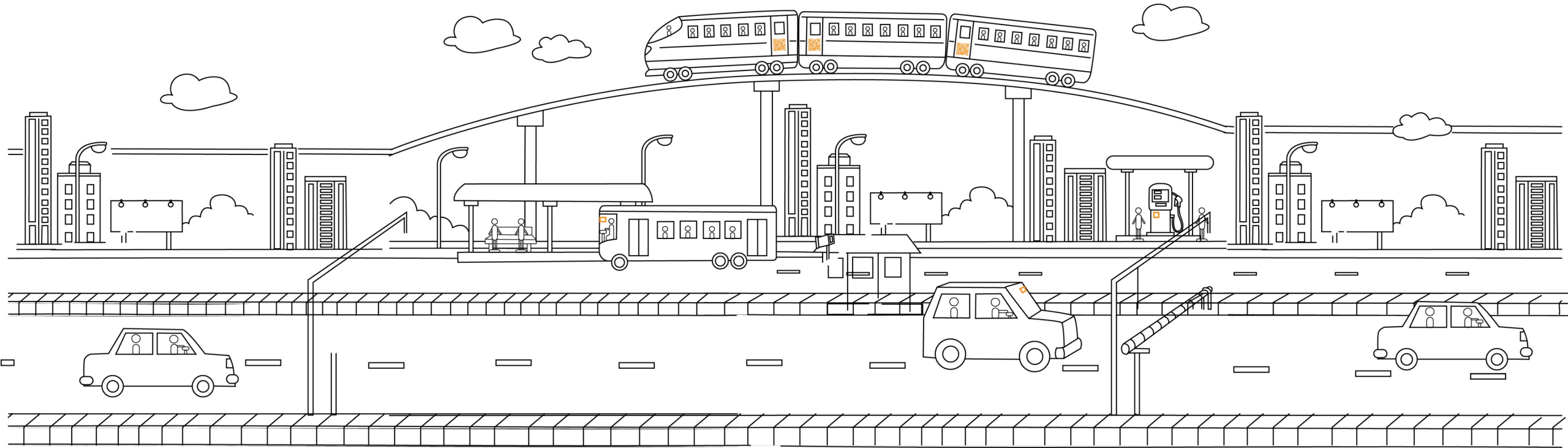


# Innovation and Challenges in Metro Rail Implementations/Operations in India

paycraft

Powering Mobility

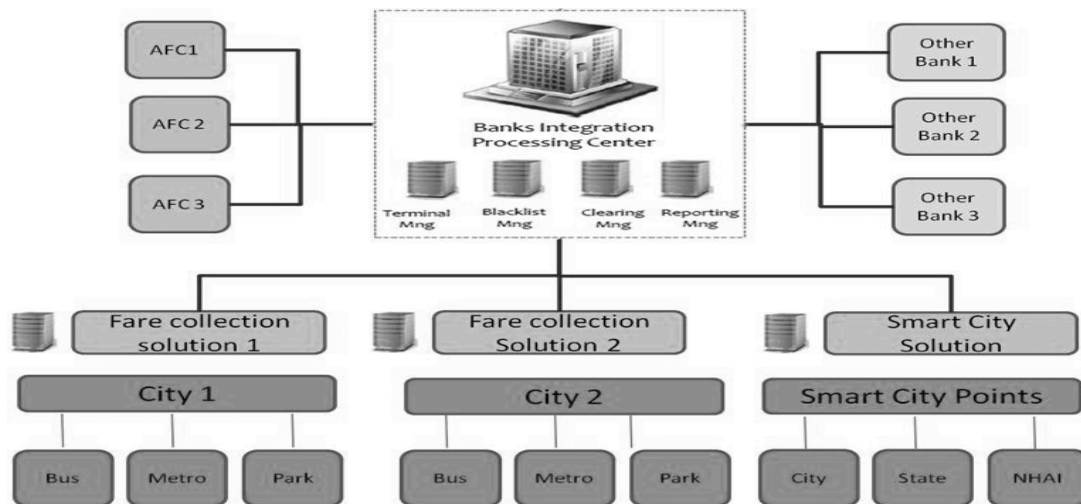


26-10-2018

# Various innovations around transit ticketing in metros (1/2)

## Cloud based AFCS

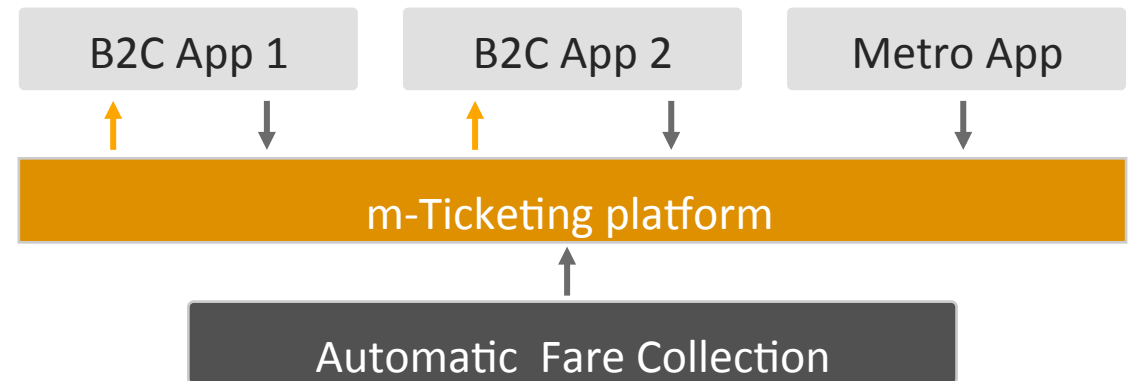
- Central fare engine integrating all existing fare collection systems in a city/state/country
- Cloud AFC helps having a central fare rules engine paving roads for integrated fares
- Helps reduce the cost for AFCS significantly as eliminates the need for multiple AFCS for each line/phase



## Open data bus for digital ticketing

m-Ticketing platform will provide interoperable APIs for enabling digital ticketing on various mobile apps

This platform will allow consumers to purchase tickets for travel on metro and other transit options.

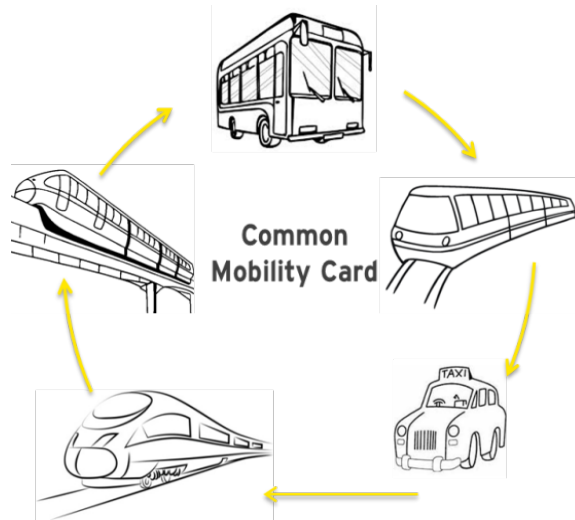


### The Open data bus platform Advantage:

- Increase in the overall ridership.
- Lower distribution cost due to digitization
- One time integration with Reliance Metro, and OC takes over the hassle of other subsequent integrations
- Consolidated Recon and Reporting across multiple Apps/channels

# Various innovations around transit ticketing in metros (2/2)

Common Mobility Cards aims to provide seamless travel for individuals across multiple modes of public transport through a common fare/ticket media.



## Easy to Use

- ▶ Enables commuters to carry one card for use on all transit modes
- ▶ Facilitates the multi-modal travel behaviour

## Travel Data Collection

- ▶ Collects authentic data about travel pattern and behaviour
- ▶ Data can be used to inform transport policy and the planning of service

## Reduce Revenue Pilferage

- ▶ Allows faster revenue reconciliation with recorded data on travel patterns
- ▶ Equips authorities to detect and deter fare evasion

## Improves Boarding

- ▶ Allows faster boarding and help to reduce trip times
- ▶ Just takes 500-850 milliseconds to complete the transaction

## Demand Management

- ▶ Allows the operator to offer discounts to commuters for specific trips
- ▶ Can balance demand and increase patronage in off peak periods

## Multiple Use of Smart Cards

- ▶ Integrates with other transport service like parking, tolls and taxis
- ▶ Promotes cashless economy by integrating with convenience stores

# Advantage: Open Loop NCMC

## Ecosystem player benefits

### Commuters

- Time saving - no queuing for tickets
- Use of payment instrument beyond transit
- Plan multi-modal trips
- Payment instrument agnostic

### Banks

- Increase in cards used for retail and transit
- Quick ramp up of card sales with least effort
- Activation and usage of cards guaranteed
- Increase engagement for wallet/ payment offering by banks
- Financial services portfolio expansion through value added services to the consumers

### Public Transport Operator

- Increase in revenue due to use of open loop cards outside the operator
- Ease in travel increases ridership
- Inter-operability increases ridership
- Reduction in costs
- Reduction in ticketing and money handling process allowing focus on core competence

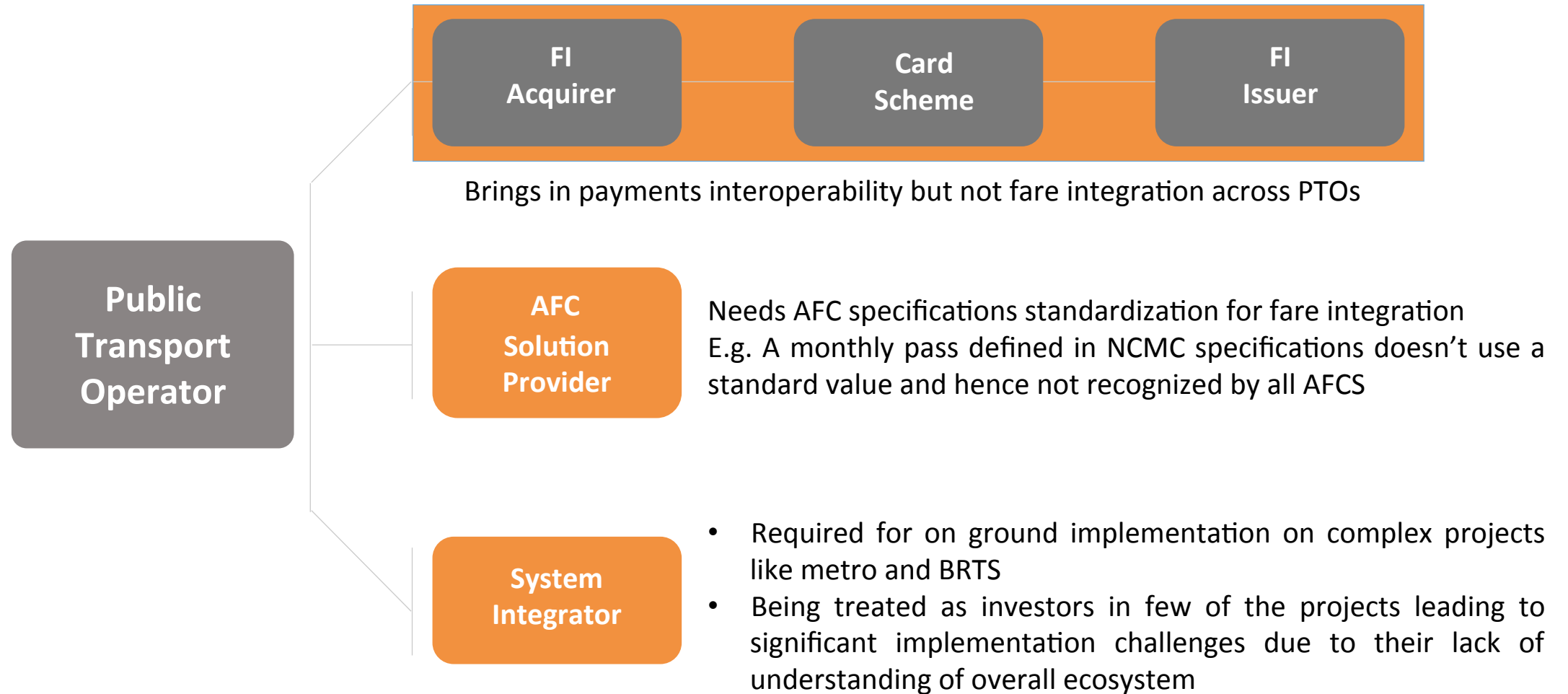
# Ecosystem Challenges

Challenges for seamless ticketing in India blocking the way for innovations

Risk Category	Impact	Risk Mitigation Strategy
Policies and Regulation	High	<ul style="list-style-type: none"><li>✓ Defining of polices and regulations between transit operators for integrated fares</li><li>✓ Integration across other key bodies – MoHUA, MoRTH, RBI and MoF</li><li>✓ Issues around open data policy and KYC</li></ul>
Sustainability	High	<ul style="list-style-type: none"><li>✓ Long terms roadmap for implementation of innovations – commercial launches</li><li>✓ Self Sustainable business model</li></ul>
Licensing	High	<ul style="list-style-type: none"><li>✓ Public transport operators need to procure RBI licenses to bring interoperable ticketing systems</li><li>✓ Considering there is no authorized closed loop transit Clearing house in India – does open loop become a natural option?</li></ul>
External – People Acceptance	Medium	<ul style="list-style-type: none"><li>✓ Extensive awareness and communication programs explaining the benefits of any innovation</li></ul>

# Transit Open Loop Eco-System Challenges

Interaction of Ecosystem players in Transit



# Legacy ticketing platforms – big challenge for NCMC

Three Possible Methods to Upgrade to Open Loop AFCS System are:

**Method I:** Replacement of existing closed loop reader to EMV certified readers/Validators in AFCS devices like Automatic Gates, TVM and POS etc.

**Method II:** Installing an additional EMV certified reader along with an existing reader in AFCS devices .

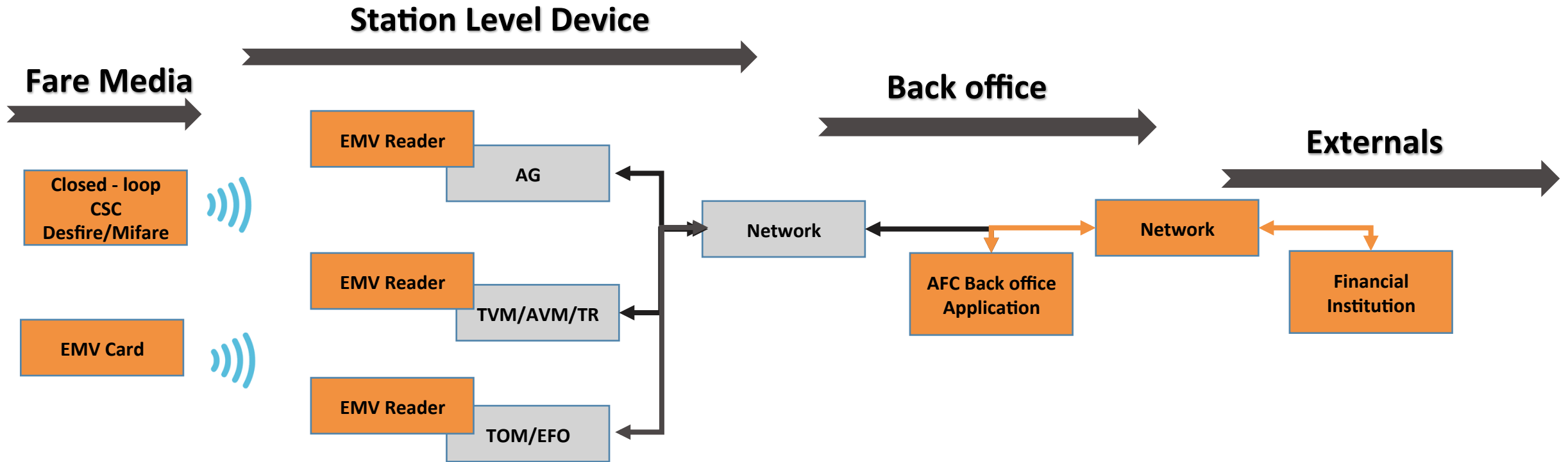
**Method III:** Install separate gates with EMV certified hardware.

**Suggested and Most Adopted method for AFC system upgrade : Method I**

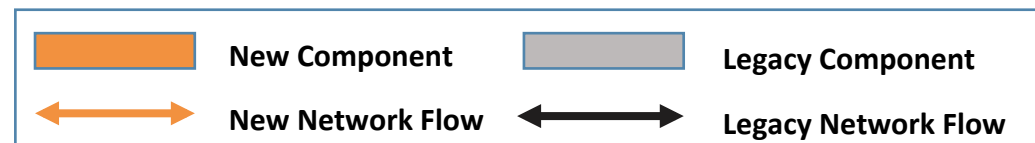
## Benefits of Suggested Method

- Existing IT infra can be used. (As per RBI guideline for storing card information)
- Existing network infra can be used as proxy.
- Single reader will be used for both close loop and EMV cards.
- Existing station level device will be used with retrofitting.

# System Architecture : *Suggested Model*



- Upgrade the legacy closed loop hardware with open loop hardware
- Connect the upgraded open loop hardware with cloud based AFCS to not impact operational AFCS
- Existing OFC network shall be used to connect till the OCC and further connectivity shall be build to the cloud AFCS





# Next Steps to Execute Open Loop AFC System

- **Identify L1 EMV compliant reader which must support the legacy closed loop cards also. (ISO 14443).**
- **Retrofitting of new EMV reader into existing AFC device (AGs).**
- **Replace or Upgrade the AFC backed system to EMV compliant AFC System OR run a parallel open loop AFC on cloud to not incur huge implementation costs**
- **Identifying the participating bank/financial institution for card acquiring.**
- **AFC back end Integration with selected financial institution.**
- **L2 and L3 certifications to be done for payment kernel and payment application.**
- **Perform POC with new EMV reader on existing AFC device with both EMV and Close loop cards.**

Thank You

