

<b>Punjab Masstransit Authority</b>			
<b>Minutes of Meeting</b>			
Subject:	Pre-Bid Conference On Tender For Development, Implementation, Operations, and Long-Term Maintenance of Proven Globally Deployed Automated Fare Collection and Bus Scheduling System (AFC-BSS) for Feeder Routes in Lahore		
Date:	November 04, 2015	Time:	11:00 AM
Venue:	Committee Room, Punjab Masstransit Authority	Chair:	Mr. Muhammad Ozair Shah, General Manager Operations, PMA
Participants:	<p>List of Participants:</p> <ol style="list-style-type: none"> <li>1. General Manager Operations, PMA</li> <li>2. Manager IT, PMA</li> <li>3. IT Expert, PMA</li> <li>4. Financial Specialist, PMA</li> <li>5. Manager Operations Technical, Lahore, PMA</li> <li>6. Manager Operations Planning, PMA</li> </ol> <p>The list of prospective bidders who participated the Pre-Bid meeting is attached at Annex-A</p>		
<b>Question</b>		<b>Discussion/Decision</b>	
<ol style="list-style-type: none"> <li>1. M/s Proline Information Systems requested for clarification regarding mention of Turnstiles in Clause 13.1, “Validators”</li> <li>2. M/s LMKT requested PMA to ensure obtaining necessary AFC-BSS information required for fare integration from existing service provider of Lahore Metrobus System</li> <li>3. M/s LMKT inquired about the specifications of smart cards already in use in Lahore Metrobus System</li> </ol>		<ol style="list-style-type: none"> <li>1. The line mentioning turnstiles in section 13.1 is deleted for the sake of clarity as below <i>Each turnstile needs to be equipped with validator(s) for each type of media to be used.---</i></li> <li>2. It is clarified that the said existing service provider has contractual obligation for Fare Integration. Therefore, in section 12, “PMA Responsibilities” following sub-clause 12.5 is added <b>5. Ensure that all service providers transfer AFC-BSS required but necessary information for fare integration in Lahore</b></li> <li>3. The following line is added to clause 9.43 of the RFP <b>---The specifications furnished for the smart cards in this RFP document are one to one similar to the</b></li> </ol>	

4. Under the Clause 6, "Tender Scope" sub-clause 6.3 and Clause 9, "Services Required" sub-clause 9.51 were explained to vendors that how PMA will place future purchase orders within the scope of the project.

*specifications of smart cards currently in use in the Lahore Metrobus System.*

Also in section Annexure-K: High Level Equipment Specifications: RFID Smart Cards, the types of Smart Cards is changed as below

*---The Smart Card to be supplied by the operations team shall be Mifare 1K / ~~Mifare Ultra Lite~~/Mifare Desfire 4K and shall be fully compliant with ISO/IEC 14443 and other relevant ISO/IEC standards.*

4. After the discussion and due deliberation the sub-clauses 6.3 and 9.51, are split into two (02) in both sections and amended as below.

*6.3 The Purchaser intends to augment the existing system by adding the following components in subsequent phases within the first ~~three (03) years~~ **eighteen (18) months** from the commencement of operations.*

- ~~1200~~**400** Driver Consoles having GPS trackers and ~~2400~~**800** validators for (~~1200~~**400** additional buses (All standard) on other feeder routes in the next phases)
- ~~155~~ additional sale points on other feeder routes
- ~~207~~ additional handheld ticket validators for spot checking

*The Contractor upon receiving a written order from the Purchaser shall incorporate the additional services into the existing system. Payments for the additional services shall be made against quoted rates on prorated basis from the date of commissioning for the remainder of the contract. ~~If such phases are undertaken by the Purchaser after three (03) years of commencement of operations, the Contract may be extended accordingly with mutual consent of both parties. However, during such extension(s) of the Contract the payment shall be made at quoted rates on prorated basis.~~*

6.4 The Purchaser intends to augment the existing system by adding the following components in subsequent phases beyond eighteen (18) months from the commencement of operations as under.

- 800 Driver Consoles having GPS trackers and 1600 validators for (800 additional buses (all standard) on other feeder routes in the next phases)
- 10 additional sale points on other feeder routes
- 13 additional handheld ticket validators for spot checking

The Contractor upon receiving a written order from the Purchaser shall incorporate the additional services into the existing system. Payments for the additional services shall be made against quoted rates on prorated basis from the date of commissioning. If such phases are undertaken by the Purchaser after eighteen (18) months of commencement of operations, the Contract may be extended accordingly with mutual consent of both parties. However, during such extension(s) of the Contract the payment shall be made at quoted rates on prorated basis. It is clarified that additional orders pursuant to clause 6.4 shall not be less than 30% of the equipment specified in clause 6.4.

ATTENDANCE SHEET

PRE-BID MEETING ON Development, implementation, operations & long term maintenance of proven globally deployed AFC-BSS FOR FEEDER ROUTES IN LAHORE

ATTENDANCE SHEET

Place: Committee Room, PMA Office, 5th floor,  
Arfa Software Technology Park, Lhr

Date: 04/11/2015

Time 11:00 AM

Sr. No.	Name of Organization	Name of JV Partner (if any)	Representative's Name & Designation	Contact No.	Email Address	Signature
16	Trakker TPL Holdings LTD		BILAL AFZAL Manager Operate	0300-2012600	bilalafzal@tpltding.com	Bilal Afzal
17	" - "		NASEER BHATTI	0300-8486666	naseer.ahmed@tplholdings.com	Naseer
18	LMKT (Pvt) Ltd.		M. Nouman Ali (Mngt)	0331-5296147	mnali@lmkt.com	M. Nouman Ali
19	Proline Information Systems		Mujahid Rashid (Project Coordinator)	0305-5551388	m.rashid@pro-line.com.pk	Mujahid
20	INBOX		ALI SHAHBAZ	0333-4466791	ali.shahbaz@inboxbiz.com	Ali Shahbaz
21	Inbox Business Technologies		Rashid Raza	0321-2428863	rashid.raza@inboxbiz.com	Rashid Raza
22	<del>HAFIZ TALAL</del>					
23	INBOX		HAFIZ M. TALAL	0321-2064641	HAFIZ.TALAL@INBOXBIZ.COM	Hafiz M. Talal
24	Interactive Sami Farooq	Sami Farooq	Program Manager	03458552102	sami.farooq@ia.com	Sami Farooq
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# Tender Document

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## DEVELOPMENT, IMPLEMENTATION, OPERATIONS AND LONG-TERM MAINTENANCE OF PROVEN GLOBALLY DEPLOYED AUTOMATED FARE COLLECTION & BUS SCHEDULING SYSTEM (AFC-BSS) FOR FEEDER ROUTES IN LAHORE

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**THE PUNJAB MASS TRANSIT AUTHORITY**

**Government of the Punjab**

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# Addendum No.1 to the Tender Document

Due to some clarifications required in the RFP document, the following addendum is hereby issued; which shall form a part and parcel of the original document titled

**"DEVELOPMENT, IMPLEMENTATION, OPERATIONS AND LONG-TERM MAINTENANCE OF PROVEN GLOBALLY DEPLOYED AUTOMATED FARE COLLECTION & BUS SCHEDULING SYSTEM (AFC-BSS) FOR FEEDER ROUTES IN LAHORE"**

, issued and uploaded on October 27, 2015. The contents of this addendum shall supersede/replace pages 11, 12, 19, 20, 21, 22 and 86 of the original RFP document, and shall be read as part of the RFP document uploaded on the following websites:

[www.pma.punjab.gov.pk](http://www.pma.punjab.gov.pk)

[www.ppra.punjab.gov.pk](http://www.ppra.punjab.gov.pk)

consideration in the interpretation of the document and words importing the singular only shall also include the plural and vice versa where the context so requires.

## 5. Notice

- 5.1 In this document, unless otherwise specified, wherever provision is made for exchanging notice, certificate, order, consent, approval or instructions amongst the Contractor and the Purchaser, the same shall be:
- 5.1.1 in writing;
- 5.1.2 issued within reasonable time;
- 5.1.3 served by sending the same by courier or registered post to their principal office in Pakistan or such other address as they shall notify for the purpose; and
- 5.1.4 The words "notify", "certify", "order", "consent", "approve", "instruct", shall be construed accordingly.

## 6. Tender Scope

6.1 Punjab Masstransit Authority (PMA), Government of the Punjab (The Purchaser), invites/requests Proposals (hereinafter referred to as "the Tenders") for the Development, Implementation, Operations, and Long-Term Maintenance (on turnkey basis) of proven, globally deployed Automated Fare Collection and Bus Scheduling System (AFC-BSS).

6.2 In the first phase, the AFC-BSS solution needs to be rolled out for approximately 14 feeder routes having onboard ticketing, on which 162 standard-buses and 38 mini-buses will be operated. As a policy, one (01) validator shall be provided in mini-buses and two (02) in standard-buses. In Phase I, only 200 buses with 362 validators and 200 driver consoles having GPS trackers will be operated on the 14 feeder routes. The AFC vendor is also required to ensure sale of cards and recharge of card at twenty two (22) localities specified by the PMA on the feeder routes in the city, either by setting up their own offices/shops or through collaboration with already established offices/shops or combination thereof. The AFC vendor is also required to provision and maintain fifteen (15) handheld ticket validators for spot checking, to facilitate PMA assigned ticket inspectors.

6.3 The Purchaser intends to augment the existing system by adding the following components in subsequent phases within the first **eighteen (18) months** from the commencement of operations **as under**.

- **400** Driver Consoles having GPS trackers and **800** validators for **400** additional buses (all standard) on other feeder routes in the next phases)
- **5** additional sale points on other feeder routes
- **7** additional handheld ticket validators for spot checking

The Contractor upon receiving a written order from the Purchaser shall incorporate the additional services into the existing system. Payments for the additional services shall be made against quoted rates on prorated basis from the date of commissioning for the remainder of the contract.

**6.4 The Purchaser intends to augment the existing system by adding the following components in**

subsequent phases beyond eighteen (18) months from the commencement of operations as under.

- 800 Driver Consoles having GPS trackers and 1600 validators for (800 additional buses (all standard) on other feeder routes in the next phases)
- 10 additional sale points on other feeder routes
- 13 additional handheld ticket validators for spot checking

The Contractor upon receiving a written order from the Purchaser shall incorporate the additional services into the existing system. Payments for the additional services shall be made against quoted rates on prorated basis from the date of commissioning. If such phases are undertaken by the Purchaser after eighteen (18) months of commencement of operations, the Contract may be extended accordingly with mutual consent of both parties. However, during such extension(s) of the Contract the payment shall be made at quoted rates on prorated basis. It is clarified that additional orders pursuant to this clause shall not be less than 30% of the equipment specified in clause 6.4.

6.5 The AFC-BSS software comprises of the following core components and its associated equipment and services:

- Automated Fare Collection System
- Bus Scheduling and Vehicle Location system
- Passenger Information System

**Special Note on AFC-BSS Software:**

The Purchaser is currently in possession of AFC-BSS software with complete rights and privileges in Punjab. However the bidders while preparing their bids must not assume that such rights and privileges to the Purchaser owned software will be extended to any successful bidder. Therefore, all prospective bidders are instructed to include the price of their proposed AFC-BSS software in the bid.

**Special Note on AFC-BSS Data Center Equipment:**

The Purchaser is currently in possession of AFC-BSS data center equipment in Lahore. However the bidders while preparing their bids must not assume that such any access rights to the Purchaser owned data center equipment will be extended to any successful bidder. Therefore, all prospective bidders are instructed to include the price of their proposed data center facility and equipment in the bid.

6.6 High-level requirements for these systems are outlined in relevant sections in this document. It is mandatory that interested bidders propose only reliable, proven, globally deployed solutions, incorporating industry best practices.

31. Ensure prompt and efficient response time related to all service delivery aspects associated with ticket sales/refunds, turnstile entry/exit process, etc.
32. Timely raise alerts to the PMA control center staff in case of issues with equipment or system functioning.
33. Ensure scalability of the AFC-BSS Project to cater to the future requirements and needs.
34. Engage and deploy suitably skilled personnel for development, installation, operation and maintenance of the AFC-BSS project, and maintenance/replacement of all related equipment/component in a timely manner and at its own cost.
35. Take prompt and reasonable action for resolution of each complaint – including complaints received from passengers as well as from PMA related to AFC-BSS operations e.g ticket sales, passenger facilitation etc and generate log of each complaint along with the details of the resolution.
36. Agree to and abide by the “Revenue Collection and Payment Mechanism” stated in this document.
37. Ensure integrity of cash collection and reconcile with sales/transaction reports daily to ensure there is no differences.
38. Engage a suitable and renowned third party inspection for qualitative verification of the deployed AFC-BSS solution and hardware.
39. Contractor must provide interfaces to PMA to devise fare policies and generate/update reports on the fly.
40. For all software and databases related components comprehensive training must be provided.
41. Adequate resources from the contractor’s side must be available to ensure smooth operations of AFC-BSS.
42. Purchaser reserves the right to purchase additional AFC-BSS solutions from any other third party through competitive bidding as per the specifications mentioned in the tender document. The Contractor is responsible to integrate with all such AFC-BSS solutions in an efficient & timely manner.
43. Smart Cards used in AFC-BSS feeder routes must also work with existing and future AFC-BSS system deployments in other AFC-BSS corridors or feeder route systems and vice versa (Fare Integration). The specifications furnished for the smart cards in this RFP document are one to one similar to the specifications of smart cards currently in use in the Lahore Metrobus System.
44. The Contractor is liable to cooperate fully with the assigned Information System Auditor’s and shall extend all necessary access, support & cooperation for the completion of said audits (as and when required).
45. The Contractor is responsible for operating the entire AFC-BSS system including all its components and peripherals, reliably and securely at all times during the course of the contract. After complete initial system deployment, User Acceptance Testing (UAT) and Commissioning of the system The Contractor shall not make any changes to the

system configuration parameters and security settings without prior written approval of the Client in a timely manner.

46. At no time or under any circumstances what so ever shall the Contractor ever make direct changes to the databases. It shall always be ensured that all changes in the database (if and when required approved by the Client) shall be done through the application interface(s). The database audit logs shall always remain in enabled mode.
47. Provision smart card sale and recharge facility (sale point) at PMA designated localities on feeder routes in the city, to facilitate passengers on feeder routes either by setting up their own offices/shops or through collaboration with already established offices/shops or a combination thereof.
48. Provision and maintain handheld ticket validators for spot checking such that each device remains operational for minimum period of eight (08) hours, to facilitate PMA assigned ticket inspectors.
49. Deploy suitably skilled personnel in feeder route buses for an initial period of three (03) months for passenger facilitation, guidance, securing installed validators, ticket sales, card sales etc (using the implemented AFC-BSS solution interfaces).
50. The Contractor's representative shall visit the country of bus manufacturer and fully coordinate with Bus Service Provider and manufacturer for installation of Driver Console Units/Onboard Bus Units (OBU), Validators and fare evasion system in buses. The fare evasion system will only be installed in feeder buses and must be able to detect entry and exit of passengers. It shall generate an indication in the Driver Console /Onboard Bus Unit (OBU) to inform the driver when any passenger Taps-in the smart card.
51. The Purchaser intends to augment the existing system by adding the following components in subsequent phases within the first **eighteen (18) months** from the commencement of operations.
  - **400** Driver Consoles having GPS trackers and **800** validators for **(400** additional buses (All standard) on other feeder routes in the next phases)
  - **5** additional sale points on other feeder routes
  - **7** additional handheld ticket validators for spot checking

The Contractor upon receiving a written order from the Purchaser shall incorporate the additional services into the existing system. Payments for the additional services shall be made against quoted rates on prorated basis from the date of commissioning for the remainder of the contract.

52. The Purchaser intends to augment the existing system by adding the following components in subsequent phases beyond **eighteen (18) months** from the commencement of operations as under.

- **800** Driver Consoles having GPS trackers and **1600** validators for **(800** additional buses (all standard) on other feeder routes in the next phases)
- **10** additional sale points on other feeder routes
- **13** additional handheld ticket validators for spot checking

The Contractor upon receiving a written order from the Purchaser shall incorporate the additional services into the existing system. Payments for the additional services

shall be made against quoted rates on prorated basis from the date of commissioning. If such phases are undertaken by the Purchaser after eighteen (18) months of commencement of operations, the Contract may be extended accordingly with mutual consent of both parties. However, during such extension(s) of the Contract the payment shall be made at quoted rates on prorated basis. It is clarified that additional orders pursuant to this clause shall not be less than 30% of the equipment specified in this clause.

#### **10. Key Service-level parameters**

***Any breach of defined service levels will entail penalties which shall not exceed more than 10% of the monthly payments to the Contractor. Service level parameters are outlined in Annexure-J.***

#### **11. Revenue collection and payment mechanism**

1. An escrow account shall be opened by the PMA in the Bank of Punjab. **The escrow account will be jointly operated by authorized representatives of PMA, the AFC-BSS Service Provider, and Bus Operator.**
2. The contractor shall arrange printing of the cards, based on card design specified by PMA
3. Sale of tickets (cards) shall be the responsibility of the contractor.
4. For activation and subsequent recharging of cards (Smart cards), the contractor shall arrange “Bulk Initialization Machines (BIM)”, and place BIMs at premises specified by PMA.
5. BIMs, and/or top-up/Point of Sale (POS) machines will only initialize/top-up media if there is sufficient balance available. Contractor must first transfer sufficient balance amount into the Government Escrow Account, and the Bank of Punjab will subsequently notify e-credit to be made available to the AFC-BSS service provider for charging of BIM/POS machine.
6. Payments from the Escrow Account will be made to Bus Operator based upon agreed policies, formulas, and reconciliation reports from AFC-BSS.
7. Payments from the Escrow Account will also be made to AFC-BSS Service Provider.
8. If there is surplus balance in the Escrow Account, the amount will be retained by PMA. If there is deficit in the Escrow Account (that is, the two service providers cannot be paid) then PMA will pay the deficit amount from its own account.
9. Regular third-party audit (financial as well as technical) to be made an integral part of the project

#### **12. PMA Responsibilities**

1. Provide fare structure, user roles, and business rules to AFC-BSS service provider
2. Provide AFC-BSS service provider necessary project site so that AFC-BSS service provider can perform its obligations in a timely manner
3. Attempt to grant timely approvals and make timely payments
4. Contract signing, Contract Payments and monitoring project operations
5. **Ensure that all service providers transfer AFC-BSS required but necessary information for fare integration in Lahore**

### **13. Key components of the solution**

#### **13.1 Validators**

As a policy, on feeder routes each mini bus needs to be equipped with one(01) validator and each standard bus needs to be equipped with two(2) validators for onboard ticketing through RFID Smart card. The Validator in the bus shall be used both for Tap-in and Tap-out.

#### **13.2 Fare Media / Tickets**

RFID Smart Cards (stored value) for long term planned repeated journeys is a must, coupled with passenger registration module.

Required number of cards necessary to efficiently serve passenger volumes must be in stock with the chosen vendor at all points of time – this is must to ensure that no shortages of fare media occur at any given time. At no point should the tickets be short at any sale point on feeder routes.

**Note:** Fare rates will be determined by Government of Punjab and cost of media will not be transferrable to passengers purchasing tickets. However the smart cards will be refundable and issued to the general public against a security deposit which is fixed at Rs 130/- per smart card.

#### **13.3 Automated Fare Collection and Fare Policy**

Passengers will be charged distance based fare. Proposed AFC-BSS must be able to handle fare policies based on flat rate, zones/stages, as well as distance travelled. Proposed AFC-BSS must also be able to handle the full fare, concessional fare and free fare policies. Proposed AFC-BSS must cater to on-board as well as off-board ticketing modes and be able to handle transfers across on-board and off-board ticketing modes.

#### **13.4 Top Ups/Printing Tickets and Refunds**

Ticket Office Machines are to be made available by the AFC-BSS Solutions Provider, at sale points on feeder routes, to issuing charged cards with the desired amount paid by the passenger. Ticket office Machines will only work if they contain balance amount that can be transferred onto the fare media. Ticket Office Machines (Top up Machines) must reliably transmit transactional data to any intermediary system and/or central database. Ticket Office must be able to refund any reported incidents of overcharging after due diligence to passenger, if it is agreed that such reimbursements are to be adopted as policy. All such functionality must be a typical feature of proposed Top up Machine and AFC-BSS. Every sale point must have at least one top up machine available in fully functional condition at any point of time.

#### **13.5 Portable Validators (as backup)**

Portable validators will be used as backup medium in case of any failure and to validate entry of passengers in the buses on the feeder routes.

#### **13.6 Bus Scheduling and Vehicle Location System**

Concerned authority of the PMA must be able to enter bus schedule into the system using Bus

## Annexure-K: High-level Equipment Specifications

### Notes:

1. All hardware equipment supplied as part of AFC-BSS must carry industry standard certifications like U/L, CE etc to ascertain that the equipment have been manufactured and certified based on international standards.
2. The Equipment supplied shall withstand the harsh working conditions of vibration, heat, dust, moisture, rough usage, Radio interference. The Service Provider shall implement application software [Asset Tracking] to track the devices that are installed in the network using suitable identification methods. This could be possibly done by attaching a RFID Tag to all assets in operation in AFC-BSS.

### RFID Smart Cards

- The smart card to be used with the AFCS shall be ISO 14443 compliant. The Smart Card to be supplied by the operations team shall be **Mifare 1K / Mifare Desfire 4K** and shall be fully compliant with ISO/IEC 14443 and other relevant ISO/IEC standards.
- The SC shall have an operating frequency of 13.56 MHz
- The dimensions of the smart card shall comply with ISO 7810.
- The resistance of the smart card to mechanical stress and chemicals shall comply with ISO 10373.
- All SC used shall be suitable for personalization of one surface with photo and personal details as required by PMA.
- Each smart card shall have a unique external identification number that is linked to the card's manufacturer supplied internal identification number which shall not be erasable or changeable. The external number shall be engraved or printed in a non-erasable, long lasting ink. The supplier of the cards shall provide an electronic correspondence list between the internal and the external card number where the two are not identical. The external number shall have a check digit to minimize the possibility of errors on data entry.
- Fixed data shall be encoded onto Contact less Smart Cards by the Operator prior to issuing. Each Smart Card shall be encoded with a unique identification number, date of entering the AFCS, type, encoding device reference number and other pertinent data that shall not change throughout the life of the Smart Card.
- Encoding on variable data fields shall be carried out by the Validator's and field AFCS devices.
- The Contact-less Smart Cards / Coins shall be authenticated by all AFCS devices before the actual financial transactions are initiated in order to check originality.
- AFCS equipment shall be able to check the integrity of the data on the Smart Card / Coins during processing. Smart Card / Coins which are no longer capable of being accurately encoded shall be detected, rejected and blocked.