automatic Fare Collection in Public Transportation
2. Paying for Parking Lots
3. Entries in Gardens and Parks
4. Municipal Taxes
5. Paying for Public Utilities
6. Bill payments in retail shops

J CARD- AUTOMATIC FARE COLLECTION SYSTEM IN PUBLIC BUSES

PREPAID SYSTEM

Online mobile wallet with 2-F authentication

Offline RFID card and Online Mobile Wallet

RFID Customer Card & NFC Merchant Device

Semi-closed, Stage based, prepaid System

Free funds transfer

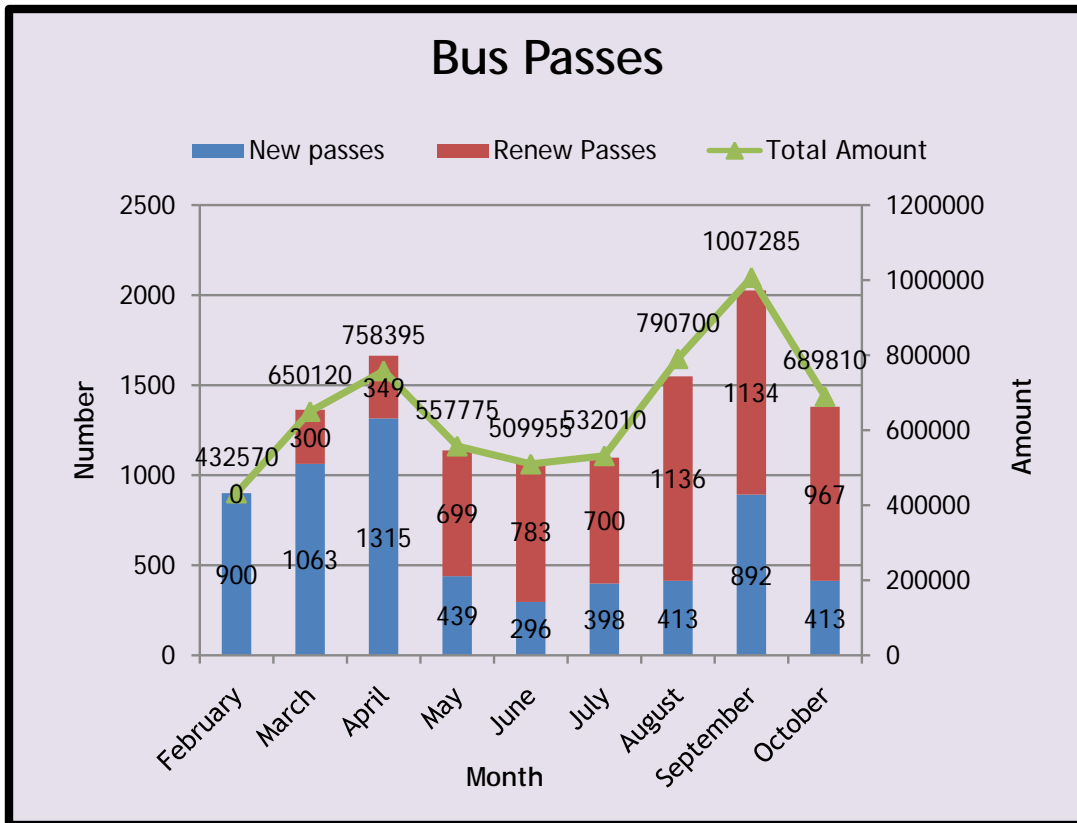# SETTLEMENT FLOW

PRESENT SCENARIO

Implementation as passes in city buses and at ISBT.

J CARD IN CITY BUSES

J Card as passes

J CARD AS CITY BUS PASS

➢All the city buses passes have been converted into JCARD.

➢Convenient and beneficial as passes can be renewed on same card.
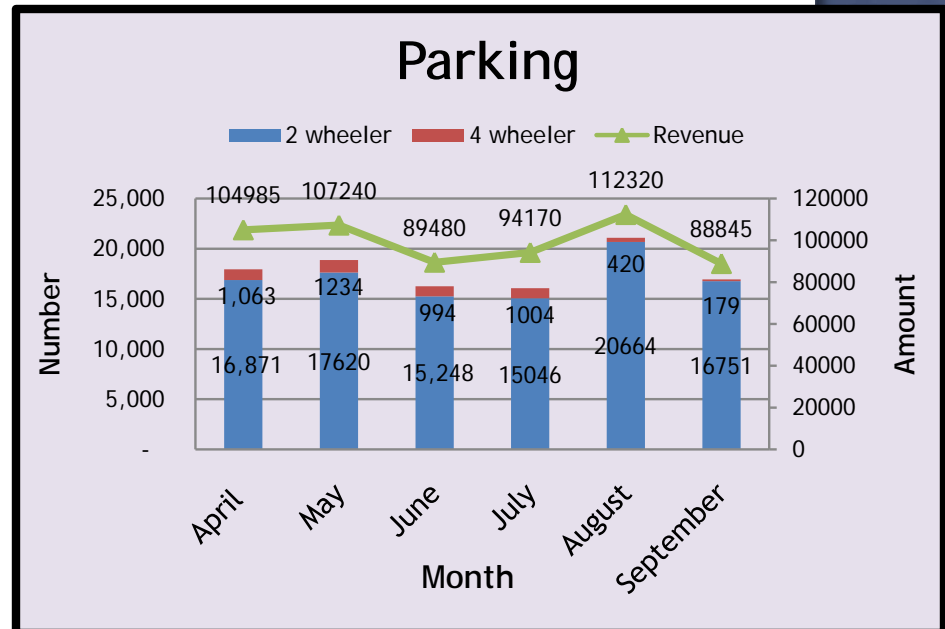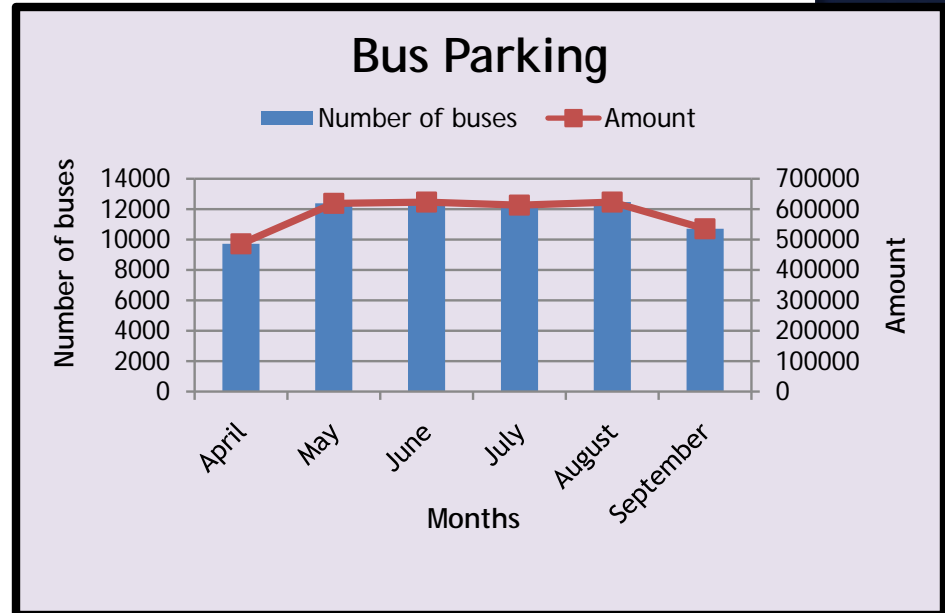
➢More than 4000 cards are in circulation.

J CARD AT ISBT

For vehicular parking

J CARD AT ISBT

➢ Convenient and Secure parking system for operators, public and beneficial for authority.

➢ Total 2000 cards have been issued and 1600 are the daily users.

➢ J Card as parking token, totally paper-free parking system

Bus Parking

Legend: Number of buses · Amount

Left axis (Number of buses): 0, 2000, 4000, 6000, 8000, 10000, 12000, 14000
Right axis (Amount): 0, 100000, 200000, 300000, 400000, 500000, 600000, 700000
Months: April, May, June, July, August, September

Parking

Legend: 2 wheeler · 4 wheeler · Revenue

Month	2 wheeler	4 wheeler	Revenue
April	16,871	1,063	104985
May	17620	1234	107240
June	15,248	994	89480
July	15046	1004	94170
August	20664	420	112320
September	16751	179	88845

Left axis (Number): -, 5,000, 10,000, 15,000, 20,000, 25,000
Right axis (Amount): 0, 20000, 40000, 60000, 80000, 100000, 120000

IMPLEMENTATION

CHALLENGES	INTERVENTION

CHALLENGES

- Phase I- ISBT Parking System
    - Initial inacceptance by operators.
    - Technological difference between BTMS of ISBT and JCard.
- Phase II – Conversion of existing bus passes
    - Device handling and inacceptance by conductors.
    - Backend system (types of passes, reissuance, renewal).
- Maintaining transparency

INTERVENTION

- Capacity building and training:
    - Conductors
    - Ticket Checkers
    - Operators and issuer
    - Parking operator.
- Customization of Front End devices.
    - Parking tokens.
    - Customized ETM machines(still to be finalized).
- Customization of backend system.
    - Integration of different systems.
    - Policy for passes (issuance, renewal, backdate issuance etc).
- Data Management.

CARD INSPECTION ON CITY BUSES

BENEFITS

➢ Reduced card recycling cost (from 300 rs per person per year to 85 rs per person per year).

➢ 100% reduction in card duplicity.

➢ Reduction in cash leakage.

➢ Increased transparency and accountability.

➢ Increased security and reliability.

WAY FORWARD

- Wallet Launch.
- Development of wide network of J Card issuance centres(shops, kiosks, public places, government department, etc).
- Phase III – Launch of AFC on all route
    - Banking Partner, present financial.
    - Development of front end devices(According to NPCIL guidelines).
- Revival of financial model.
- Integration with all the municipal corporation payment system.

THANK YOU