Unique Identification Authority of India (UIDAI)
Planning Commission, Government of India

Reference Number: UIDAI/RO/RNC/BFD-2012

Limited Tender
## For
Procurement of POS Terminal with Best Finger Detection Client (BFD)

July 31, 2012

Last Date for Receipt of Tender: 13-08-2012, 15.00Hrs.

Opening of Tender: 13-08-2012, 15.30Hrs.

Regional Office
Unique Identification Authority of India
Planning Commission, Govt of India
RIADA Central Office Building, 1st Floor
Namkum Industrial Area, Lowadih
Ranchi-834010 (Jharkhand)
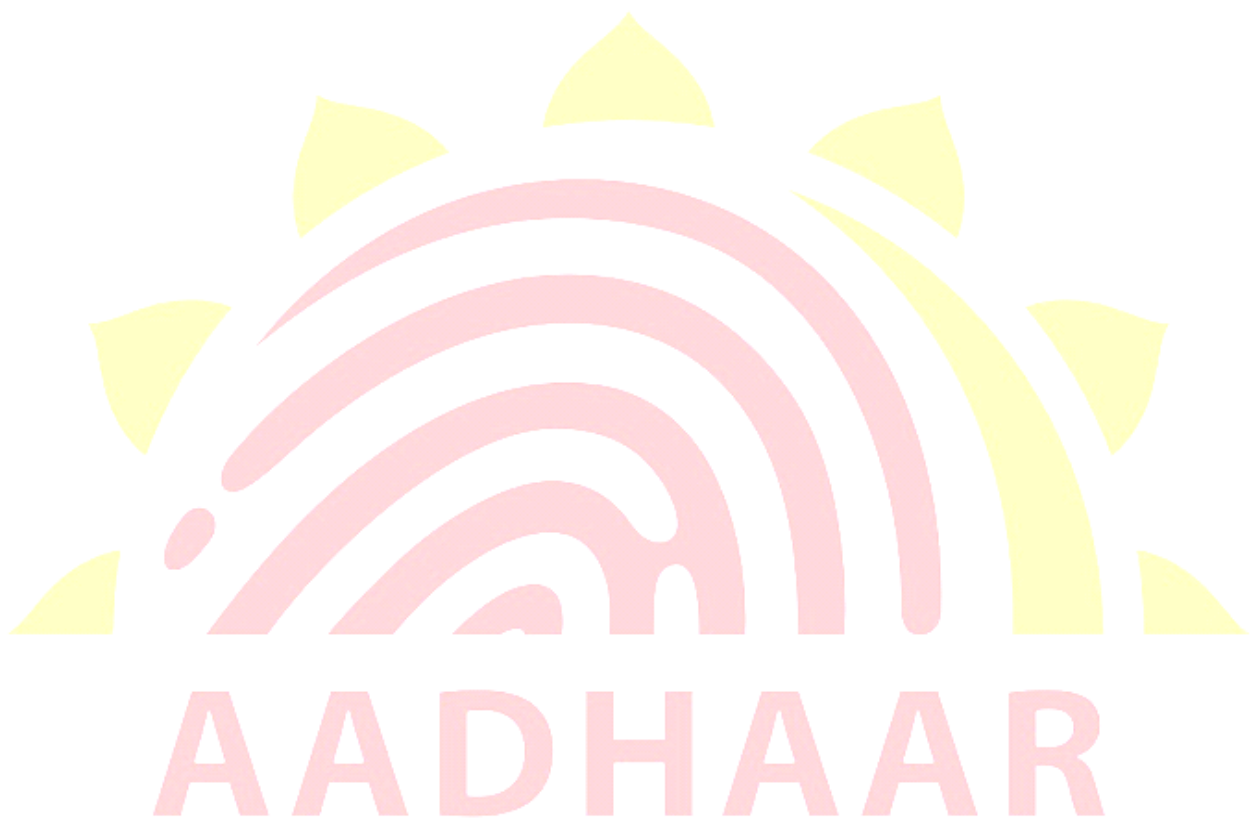
To,

     M/s …………………………………….

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No: - UIDAI/RO/RNC/BFD-2012   Dated:31.07.2012

Sub:Limited tender for "procurement of POS Terminal with Best Finger Detection Client (BFD)"

On behalf of UIDAI, the Dy. Director General, RO Ranchi invites Wax/Tape sealed tendersfrom experienced and reputed Biometric Device venders to supply"Biometric POS terminals along with Best Finger Detection Client". The bids will be received in the office of ADG(system) O/o Dy. Director General, UIDAI Regional Office, Ranchi, Ist Floor, RIADA Central Office Building, Namkum Industrial Area, Lowadih, Ranchi-834010 up to 15:00 hrs. of 13-08-2012 and will be opened on same date at 15:30 hrs. in the presence of bidders or their authorized representatives.

The schedule rate is given below: -

Sl No	Name of Work	Quantity Required	Estimated Cost (for 10 devices)	EMD	Quoted Rate* per set
1.	Supply of Biometric POS terminals along with UIDAI Best Finger Detection Client.	10 Nos.	Rs. 2,00,000/- (Rupees Two Lac Only)	Rs. 5,000/- (Rupees Five Thousand Only)	(a) In Figure Rs…………………………………. …………………………………………. (b) In words (Rs)…………………………………. …………………………………………. …………………………………………. ..

'*' Rates will be composite i.e. Inclusive of all taxes, octroi, transport etc.

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A. Terms & Conditions

1. **Wax sealed Tender (complete signed and sealed tender document) should be addressed to ADG(System) O/oDy. Director General, UIDAI Regional Office,Ist Floor, RIADA Central Office Building, Namkum Industrial Area, Lowadih, Ranchi-834010.**The envelope should bear the words at the top **"Limited tender for procurement of POS Terminal with Best Finger Detection Client (BFD)".**

2. The bids will be received in the office of **Asstt Director General (System) O/o Dy. Director General, UIDAI Regional Office, Ranchi, Ist Floor, RIADA Central Office Building, Namkum Industrial Area, Lowadih, Ranchi-834010 up to 15:00 hrs. of 13-08-2012 and will be opened on same date at 15:30 hrs. in the presence of bidders or their authorized representatives.**

3. **The intending tenderer have to deposit EMD of Rs.5000/-(Rupees Five Thousand Only) by A/C payee Demand Draft in favour of CDDO, UIDAI, RO Ranchi payable at Ranchi. The tender without EMD will be rejected straight way.**

4. **The Bidder must put his signature and seal in all pages of document and must fill Specifications offered in para-C (Device Hardware Requirement) of tender document at page No.8-10. Without this, bid will not be considered.**

5. The tenderers are advised not to mutilate or erase in figures, the tender on this A/C areliable to be rejected.

6. No interest shall be payable by UIDAI on EMD.

7. EMD of the tenderer shall be forfeited, if he withdraws his offer before finalization oftender or deny to sign contract/ agreement if his offer is accepted and approved bycompetent authority.

8. The EMD of the successful tenderer will be returned after submission of Performance Bank Guarantee which detail is given in the payment terms (clause 18.2) .

9. Performance Bank Guarantee of the successful tenderer will be refund after six months of completion of contract period (including warranty period).

10. The Sales tax if any as applicable will be deducted from the supplier's bill.

11. The Income Tax as applicable will be deducted from the supplier's bill.

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12. Supply of devices may be made **within a period of four weeks from issue of work order.**

13. In case of supply of sub standard items, this office has full authority to reject the approved tender and discontinue the transaction and the SD/ PBG will be forfeited.

14. If the supplier fails to complete the supply ofdevices within stipulated period a penalty of @ 2.5% per week subject to maximum of the 10% of total cost will be imposed. However in case of any natural calamity, disturbances in Town or any other reason to prove genuine cause of delay in work, Dy. Director General, UIDAI Regional Office or any other officer nominated by him/her shall be empowered to grant extension in stipulated period.

15. Bill may be submitted to ADG (System), UIDAI, RO Ranchi in duplicate. Payments will be made subject to availability of funds after deduction of Income Tax & other taxes as applicable.

16. The supplier will be bound to follow instruction issued by the Dy. Director General, UIDAI Regional Office, Ranchion the subject matter from time to time as per requirement of the department.

17. Dy. Director General, UIDAI Regional Office, Ranchi has right to cancel any or all tenders without assigning any reason what so ever.

18. **The tenderer will have to provide Sale Tax Registration, Service Tax Registration, and Income Tax PAN No.**

19. **The rates in words & figures should be quoted on the prescribed tender form (page Nos. 3 of document) only. Quoting the rates on other documents will not be entertained.**

20. Court case, if any, shall be entertained in Ranchi city jurisdiction only.

21. **Payment Terms:**
    18.1 Payment shall be made only after completion of supply, installation commissioning and acceptance ofthe Goods above, to the entire satisfaction of UIDAI or any other agency nominated by UIDAI.
    18.2 The UIDAI may however, consider making advance payments which shall be subject to the followingconditions:

    i) An advance payment equivalent to 75% of the total value of the Goods and Servicesagainst proof of delivery and installation of system subject to the Vendor furnishing abank guarantee on stamp paper of requisite value of an equivalent amount from any ofthe Nationalised/Scheduled Bank to indemnify

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Purchaser to the extent of any loss ordamage sustained, in case the acceptance tests carried out on the Goods at the timeof commissioning are not satisfactory.

ii) Balance 25% payment within 30 days of satisfactory commissioning and acceptance ofthe Goods/Services. In case the commissioning and acceptance of the Goods/Servicesis delayed or put off beyond 90 days of the receipt of the equipment at UIDAI's site dueto express written instructions of the UIDAI, this amount may be released to the Vendoron his furnishing a necessary Bank Guarantee for an equivalent amount.

iii) No payment shall, however, accrue until after the Performance Guarantee Bond in theform of a Bank Guarantee (BG), which shall be equal to 10 % of the value of the orderand valid upto date of expiry of warranty period, has been furnished. This BG shall besubmitted by the selected Vendor within 10 days of issue of the firm purchase order bythis office.

iv) It should be noted that installation, commissioning and acceptance, have to be duly certified by the committee approved by the DDG, RO Ranchi for release of payments as per 18.1 and 18.2 above.

22. The items supplied would be under **Three Years Comprehensive Warranty and free support service from the date of installation and acceptance, including free provision of spare part as and when necessary.** The vendor should fulfill the following condition during the warranty period:

    (a) Any failure in the system or a subsystem thereof should be rectified within maximum periodof 24 hours of lodging complaint.

    (b) If any of the system/subsystem is down beyond 24 hours, penalty will be charged per hourper system/subsystem at the rate of Rs.1000/-(Rupees One Thousand Only.)

23. Vendor shall provide the CD of complete source code of BFD client and Authentication client along with documentation and operating manual.

Name &Signature of Bidder

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B. Requirement

The following provides an overview of the requirement.

The Unique Identification Authority of India (UIDAI) through its Regional Office (RO) Ranchi, Jharkhand, proposes to perform field study of Best Finger Detection (BFD) at Jharkhand. To conduct this study UIDAI would require to procure devices and required device (client) application to perform Best Finger Detection (BFD). Alongside the BFD application, UIDAI also requires the authentication device (client) application which may be used for Aadhaar authentication during the aforesaid field study. The selected bidder will need to further integrate its authentication and BFD device (client) applications with the identified Authentication User Agency's (AUA's) server application.

At this stage the field study is proposed to be conducted in the state of Jharkhand, however at a later stage UIDAI may decide to conduct or perform BFD at additional districts across other states.

Brief introduction to BFD and Aadhaar authentication is provided in the paragraphs below.

Best Finger

When authenticating a resident using any single finger or two finger as part of fusion authentication, the accuracy or the chances of being matched would be different due to differences in quality across all his/her fingers. This variation may also be present due to the manner in which the resident normally interacts with a typical fingerprint scanner and the different fingers may inherently have different amount of identifying information depending on the size of the finger and the commonness of the pattern it carries. It may thus be useful to appraise each resident of finger providing the best accuracy and successful matching results. We shall refer to this finger with best accuracy as the best finger. Resident may possess one or more best fingers. This knowledge allows the resident to provide his/her best finger(s) during authentication thereby increasing the chances of successful match.

For more details refer to Aadhaar Best Finger Detection (BFD) API 1.6 published by UIDAI at http://uidai.gov.in/images/FrontPageUpdates/aadhaar_bfd_api_1_6.pdf

Aadhaar Authentication

Aadhaar authentication is the process wherein Aadhaar Number, along with other attributes, including biometrics, are submitted online to the UIDAI's CIDR for its verification on the basis of information or data or documents available with it.

For more details refer to Aadhaar Authentication API 1.6 published by UIDAI at http://uidai.gov.in/images/FrontPageUpdates/aadhaar_authentication_api_1_6.pdf

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C. Device hardware requirements

The following table specifies minimal hardware requirements.

Terminal specifications

Component	Minimum Requirement	Specifications Offered
Form Factor	Handheld or Table top	
Biometric Scanner	Refer Biometric scanner specifications	
Communication Protocol	Support for HTTPS between device and Authentication User Agency's server	
Connectivity	Device must have capability of all of the PSTN, GPRS or Edge, Ethernet, CDMA, 3G technologies	
Processor	X 86, ARM 9 or equivalent processor based system. Vendor may provide higher processing capability.	
Memory RAM	256 MB-expandable or higher	
Security	Support for application to authenticate and perform Best Finger Detection as per UIDAI's Aadhaar Authentication API 1.6 and UIDAI's Aadhaar Best Finger Detection (BFD) API 1.6 Support for Encryption/Encoding capabilities as per UIDAI's Aadhaar Authentication API 1.6 and UIDAI's Aadhaar Best Finger Detection (BFD) API 1.6	
Storage (non-volatile)	Minimum of 2 GB of Non volatile/fast memory	
Display	QVGA – 320 x 240 pixels or higher. Readability under direct Sunlight conditions is required.	
User Interface	Graphical icon based and local language support	
External Interfaces	1 LAN and at least 1 USB2.0	

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Location Tracking	Mechanism to automatically detect lat/long either through GPS (Industry standard 16 channel NMEA compliant GPS support) or cell phone tower tracking	
Printer	Inbuilt and capable of printing BFD output. Multilingual printing capability. Receipt and other printer items must be legible for at least two months from date of printing Bidder should supply sufficient quantity of printing stationary (paper) to print a minimum of 5000 BFD outputs with each device.	
Key pad	16 key alpha numeric pad or higher	
Speaker	Voice confirmation of the transaction is required	
Battery life	Minimum 8 hours	
Power Adaptor	AC/DC Adaptor with surge protection	
Certification	CE mark compliance for EMI, EMC	
Environment	Operating temp: 0°C to 50°C Storage not including battery: (0°C to 55°C)	
Ruggedness	Protection from Rain, Dust, Liquid, 1.2 m drop safety	
OS	Multi-tasking OS support	
User Accessories	Carry case, holster, hand or wrist strap	
Warranty and Support	3 year warranty and on-field support (at least NBD)	

Biometric Sensor/ Extractor Specification:

1. All the parameters of Biometric Sensor /Extractor should as per latest STQC specification of Biometric Authentication devices.

2**.** Sensor / Extractor should be Certified/ Provisionally Certified by STQC.

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Software/Application specifications and scope of services

Component	Minimum Requirement	Specifications Offered
Best Finger Detection client	BFD client application conforming to Aadhaar Best Finger Detection (BFD) API 1.6 Voice enablement of BFD output in English and Hindi BFD output print on receipt should indicate best finger(s) pictorially	
Authentication Client	Authentication client application conforming to UIDAI's Aadhaar Authentication API 1.6 Application should at least support single finger and 2-finger fusion authentication Voice enablement of Authentication output in English and Hindi	
Integration	BFD and Authentication client application integration with AUA server application	
Warranty and Support	1 year warranty and on-field support on software/applications	

D. Functional device requirements

The minimal functional device requirements are listed below.

Processing Speed

1. The device must be able to perform authentication and best finger detection transactions promptly. Internal operations do not include data entry or back-end processing of transaction instructions, but do include operations such as encryption and decryption of messages, preparing packets for transfer on the network, etc.

Role based access

2. The device must provide different logins for operators, service agents, and super-users. These may be authenticated using AADHAAR authentication as well.
3. No transactions may be performed on the device without the operator logging in.

Unique device number

4. Each device will have a unique terminal ID.

Reporting

5. The device must allow operators to generate end of day reports for authentication transactions done during the day. The reporting guidelines can be updated subsequently by UIDAI.

Security

6. The device must not transmit any confidential data unencrypted on the network.
7. Security requirements specified by UIDAI for AADHAAR data must be followed to secure the biometric and other AADHAAR authentication data.
8. The device must automatically log out the operator and lock itself after a period of inactivity.

UIDAI standards for biometrics and authentication

9. Biometric hardware must meet minimal standards as described in this document in the hardware requirements section
10. The terminal must be capable of following UIDAI authentication as described in the [Aadhaar Authentication API 1.6](#)released by UIDAI.
11. The terminal must be capable of conducting two finger authentication (fusion authentication) transactions in the same session.
12. Terminal must support best finger detection software as per [Aadhaar Best Finger Detection (BFD) API 1.6](#) released by UIDAI.

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13. The authentication and BFD process must comply with authentication policies of UIDAI, and updated from time to time with-in the software/application warranty and support period.

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E. Software/Application implementation guidelines

The guidelines for Authentication and Best finger development client applications are listed below.

Two finger authentication

Aadhaar authentication API

Authentication transactions should be conducted in accordance to the Aadhaar authentication policy[1] and Aadhaar Authentication API Specification[2] published on UIDAI website, for biometric and non-biometric (eg. OTP[3], demographic, etc.) authentication methods.

Single finger and two finger authentication

In accordance with the API, authentication application on the device can package single finger or two finger minutiae records in the same transaction. Syntax for packing single or two finger minutiae records is elaborated in the Aadhaar Authentication API Specification.

Application is expected to implement two finger authentications as part of the fingerprint authentication module.

In the event of online Aadhaar authentication transaction, flow of events for carrying out two finger authentication is as follows.

- After capturing the first best finger, the minutiae record is sent to UIDAI. A copy of the minutiae record for the first finger is retained in memory (as against stored on disk). This issingle finger authentication.
- If the authentication transaction is successful, then the minutiae record is deleted from memory and application proceeds to next stage post authentication.
- If the authentication transaction is unsuccessful, then resident is requested to provide second best finger and minutiae record from first finger (retrieved from memory) as well as minutiae record from second best finger is submitted for two-finger authentication.
- During multiple attempts, simplified two finger scheme can be implemented which is detailed below. By retaining the last captured fingerprint minutiae in memory, application can only request one best finger and form two finger authentication requests. Sample capture flow process is indicated below.

    o Capture 1 – 1st best finger – single finger auth transaction
    o If fail, Capture 2 – 2nd best finger – two finger auth transaction (using capture 1 and 2)
    o If fail, Capture 3 – 1st best finger – two finger auth transaction (using capture 2 and 3)
    o If fail, Capture 4 – 2nd best finger – two finger auth transaction (using capture 3 and 4)

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[1] http://uidai.gov.in/operating-model-overview.html
[2] http://uidai.gov.in/images/FrontPageUpdates/aadhaar_authentication_api_1_6.pdf
[3] http://uidai.gov.in/images/FrontPageUpdates/aadhaar_otp_request_api_1_5.pdf

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- This flow helps resident to achieve authentication in minimal number of captures.
- In case of connectivity issues, two fingers can be captured at once and two finger authentication transactions can be carried out in buffered mode.

This completes one attempt of two finger authentication cycle. If the two finger authentication is unsuccessful, the same process can be repeated in order to enable successful authentication.

Best finger detection

The Best Finger for a resident is the one that, when selected for authentication, provides the highest chance of successful authentication for that resident. The best finger to be used for authentication depends on the intrinsic qualities of the finger (ex. ridge formation, how worn out they are, cracked, etc.), as well as the quality of images captured during enrolment process and the authentication transaction.

Best Finger API

A separate API[4] (application programming interface) was developedand deployed on the client authentication device for the detection of the best finger. When BFD feature is implemented on an authentication device, residents can determine their best fingers, prior to authentication.

BFD Implementation

Best finger is expected to determine after analyzing all ten fingers of resident. Recent studies have indicated that for most of residents, some fingers have higher chances of being best fingers as compared others. In view of the above findings, and in order to simplify best finger detection process, staged approach is being suggested. This simplification saves time and effort for residents as well as operators.

Best finger detection can be done in two stages. The two stages should be two different modes in the BFD application.

1. In Stage 1, only six fingers are captured from both hands of the resident and if best fingers are detected among six fingers, resident proceeds to conduct authentication thereon using the best fingers.
2. In Stage 2, However, if best fingers are not determined among the six fingers, resident proceeds to provide all ten fingers and best finger detection process responds with best fingers among all the ten fingers of the resident.

In case, best fingers are not detected even after providing all 10 fingers, resident can attempt the process again or follow the error codes to take appropriate action as per the AUA guidance.

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[4]http://uidai.gov.in/images/FrontPageUpdates/aadhaar_bfd_api_1_6.pdf

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BFD finger capture process

The following section outlines, the process of finger captures in order to determine best fingers. The same is outlined in figure 1 and 2.

1. Capture one finger at a time in order specified in figure 1.
    a. One at a time, capture six fingers. Ensure labelling is properly done. As a best practice following order is suggested Left middle, Left index, Left thumb, Right Thumb, Right index, Right middle fingers in that order (refer figure 2)

2. If AUA chooses to do full BFD(stage2) in one go, sequence of fingers to be captured in indicated in figure 3. As a best practice following order is suggested Left little, Left Ring, Left middle, Left index, Left thumb, Right Thumb, Right index, Right middle, Right ring and Right little fingers in that order (refer figure 2)
3. Once the best attempt is captured for all fingers, application forms the input XML for the BFD API as specified the api specification document.
4. Application invokes the BFD API through AUA server (similar to authentication).
5. Based on the response, provide a printed receipt to the resident indicating the best fingers of the resident.

Figure 1. BFD Stage1 (1-6 fingers)	**Figure 2. BFD Stage2 finger picture sequence**

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