

## **AFCS (AUTOMATIC FARE COLLECTION SYSTEM)**

**1. Name of the Project:** Design, Development, Implementation, Maintenance and Management of Automated Fare Collection System (AFCS) for Bus Rapid Transit System (BRTS) and City Bus operation for Surat City.

**2. Background:**

Surat is among the fastest developing city in the world. It has ranked 4<sup>th</sup> developing city of the world. Surat city is well-known for its diamond polishing business, textile market business, Real estate business. As a city develops it attracts many people around the city as well as far away from the city. Due to this population increases; and one can say that increase in population is directly proportional to the increase in traffic density. There is a substantial change of transportation condition in Surat city in last 3 years. SMC has introduced a high-quality public transport through BRTS for 30 Km route in Phase-I which has improved liveability and contributed to economic development. Phase-II of BRTS is about 42 Km. At present, in Surat city there are city buses (Citilink) & BRTS buses in operation. SMC has finalized Master plan for induction of 2000 city buses and 300 BRTS buses, in the next 3 years.

**3. Vision:** AFCS project aims to automate the fare collection mechanism and technology within Surat’s transport ecosystem (BRTS & City Bus Services) and enhance operational capability, citizen’s satisfaction, reliability and ease of operations for its services offered through various transits.

**4. Sector:** Transportation

**5. Cost and financing:**

SCP Cost	: Rs. 166.00 Cr
DPR Cost	: Rs. 105.42 Cr
Tender Estimated Cost	: Rs. 105.42 Cr
Tender Sanctioned Cost	: Rs. 80.22 Cr
	(Capex=48.4+Opex=31.8)
Convergence Scheme/PPP/SMC	: Surat Smart City Project
Convergence/PPP/SMC Costing	: NA

## 6. Brief Description (Technical Details):

The functional specifications section provides specification for major components for AFCS:

- Automatic Fare Collection System
- Fare Collection Devices
- Integration with Incident Management
- Integration with Business Intelligence
- Integration with Enterprise Management System

Following media types shall be offered to users for payment of fare purposes:

- Contactless Smartcards
- QR code based Paper Tickets
- Mobile application based ticketing using QR code and NFC in future
- Mobile Wallet integrated with pre-paid account

**Mobile based ticketing:** Mobile based ticketing shall be used by commuters to book their tickets via mobile phone application. Mobile based tickets shall be based on secure QR code technology & NFC (Future)

**Quick Response Code (QR Code):** The QR codes shall be read by ticketing devices on BRTS bus stations and on bus HTT. QR Code based tickets can be generated on mobile applications and same can be used on ticketing devices for authentication.

The paper tickets shall be printed along with QR code for authentication purposes.

These AFCS fare media shall be made available to user at several locations such as BRTS stations, Service delivery point's setup within the city, designated branches, Web application, Mobile application, etc.).

### **BRTS Station and Ticketing Devices**

The station ticketing facility shall facilitate the commuter travel by providing an ecosystem for the issuance and acceptance of fare media.

The station ticketing facilities shall consist of the following:

**Point of Sale:** The POS shall offer functionality to conduct the activities like issuing smart card, QR code based paper tickets, topping up of the smart cards and handle customer queries related to ticketing. POS shall have ability of ticket issuing / cancelling / refunding / adjusting etc. POS should be able to read and write from all the fare media as defined in the business rules.

**Turnstile Type Automatic Gates with ticket validators:** The Automatic Gates shall be equipped with acceptance infrastructure capable of reading and authenticating all types of fare media. The acceptance infrastructure shall interface with the gates for communicating the access controls.

**Handheld Ticket Terminal (HTT):** Hand held electronic ticketing terminals shall be deployed for checking/ validating the fare media with the commuters and shall be used by station AFC staff for issuing QR code based paper tickets. This equipment is a portable hand held device to facilitate the ticket checking capability as well.

**Mobile App for ticketing:** Mobile application (Android/iOS/Windows) shall be developed to enable users to generate secure QR based tickets for use on ticket validation devices. The mobile app shall also be connected to mobile wallet for purposes of app based payments for parking etc.

**Station Server:** The Station server shall reside at the station and acts as a bridge between the station ticketing equipment's and the Central AFCS. The station Server shall control and manage the AFCS processes at the station.

## 7. Speciality:

- Support for Surat Money Card
- M-ticketing (Mobile)
- Integrated Ticket between City bus and BRTS

## 8. Benifits:

- This IT enabled service will make present public transport system more efficient and citizen friendly.
- AFCS promotes cashless smart card technology in transportation as well as in retail areas
- It will be helpful to citizens using the Amenities like Library, Swimming pool, Aquarium and others.

## 9. Implementation Plan:

- **Current status:**
- 605 ETM's go live- completed
- Data center installation & - completed
- AFCS software installed & working

- Mobile application & M ticketing Android-live
- Mobile application & M ticketing ios platform- in testing
- RO2- procurement in progress
- 28 station installation completed with Turnstiles,pos,station server,swing gate, UPS,network rack ,network switch etc.
- Application for faregate,pos,station server are under testing.
- RO3(672 ETM)- 79 ETM's live. 60 ETM hand over from NEC to sitilink within 2 days  
Remaining 533 ETM are at NEC warehouse and deliver as and when required from sitilink.
- **Completion Date:** 20/03/2019

## 10.Photos:

### Site photo:



Turnstile



**Pole Validator in City Bus**



**POS Machine at BRTS Stop**