UNIQUE IDENTIFICATION AUTHORITY OF INDIA

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Seeking

EXPRESSION OF INTEREST

FROM
TECHNOLOGY SOLUTION PROVIDERS AND DEVICE MANUFACTURERS

FOR PARTICIPATION IN

Iris AUTHENTICATOIN DEVICE ECOSYSTEM DEVELOPMENT AND

PROOF OF CONCEPT EXERCISE

April 2015

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1. Introduction and Overview

Unique Identification Authority of India (UIDAI) invites Expression of Interest (EoI) for participating in Iris device ecosystem development and Proof of Concept exercise, from the technology solution providers and device manufacturers developing Iris devices (as integrated devices[1] or as discrete devices[2]) that can be used to conduct Aadhaar enabled biometric authentication. This EoI is an extension of the RFI published by UIDAI during February 2015 on the same subject.

Unique Identification Authority of India (UIDAI) has been set up with the mandate of providing a unique identification number (Aadhaar) to all residents of India and defining usages and applicability of Aadhaar for delivery of various services. Towards Aadhaar-enabling delivery of various services, UIDAI proposes online identity authentication. The online authentication may be done using demographic data, biometric data or OTP (One Time PIN).

Over the last three years, UIDAI and its partners have conducted successful field studies and implemented certification processes for fingerprint and Iris authentication devices. These successes have resulted in publication of biometric device standards and associated certification processes. Subsequently, Biometric devices thus certified have contributed to increased use of Aadhaar authentication.

Over last few years, biometric authentication technology has seen many advances. Innovations in biometric authentication technologies have seen huge strides. Examples of such innovations include miniaturization resulting in integration of biometric devices into small form factor devices such as mobile phones, tablets etc.

UIDAI endeavors to bring latest advances in authentication devices into the ecosystem of Aadhaar authentication. In order to provide opportunity for authentication devices ecosystem partners to test and certify their devices, UIDAI proposes to conduct field testing activities as a collaborative effort.

Through this Expression of Interest (EOI), UIDAI invites applications from organizations specializing in biometric devices to participate in lab and field testing of Iris authentication devices.

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[1] 'Integrated devices' refers to devices where biometric sensor is integrated into the device package. Examples of devices in this category include, biometric sensors integrated into phone/tablet etc.
[2] 'Discrete devices' refers to biometric devices which need to be connected to a host device such as PC/Laptop/Micro ATM etc. as an accessory.

2. Objectives and Prerequisites of the PoC

The proposed testing is expected to achieve the following objectives

I. Provide opportunity for UIDAI's device ecosystem partners to test their latest innovations in the areas of Iris capture hardware, software, and Iris cameras integrated into small form factor devices.

II. Provide opportunity for UIDAI and its certification partners to fine tune the device specifications used for Aadhaar authentication.

The testing would be carried out by the UIDAI Technology Centre at Bangalore. UIDAI may conduct further field studies based upon the lab test results.

UIDAI after due process of seeking inputs on revising authentication device specification, through Request for Information (published in February 2015) has arrived at a reference Iris authentication device specifications (Annexure 1) for the purpose of conducting field trials. These specifications form a broad base for qualification of the Iris devices to be considered for the PoC. UIDAI invites interest from device manufacturers to actively participate in this exercise with their devices (production models or prototypes) that are grossly compliant to the reference specifications. UIDAI also advises the partners to come forward even if their devices' specifications deviate from the reference ones. However, UIDAI reserves the right to include/exclude any device offered for the field testing.

In addition, UIDAI requests device vendors whose device specification meets the currently published Iris specification (STQC Document reference: BDCS(A-I)-03-07) to approach STQC for certification purposes and not to offer the same devices for the proposed PoC.

All the interested Partners are requested to furnish the response template (Annexure 2) duly filled to UIDAI as per the time lines mentioned in Section 3 below.

After completion of the selection process, the shortlisted partners will be informed by UIDAI to submit their devices (6 numbers for each model) as per the details given below.

a. *For Discrete Iris Devices*: Device drivers, any software prerequisites, any other software or program which is required for the integration with UIDAI Authentication PoC client.

b. *For Integrated Iris Devices*: Loaded with the UIDAI Authentication PoC Application fitting into the device display, the protocol for which will be published to the selected partners.

Broadly, Iris authentication devices should support auto capture and segmentation SDK which produces output image in the CROPPED_AND_MASKED Iris image interchange format (previously known as kind 7) compliant to ISO 19794-6:2011. Device is expected to feature appropriate applications including authentication application compliant to UIDAI's Aadhaar Authentication API 1.6 Specification.

3. Tentative Timelines

S. No	Milestone	Timeline
1	Publish UIDAI's invitation seeking EOI	30th April 2015
2	Last date for seeking clarifications by Partners	8th May 2015
3	Last date for submission of responses (Annexure 2) by Partners	12th May 2015
4	Shortlisting and communicating to the Partners	14th May 2015
5	Workshop for short listed device partners in order to provide further details on field testing methodologies, POC software requirements and other details.	21st May 2015
6	Last date for submission of devices, SDK and authentication application	28th May 2015
7	PoC activity *Definite dates will be intimated by UIDAI separately.*	*June 2015

Reference specification for Iris devices for Aadhaar authentication

S. No	Device Characteristics	Shortlisted Specification (Based on RFI inputs)
1	*Functional*	
1.1	Spatial Resolution	> 50% at 1 LP/mm.
1.2	Pixel Resolution	>10 pixels/mm
1.3	Image Margins	Left & right >= 0.6x Iris radius Top & bottom >= 0.2x Iris radius
1.4	Imaging Wavelength	700-900nm
1.5	Spectral Spread	Power in any 100nm band>35% of total power
1.6	Pixel Depth	minimum of 8 bits/pixel
1.7	Sensor Signal to Noise Ratio	> 30 db
1.8	Scan Type	Progressive
1.9	Output Image	IMAGE_TYPE_CROPPED_AND_MASKED format with various JPEG2000 image sizes (2KB, 3.5KB, 5KB**,** 7KB, 10 KB)
1.10	Contrast	The Iris image should have good grey level separation between the Iris and sclera and between the Iris and pupil and should have sufficient contrast to reveal the Iris texture. *The quantification of "Good" and "Sufficient" will be done after the PoC.*
1.11	Optical Distortion	The Iris image should not exhibit effects of optical distortion including spherical aberration, chromatic aberration, astigmatism and coma consistent with standard optical design practices
1.12	Noise	No image resizing. No image manipulation other than recommended by IMAGE_TYPE_CROPPED_AND_MASKED. Single pass JP2.
1.13	Capture time	<5 sec
1.14	Operating Temperature	0-50
2	*Safety*	Exempt Group per IEC 62471:2006-07
3	*Occupational Health-Safety*	RoHS compliant
4	*Software API*	Conforms to UIDAI Auth PoC API

Response Template providing details of the devices offered by Partners

Note: *Separate table shall be submitted for each model*

S. No	Parameter	Submitted device specifications	Remarks
1	Name of Organization		
2	Contact Person's Name		
3	Contact Person's address & contact details (phone and email)		
Device Related			
4	Single or dual Iris capture		
5	Pixel resolution in pixel/mm		
6	Capture distance		
7	Capture volume		
8	Contrast		
9	Imaging wavelength /spectrum		
10	Image margins		
11	Pixel depth		
12	Capture mode (auto, forced)		
13	Signal to noise ratio		
14	Device dimension		
15	Device form factor (Discrete/ Integrated)		
16	In case of discreet devices - Operating Systems supported (Windows / Linux / Android / Others) Provide details of all compatible OS		

17	In case of discreet devices - Connectivity supported (Standard USB connectivity for PC based application, Connectivity for POS devices)		
18	Development stage (production ready / R&D) If R&D, likely date for production readiness		
19	Image acquisition time		
20	Any audio / visual indication at device level for various events like capture etc.? If Yes, provide details		
21	Any Liveness Detection mechanism? If Yes, provide details		
22	Operating temperature		
23	Safety		
24	EMC compliance		
25	Any implementation / study done earlier for Iris authentication? If yes, please attach biometric accuracy and performance report with details such as FRR/FAR results, packet size, acquisition time etc.		
26	Image ISO 19794:6 compliant? (Yes/No)		
27	Does the camera provide image quality information? If yes, what are the image quality metrics?		
SDK Related			
28	Biometric Algorithm SDK Name/ Version (Optional)		
29	Supports CROPPED AND MASKED (image type 7) image? (Yes/No) If yes, specify file size.		
30	Any parameters for checking image quality? If Yes, provide details		
Testing Support			
31	No. of devices that can be provided		
32	Profile of technical manpower that can support integration & on-field troubleshooting		

References

1. Aadhaar Registered Devices - Technical Specification Version 1.0
   http://uidai.gov.in/images/Aadhaar_registered_devices_1_0.pdf
2. Biometrics Standards Committee Report
   http://uidai.gov.in/UID_PDF/Committees/Biometrics_Standards_Committee_report.pdf
3. UIDAI Biometrics Device Specification (FP) - Authentication (STQC 2013)
   http://stqc.gov.in/sites/upload_files/stqc/files/New%20Revision%20_May_%201%20STQC%20UIDAI%20BDCS-03-08%20UIDAI%20Biometric%20Device%20Specifications%20_Authentication_.pdf
4. UIDAI Iris Authentication Device Specification (STQC)
   http://www.stqc.gov.in/sites/upload_files/stqc/files/Device_specification_BDCS_A-I_-03-07_0.pdf
5. Aadhaar Authentication Framework
   http://uidai.gov.in/images/authentication/d2_authentication_framework_v1.pdf
6. Aadhaar Authentication API 1.6
   http://uidai.gov.in/images/FrontPageUpdates/Aadhaar_authentication_api_1_6.pdf
7. High Accuracy and Inclusive Authentication using Iris Modality
   http://uidai.gov.in/images/authDoc/Iris_auth.pdf
8. Iris Authentication Accuracy - PoC Report
   http://uidai.gov.in/images/authentication/Iris_poc_report_14092012.pdf
9. Role of Biometric Technology in Aadhaar Authentication
   http://uidai.gov.in/images/authentication/role_of_biometric_technology_in_Aadhaar_authentication_020412.pdf
10. Authentication - Standards and Specifications
    http://uidai.gov.in/images/authentication/authentication_standards_and_specs_v1_7.pdf

Contact Details

The responses may be sent to the following email address.

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