

EXPRESSION OF INTEREST (EOI)

Title of Consulting Service: 01-KYC-2022

Method of Consulting Service: International

**Project Name : Design, Development/Supply, Integration, Implementation,
Operation and Support for Centralized Biometric based Digital Know Your
Customer (DigitalKYC)**

EOI : 01-KYC-2022

Office Name: Nepal Telecommunications Authority

Office Address: Kathmandu Kathmandu

Funding agency : Internal Resources

Abbreviations

DS.....	Data Sheet
RFP	Request For Proposal
DCS.....	Delivery and Completion Schedule
DoIT.....	Department of Information Technology
DP	Development Partner
EQC	Evaluation and Qualification Criteria
GCC	General Conditions of Contract
GoN	Government of Nepal
IFP	Invitation for Proposals
ITC	Instructions to Consultants
LGRS	List of Goods and Related Services
NCB	National Competitive Bidding
NTA	Nepal Telecommunications Authority
PAN	Permanent Account Number
PPMO	Public Procurement Monitoring Office
SBQ.....	Schedule of Bidder Qualifications
SCC.....	Special Conditions of Contract
SR	Schedule of Requirements
TOR.....	Terms of Reference
VAT	Value Added Tax

Table of Contents

Section I.	A. Request for Expression of Interest	5
Section II.	B. Instructions for submission of Expression of Interest	7
Section III.	C. Objective of Consultancy Services or Brief TOR	9
Section IV.	D. Evaluation of Consultant's EOI Application	14
Section V.	E. EOI Forms and Formats	18

A. Request for Expression of Interest

Request for Expression of Interest

Government of Nepal (GoN)

Name of Employer: Nepal Telecommunications Authority

Date: 06-04-2022 10:30

Name of Project: Design, Development/Supply, Integration, Implementation, Operation and Support for Centralized Biometric based Digital Know Your Customer (DigitalKYC)

1. Government of Nepal (GoN) has allocated fund toward the cost of Design, Development/Supply, Integration, Implementation, Operation and Support for Centralized Biometric based Digital Know Your Customer (DigitalKYC) and intend to apply portion of this fund to eligible payments under the Contract for which this Expression of Interest is invited for International consulting service
2. The Nepal Telecommunications Authority now invites Expression of Interest (EOI) from eligible consulting firms (“consultant”) to provide the following consulting services: Nepal Telecom Authority will be hosting the Centralized Biometric based Digital Know Your Customer digital KYC system to give access to its Licensees to use the Digital KYC/ e-KYC to offer the services to their customers
3. Interested eligible consultants may obtain further information and EOI document free of cost at the address Nepal Telecommunications Authority, Only EGP during office hours on or before 22-04-2022 14:00 or visit e-GP system www.bolpatra.gov.np/egp or visit the client’s website <https://nta.gov.np/en/>
4. Consultants may associate with other consultants to enhance their qualifications.
5. Expressions of interest shall be delivered online through e-GP system www.bolpatra.gov.np/egp Only EGP on or before 22-04-2022 14:00
6. In case the last date of obtaining and submission of the EOI documents happens to be a holiday, the next working day will be deemed as the due date but the time will be the same as stipulated.
7. EOI will be assessed based on Qualification 40.0 %, Experience 50.0 %, and Capacity 10.0 % of consulting firm and key personnel. Based on evaluation of EOI, only shortlisted firms will be invited to submit technical and financial proposal through a request for proposal.
8. Minimum score to pass the EOI is 60

B. Instructions for Submission of Expression of

Instructions for Submission of Expression of Interest

1. Expression of Interest may be submitted by a sole firm or a joint venture of consulting firms.
2. Interested consultants must provide information indicating that they are qualified to perform the services (descriptions, organization and employee and of the firm or company, description of assignments of similar nature completed in the last 7 years and their location, experience in similar conditions, general qualifications and the key personnel to be involved in the proposed assignment).
3. This expression of interest is open to all eligible consulting firm/person/ company/ organization.
4. In case, the applicant is individual consultant, details of similar assignment experience, their location in the previous 4 years and audited balance sheet and bio data shall be considered for evaluation.
5. The assignment has been scheduled for a period of 60 Month. Expected date of commencement of the assignment is 01-07-2022.
6. A Consultant will be selected in accordance with the QCBS method.
7. Expression of Interest should contain following information:
 - (i) A covering letter addressed to the representative of the client on the official letter head of company duly signed by authorized signatory.
 - (ii) Applicants shall provide the following information in the respective formats given in the EOI document:
 - EOI Form: Letter of Application (Form 1)
 - EOI Form: Applicant's Information (Form 2)
 - EOI Form: Work Experience Details (Form 3(A), 3(B) & 3(C))
 - EOI Form: Capacity Details (Form 4)
 - EOI Form: Key Experts List (form 5).
8. Applicants may submit additional information with their application but shortlisting will be based on the evaluation of information requested and included in the formats provided in the EOI document.
9. The Expression of Interest (EOI) document must be duly completed and submitted in sealed envelope and should be clearly marked as "EOI Application for Short-listing for the Design, Development/Supply, Integration, Implementation, Operation and Support for Centralized Biometric based Digital Know Your Customer (DigitalKYC).The Envelope should also clearly indicate the name and address of the Applicant. Alternatively, applicants can submit their EOI application through e-GP system by using the forms and instructions provided by the system.
10. The completed EOI document must be submitted on or before the date and address mentioned in the "Request for Expression of Interest". In case the submission falls on public holiday the submission can be made on the next working day. Any EOI Document received after the closing time for submission of proposals shall not be considered for evaluation.

C. Objective of Consultancy Services or Brief TOR

Design, Development/Supply, Integration, Implementation, Operation and Support for Centralized Biometric based Digital Know Your Customer (DigitalKYC)

1. Introduction of Project:

Several avoidable security breaches such as terrorists' acts, and violent crimes have been committed using either non-registered or improper registered SIM card around the world. Financial crimes have also been committed either in the form of mobile-money fraud or illegal SIM swap which has resulted in significant loss to the victims.

Digital identity verification is rapidly growing as a direct result of digital transformation initiatives and has seen increasing growth due to the COVID-19 pandemic. Account opening is moving online, and service providers demand a secure and safe method to verify identity and for DigitalKYC/ e-KYC.

Different countries are establishing centralized Biometric based Digital Know Your Customer DigitalKYC/ e-KYC system to service various licensed service providers to enable them to offer their services to their customers efficiently and securely without compromising the security. They have adopted different approaches to implement centralized Biometric based Digital Know Your Customer DigitalKYC/ e-KYC system and provide information about technical standards that could be implemented to achieve interoperability at the level of the digital identity verification process.

In Nepal, currently, for issuance of Mobile SIM, or subscribing an internet connection or telephone line, a Customer Application form along with physical copies of Proof of Identity, Proof of Address and photographs are required. Another challenge is every time a Person or an organization would like to subscribe the service has to fill the same form again and again for same provider or different providers. Management of physical record and wastage of paper is a big challenge.

Other challenge is multiple subscription or fraudulent subscription of the services

Having a proper Centralized Biometric based Digital Know Your Customer digital KYC system-based SIM registration and verification database of every subscriber has been identified as solution to these challenges. To fully address these issues, and in compliance to the Bylaws relating to the KYC registration of customers of telecommunications operators, The Government of Nepal through Nepal Telecommunications Authority (NTA) is looking at acquiring/ leverage a Centralized Biometric based Digital Know Your Customer DigitalKYC/ e-KYC solution that will make use authentication features of National Identity (NID) and capture biometric KYC data of all telecommunications subscribers from each licensed operator in Nepal. The system will serve as the master data repository which will be used for verifications when performing SIM Swap, change of ownership and other service that NTA will deem fit.

Service Providers (SPs) will be leveraging the Centralized Biometric based Digital Know Your Customer digital KYC feature of NID wherein after getting the customer's consent using his/her NID number along with Biometric based Digital KYC/ e-KYC.

Centralized Biometric based Digital Know Your Customer Digital KYC/ e-KYC system for SIM Registration and Verification System must be a centralized secured solution to support Nepal Telecommunications Authority (NTA) to receive real-time or file-based subscriber KYC data from all telecommunications operator in Nepal. The data/information of subscriber which are authenticated through National identity system (NID) and consist of biometric and demographic data of individuals and companies will be securely stored. The system must have an interface to allow all licensed telecommunications operator to perform the following: Register details of new SIM card subscribers; Re-registration of existing SIM card subscribers; Mobile number porting of SIM card subscribers; SIM replacement of SIM card subscribers; Change of ownership; Additional SIM registration; Fetch the registered information record of the SIM card subscribers; and terminate the registered information record of the SIM card subscribers.

The solution must be fully automated with little, or no engagement needed by NTA to verify subscriber data compliance. The solution should automatically accept and reject KYC data in real-time and must support verification use-cases such as – SIM Swap, Change of Ownership and MNP. The solution should have the capability to selectively control what users and dealers are allowed to perform during the subscriber KYC capturing process.

Nepal Telecom Authority will be hosting the Centralized Biometric based Digital Know Your Customer digital KYC system to give access to its Licensees to use the Digital KYC/ e-KYC to offer the services to their customers. The Digital KYC system will have the following features:

2. Objective of Work:

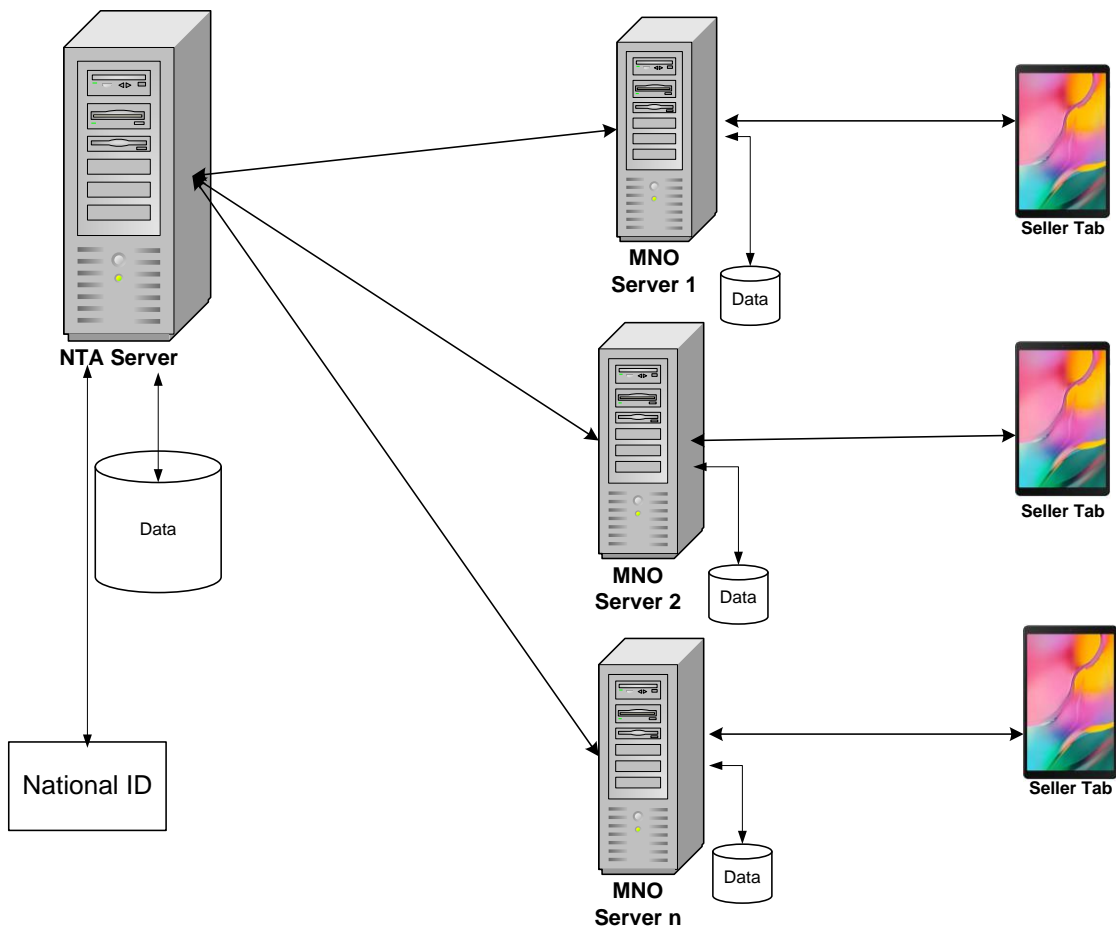
The objective of the project is to design, develop, implement and test an end-to-end solution which includes software hardware (including devices), professional services, maintenance and support that will aid the registration of all categories of subscribers, registration of POS agents and verification of subscriber data by licensed telecommunications operators and store verified information in the system for future usage of the same provider or for the service providers, keep centralized records of subscriptions, cross-verify information of the subscriber with their subscription and devices.

3. Purpose of the Project:

The main purpose of this project is to establish Centralized Biometric based Digital Know Your Customer digital KYC system for SIM Registration and Verification platform at Nepal Telecommunications Authority for authentication services for service providers. The solution will include all infrastructure, administrative and technical support.

The system must enable a secure communication between the Licensees and the NTA by which Licensees can share/transfer the subscriber's information to the NTA.

4. Communication Block Diagram



5. In Summary, the successful bidder will be expected to (as minimum):

- a) Develop the Centralized Biometric based Digital Know Your Customer DigitalKYC / e-KYC system for SIM Registration and hardware system in accordance with these requirements.
- b) Develop the registration system for each Service Provider (SPs) that will interact with the central system
- c) Installation and Implementation of the system in (a) and (b) above.
- d) Supply POS devices for subscriber enrolment
- e) Conduct Training for specific NTA and Service Provider staff.
- f) Support the system

The system must have an interface to allow the Licensees to perform the following:

- a) Register details of new SIM card subscribers.
- b) Re-registration of existing SIM card subscribers.
- c) SIM Swap of SIM card subscribers.
- d) Change of ownership.
- e) Additional SIM registration.
- f) Terminate the registered information record of the SIM card subscribers.
- g) Should support OCR for auto filling of form: Capturing registration form filled by the customer
- h) Should support OCR to capture information and pass to system automatically from passport for various countries, Nepal driving license and Nepal national IDs. OCR should support both Nepali and English.
- i) should support face recognition, face attributes, emotions, including liveness detection.

D. Evaluation of Consultant's EOI Application

Evaluation of Consultant's EOI Application

Consultant's EOI application which meets the eligibility criteria will be ranked on the basis of the Ranking Criteria.

i) Eligibility & Completeness Test

Sl. No.	Criteria Title	Compliance
1	Corporate Registration	
2	Tax Clearance/Tax Return Submission	
3	VAT/PAN Registration	
4	EOI Form 1: Letter of Application	
5	EOI Form 2: Applicant Information Form	
6	EOI Form 3: Experience (3(A) and 3(B)) as mentioned in Evaluation Criteria	
7	EOI Form 4: Capacity as mentioned in Evaluation Criteria	
8	EOI Form 5: Qualification of Key Experts as mentioned in Evaluation Criteria	
9	In case of a natural person or firm/institution/company which is already declared blacklisted and ineligible by the GoN, any other new or existing firm/institution/company owned partially or fully by such Natural person or Owner or Board of director of blacklisted firm/institution/company; shall not be eligible consultant.	
10	If the corruption case is being filed to Court against the Natural Person or Board of Director of the firm/institution /company or any partner of JV, such Natural Person or Board of Director of the firm/institution /company or any partner of JV shall not be eligible to participate in procurement process till the concerned Court has not issued the decision of clearance against the Corruption Charges.	
11	Firm/ institution/ company must be IT company (If Consulting firm applied in JV then all partner must be IT company)	
12	Firm/ institution/ company shall not Telecom Service Provider of Nepal or did not provide KYC solution to Telecom Service Provider of Nepal. (If Consulting firm applied in JV then all partner shall not Telecom Service Provider of Nepal or did not provide KYC solution to Telecom Service Provider of Nepal)	
13	Firm/ institution/ company must be certified to its relevant international norms of ISO 27001 (any one partner in case of JV or OSM)	

ii) EOI Evaluation Criteria

A. Qualification

Sl. No.	Criteria	Minimum Requirement
1	Project Manager x 1	Masters in IT/ Computer Science/Telecommunications Management or equivalent ? Experience of at least 10 years in Telecommunications software, IT Infrastructure Services and Software design ? Having at least five projects experience in KYC deployment across different continents with one having more than 50million subscribers ? Having project management experience as a Team Leader of not less than 5 project managers ? Preferred PMP certified
2	Deputy Project Manager x1	Bachelors in IT/ Computer Science/Information Systems or equivalent ? Experience of at least 10 years System Integration, Project Management, IT related projects
3	System Design x 2	Bachelors in IT/ Computer Science/Information Systems or equivalent ? Experience of at least 5 years in database design and

Sl. No.	Criteria	Minimum Requirement
		implementation along with experience in business flow design and software development
4	Software Engineer x 2	? Bachelors in IT/ Computer Science/Information Systems or equivalent ? Experience of at least 5 years in the following: Mobile development, Web Development, Backend business flow design and implementation and database design
5	Software Testers x 2	? Bachelors in IT/ Computer Science/Information Systems or equivalent ? Experience of at least 3 years in Mobile and Web application testing
6	Integration Lead x 1	? Bachelors in IT/ Computer Science/Information Systems or equivalent ? Experience of at least 7 years in integration ? Having at least five projects experience in KYC deployment across different continents with one having more than 10million subscribers ? Having management experience as a Team Leader of not less than 5 integration engineers
7	Integration Engineers x 2	? Bachelors in IT/ Computer Science/Information Systems or equivalent ? Experience of at least 3 years in Telecommunications software, IT Infrastructure Services and Support ? Having at least two projects experience in KYC deployment across different continents with one having more than 10million subscribers
8	Trainer Expert x 2	? At least Bachelor's Degree in IT /Computer Engineering / Electronics and Communication / Management / Law or equivalent. ? Minimum of 5 Years of experience in IT Training

Score: 40.0

B. Experience

Sl. No.	Criteria	Minimum Requirement
1	General Experience of consulting firm	Overall experience of supply of ICT/ advanced and automated biometric KYC and SIM automation compliance related solutions/ Goods and related services in last five (5) years. [In case of JV, at least one partner must meet the requirement] Must have experience in Intelligent Registration management in at least 5 projects and minimum total registration should be 130 million. (Consulting Firm can use Original Software Manufacture(OSM) credential)
2	Specific experience of consulting firm within last 7 years. In case of person, specific experience of the person within last 4 years.	In the Design, Develop, Installation and Commissioning of at least two (2) similar projects in telecommunication operators, government enterprises or private institutes (including but not limited to detailed designing, implementing and deployment) [In case of JV, at least one partner must meet the requirement]. (Consulting Firm can use Original Software Manufacture(OSM)/Original Equipment Manufacture (OEM) credential)
3	Similar Geographical experience of consulting firm	Global

Score: 50.0

C. Capacity

Sl. No.	Criteria	Minimum Requirement
1	Financial Capacity.[Average turnover required shall not exceed 150% of cost estimate]	4 Million USD
2	Infrastructure/equipment related to the proposed assignment.[This Evaluation criteria should be deleted if infrastructure/equipment are not the part of the proposed assignment]	Declaration of Infrastructure such that Consulting firm can Design, Develop, Install and Operate KYC System

Score: 10.0

Minimum score to pass the EOI is: 60

Note : If the corruption case is being filed to Court against the Natural Person or Board of Director of the firm/institution /company or any partner of JV, such Natural Person or Board of Director of the firm/institution /company or any partner of JV such consultant's proposal shall be excluded during the evaluation.

E. EOI Forms & Formats

E. EOI Forms & Formats

Form 1. Letter of Application

Form 2. Applicant's information

Form 3. Experience (*General, Specific and Geographical*)

Form 4. Capacity

Form 5. Qualification of Key Experts

Standard EOI Document

1. Letter of Application

(Letterhead paper of the Applicant or partner responsible for a joint venture, including full postal address, telephone no., fax and email address)

Date:

To,

Full Name of Client: _____

Full Address of Client: _____

Telephone No.: _____

Fax No.: _____

Email Address: _____

Sir/Madam,

1. Being duly authorized to represent and act on behalf of (hereinafter "the Applicant"), and having reviewed and fully understood all the short-listing information provided, the undersigned hereby apply to be short-listed by **[Insert name of Client]** as Consultant for **[Insert brief description of Work/Services]**.
2. Attached to this letter are photocopies of original documents defining:
 - a) the Applicant's legal status;
 - b) the principal place of business;
3. **[Insert name of Client]** and its authorized representatives are hereby authorized to verify the statements, documents, and information submitted in connection with this application. This Letter of Application will also serve as authorization to any individual or authorized representative of any institution referred to in the supporting information, to provide such information deemed necessary and requested by yourselves to verify statements and information provided in this application, or with regard to the resources, experience, and competence of the Applicant.
4. **[Insert name of Client]** and its authorized representatives are authorized to contact any of the signatories to this letter for any further information.¹
5. All further communication concerning this Application should be addressed to the following person,

[Person]

[Company]

[Address]

[Phone, Fax, Email]
6. We declare that, we have no conflict of interest in the proposed procurement proceedings and we have not been punished for an offense relating to the concerned profession or

¹ Applications by joint ventures should provide on a separate sheet, relevant information for each party to the Application.

Standard EOI Document

business and our Company/firm has not been declared ineligible.

7. We further confirm that, if any of our experts is engaged to prepare the TOR for any ensuing assignment resulting from our work product under this assignment, our firm, JV member or sub-consultant, and the expert(s) will be disqualified from short-listing and participation in the assignment.
8. The undersigned declares that the statements made and the information provided in the duly completed application are complete, true and correct in every detail.

Signed :

Name :

For and on behalf of (name of Applicant or partner of a joint venture):

Standard EOI Document

2. Applicant's Information Form

(In case of joint venture of two or more firms to be filled separately for each constituent member)

1. Name of Firm/Company:
2. Type of Constitution (*Partnership/ Pvt. Ltd/Public Ltd/ Public Sector/ NGO*)
3. Date of Registration / Commencement of Business (*Please specify*):
4. Country of Registration:
5. Registered Office/Place of Business:
6. Telephone No; Fax No; E-Mail Address
7. Name of Authorized Contact Person / Designation/ Address/Telephone:
8. Name of Authorized Local Agent /Address/Telephone:
9. Consultant's Organization:
10. Total number of staff:
11. Number of regular professional staff:

(Provide Company Profile with description of the background and organization of the Consultant and, if applicable, for each joint venture partner for this assignment.)

Standard EOI Document

3. Experience

3(A). General Work Experience

(Details of assignments undertaken. Each consultant or member of a JV must fill in this form.)

S. N.	Name of assignment	Location	Value of Contract	Year Completed	Client	Description of work carried out
1.						
2.						
3.						
4.						
5.						
6.						
7.						

Standard EOI Document

3(B). Specific Experience

Details of similar assignments undertaken in the previous seven years

(In case of joint venture of two or more firms to be filled separately for each constituent member)

Assignment name:	Approx. value of the contract (in current NRs; US\$ or Euro) ² :
Country: Location within country:	Duration of assignment (months):
Name of Client:	Total No. of person-months of the assignment:
Address:	Approx. value of the services provided by your firm under the contract (in current NRs; US\$ or Euro):
Start date (month/year): Completion date (month/year):	No. of professional person-months provided by the joint venture partners or the Sub-Consultants:
Name of joint venture partner or sub-Consultants, if any:	Narrative description of Project:
Description of actual services provided in the assignment: Note: Provide highlight on similar services provided by the consultant as required by the EOI assignment.	

Firm's Name: _____

² Consultant should state value in the currency as mentioned in the contract

Standard EOI Document

3(C). Geographic Experience

Experience of working in similar geographic region or country

(In case of joint venture of two or more firms to be filled separately for each constituent member)

No	Name of the Project	Location (Country/ Region)	Execution Year and Duration
1.			
2.			
3.			
4.			
5.			
6.			
7.			

Standard EOI Document

4. Capacity

4(A). Financial Capacity

(In case of joint venture of two or more firms to be filled separately for each constituent member)

Annual Turnover	
Year	Amount Currency

- **Average Annual Turnover**

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(Note: Supporting documents for Average Turnover should be submitted for the above.)

Standard EOI Document

4(B). Infrastructure/equipment related to the proposed assignment³

No	Infrastructure/equipment Required	Requirements Description
1.		
2.		
3.		
4.		
5.		

³ Delete this table if infrastructure/equipment for the proposed assignment is not required.

Standard EOI Document

5. Key Experts *(Include details of Key Experts only)*

(In case of joint venture of two or more firms to be filled separately for each constituent member)

SN	Name	Position	Highest Qualification	Work Experience (in year)	Specific Work Experience (in year)	Nationality
1						
2						
3						
4						
5						

(Please insert more rows as necessary)

CURRICULUM VITAE (CV)

Position Title and No.	{e.g., K-1, TEAM LEADER}
Name of Firm	<i>Insert name of firm proposing the expert</i>
Name of Expert:	{Insert full name}
Date of Birth:	{day/month/year}
Citizenship	

Education: {List college/university or other specialized education, giving names of educational institutions, dates attended, degree(s)/diploma(s) obtained}

Employment record relevant to the assignment: {Starting with present position, list in reverse order. Please provide dates, name of employing organization, titles of positions held, *type of employment (full time, part time, contractual)*, types of activities performed and location of the assignment, and contact information of previous clients and employing organization(s) who can be contacted for references. Past employment that is not relevant to the assignment does not need to be included.}

Period	Employing organization and your title/position. Contact information for references	Country	Summary of activities performed relevant to the Assignment
[e.g., May 2005-present]	[e.g., Ministry of, advisor/consultant to... For references: Tel...../e-mail.....; Mr. Bbbbbb, deputy minister]		

Membership in Professional Associations and Publications:

Language Skills (indicate only languages in which you can work): _____

Adequacy for the Assignment:

Detailed Tasks Assigned on Consultant's Team of Experts:	Reference to Prior Work/Assignments that Best Illustrates Capability to Handle the Assigned Tasks
{List all deliverables/tasks as in TECH- 5 in which the Expert will be involved}	

Expert's contact information: (e-mail....., phone.....)

Certification:

I, the undersigned, certify to the best of my knowledge and belief that

(i) This CV correctly describes my qualifications and experience

(ii) I am not a current employee of the GoN

(iii) In the absence of medical incapacity, I will undertake this assignment for the duration and in terms of the inputs specified for me in Form TECH 6 provided team mobilization takes place within the validity of this proposal.

(iv) I was not part of the team who wrote the terms of reference for this consulting services assignment

(v) I am not currently debarred by a multilateral development bank (In case of DP funded project]

(vi) I certify that I have been informed by the firm that it is including my CV in the Proposal for the {name of project and contract}. I confirm that I will be available to carry out the assignment for which my CV has been submitted in accordance with the implementation arrangements and schedule set out in the Proposal.

(vii) I declare that Corruption Case is not filed against me.

I understand that any willful misstatement described herein may lead to my disqualification or dismissal, if engaged.

_____ Date: _____
[Signature of expert] Day/Month/Year

_____ Date: _____
[Signature of authorized representative of the firm] Day/Month/Year

Full name of authorized representative:

KYC EOI

Terms of Reference

For

Design, Development/Supply, Integration, Implementation, Operation and Support for Centralized Biometric based Digital Know Your Customer (DigitalKYC) for SIM Registration and Verification System

ID	Requirement	Bidder's Response
GENERAL REQUIREMENTS		
REQ.1	The proposed system should be capable of maintaining the lifecycle status of the subscriber	
REQ.2	During the initial phase, the proposed system will support all the licensees to perform the SIM registrations & SIM Re-registrations for existing natural persons. Registration data would be provided to Nepal Telecom Authority (NTA)	
REQ.3	The proposed system will support the licensees' registered natural persons (Subscribers who are registered in Nepal Telecom Authority (NTA) database) to be verified with their fingerprint for subscription of other services as described in this document.	
REQ.4	The proposed solution must be end-to-end including software components, hardware, devices, maintenance and support.	
REQ.5	Proposed solution must have support for reporting functions. It must also support customization of reports and visualization.	
REQ.6	The Solution must provide audit reports upon request for count of prepaid SIM cards tied to each Subscriber – Listing of number of prepaid SIM cards tied to each subscriber. The report shall contain the following information: name, identification number(s), corresponding type of identity document, DOB, count of prepaid SIM cards.	

REQ.7	The Solution must provide audit reports upon request for card Suspension Status – A list of prepaid cards due for suspension (the SIM card is going to put on TOS (temporary out of service). The report shall contain the following information of all prepaid cards that are due for suspension if the subscriber does not re-register their cards: all fields in the register for the subscriber, reason for re-registration, and deadline for suspension (i.e. end of 2 weeks window from detection of improper registration).	
REQ.8	The Solution must provide audit reports upon request for cards suspended in the last month – A list of prepaid cards suspended in the last month. The report shall contain the following information of suspended prepaid SIM cards in the last month: all fields in the register for the subscriber, and date of suspension	
REQ.9	The proposed system architecture must be such that there is no single point of failure. The bidder should explain how the system will function, should there be failure with any of the Licensees system and during the central system be unreachable.	
REQ.10	The bidder must provide a high-level architecture of the centralized biometric KYC system including all required integration and details based on the provided use cases	

FUNCTIONAL REQUIREMENTS

REQ.11	The proposed system must be secured Centralized Biometric based Digital Know Your Customer (Digital KYC/ e-KYC) system for SIM and other telecommunication service Registration and Verification	
REQ.12	The proposed system must support integration with all Telecommunications provider in Nepal for the purpose of subscriber enrollment and verification	
REQ.13	The proposed system must support real time enrollment of subscribers of all telecommunications provider in Nepal	
REQ.14	The proposed system must support file-based bulk enrollment of subscribers	
REQ.15	The proposed system must support offline enrollment of subscribers	
REQ.16	The Proposed system must support the following use cases	
REQ.16a	- Register details of new SIM card subscribers;	
REQ.16b	- Re-registration of existing SIM card subscribers;	
REQ.16c	- Mobile number porting of SIM card subscribers;	

REQ.16d	- SIM Swap of SIM card subscribers;	
REQ.16e	- Change of ownership;	
REQ.16f	- Additional SIM registration;	
REQ.16g	- Fetch the registered information record of the SIM card subscribers; and,	
REQ.16h	- Terminate the registered information record of the SIM card subscribers	
REQ.16i	- Suspension, Deactivation and Reactivation of SIM Service	
REQ.16j	- Registration of SIM seller	
REQ.17	The proposed system must support standard interface for notifying telecommunication providers of successful and failed enrollment and verification	
REQ.18	The solution must support automatic subscriber data compliance without the need for manual verification	
REQ.19	The solution must support exceptional cases that requires manual verification - eyeballing support	
REQ.20	The proposed solution must capture and store ICCID of the SIM, MSISDN associated with the SIM, Customer details (First name, Last name, ID type of the customer (i.e., National ID, or Passport or Driving License), ID number, ID Date of Issue, ID expiry date, Date of birth of the customer, Nationality of the customer, Gender of the customer, Address), Service details (Licensee, Prepaid or postpaid, Registration type: New Registration, Re-registration, MSISDN of the seller), two fingerprints left Index finger and right index finger, face photo with liveness detection	
REQ.21	The proposed solution must be able to Receive / manage fingerprint in WSQ format.	
REQ.22	The proposed solution must support ability to display / view the FP image from the web UI	
REQ.23	The proposed solution must include mobile POS application and web application as channel for enrollment	
REQ.24	Biometric data of users shall not be stored in any enrollment devices	
REQ.25	The proposed solution must support offline subscriber registration.	

REQ.26	<p>The proposed solution should check for the facial picture by the following:</p> <p>-should support face recognition, face attributes, emotions, including liveliness detection.</p> <p>- Facial likelihood: There is only one face in the image captured; Facial features such as eyes, nose, ears, mouth are clearly visible.</p> <p>Front facing picture of the customer</p> <p>- Image should be clear and not blurred.</p>	
REQ.27	<p>The proposed system should return the response as a result of registration data transmission from the web service. If, in any case, those registration criteria are not followed, error response shall be sent to the licensee. The system shall record the failed registration and its reason and shall send a log of failed registration to the licensees at the end of the day.</p>	
REQ.28	<p>The proposed system should support override or update of the registration status by the NTA user using the management user interface. The notification shall be sent to the licensee</p>	
REQ.29	<p>The proposed system should support corporate registration of corporate persons from the licensees through web service. The system should ensure that registration information is correct and valid following the criteria below</p>	
REQ.30	<p>Corporate person in this scenario is the person who is an employee of the company/organization registered under the company laws of Nepal. These are the person who will procure their SIM related service under the authorization of the parent company and their own documents for verification. A corporate person is:</p> <ol style="list-style-type: none"> a) Any citizen of Nepal working for the company/organization registered under the company registration laws of Nepal. b) Foreigner with passport working for the company/organization registered under the company registration laws of Nepal. 	

REQ.31

The proposed system shall support the capture of the following registration information for corporate persons:

- a) ICCID of the SIM
- b) MSISDN associated with the SIM
- c) Customer details
 - First name of the customer (Mandatory)
 - Middle Name (optional)
 - Last name of the customer (Mandatory)
 - ID type of the customer (i.e., National ID, or Passport or Driving License) (Mandatory)
 - ID number (Mandatory)
 - Date of Issue (Mandatory)
 - ID expiry date (Mandatory): ID which is not expiring in less than 6 months
 - Date of birth of the customer (Mandatory)
 - Nationality of the customer (Mandatory)
 - Gender of the customer (Mandatory)
 - Company/organization name (Mandatory)
 - Company Registration certificate number (Mandatory)
 - Date of Incorporation for the company (Mandatory)
- d) Service details
 - Licensee (Mobile operator)
 - Prepaid or postpaid
 - Registration type: New registration, Re-registration
 - MSISDN of the seller

REQ.32	<p>The proposed system must support the following identity credential documents and pictures :</p> <ul style="list-style-type: none"> - Identity document (Mandatory) <p>National Citizen of Nepal</p> <ul style="list-style-type: none"> - A valid (Not expiring within 6 months from the date of subscription) scanned copy of their national ID or - A valid (Not expiring within 6 months from the date of subscription) scanned copy of their national driving license or - A valid (Not expiring within 6 months from the date of subscription) scanned copy of their passport issued by passport authority of Nepal. <p>Foreigners</p> <ul style="list-style-type: none"> - A valid (Not expiring within 6 months from the date of subscription) scanned copy of their passport <p>Note: The front and backside of the ID must be captured.</p> <ul style="list-style-type: none"> - Biometric data: Captured fingerprints of the customers (Mandatory) - Right Index Finger - Left Index finger <p>Note:</p> <ul style="list-style-type: none"> - Portrait picture of the customer (Mandatory) - The system should check for the facial picture by the following: <ul style="list-style-type: none"> - Facial likelihood - There is only one face in the image captured - Facial features such as eyes, nose, ears, mouth are visible - Front-facing picture of the customer - The image should be clear and not blurred. - Scan copy of the Company Registration Certificate (Mandatory) - Declaration letter signed by an authorized representative of the company (Mandatory) - Scan copy of the declaration letter signed by the authorized representative on the company letterhead. 	
REQ.33	The proposed system should support government employee registration with same criteria as corporate registration	
REQ.34	The proposed solution must have the option to upload the unique documents. Duplicate upload must be restricted.	
REQ.35	The proposed solution must have a capability to extract information through OCR or QR code.	
REQ.36	The proposed solution must have logic to create the reference ID after submitting the application.	
REQ.37	The solution must have the approval process to approve or reject the application.	
REQ.37	The proposed solution should support high availability architecture. Details architecture and process should be submitted.	

REQ.39	<p>The proposed solution should support optical character recognition (OCR) and document scanning and uploading on all functions that it requires. All the registration information should be stored directly on the backend server; all subscriber information stored temporarily on the client shall be encrypted.</p> <p>The proposed system should support OCR for auto filling of form: Capturing registration form filled by the customer</p> <p>Should support OCR to capture information and pass to system automatically from passport for various countries, Nepal driving license and Nepal national IDs. OCR should support both Nepali and English.</p>	
REQ.40	<p>The proposed solution should support load balancing architecture. Details architecture and process should be submitted.</p>	

NON-FUNCTIONAL REQUIREMENTS		
REQ.41	<p>The proposed system must have 99.95% availability.</p> <p>OCR:</p> <p>Processing time for a single ID photo shall within 700ms with GPU server</p> <p>Support detection and warning for photocopy ID, remake ID, ID occlusion; Pass rate for valid ID shall be above 95% (positive samples), detection rate for invalid IDs shall be over 95% (negative samples)</p> <p>Intelligent structural data covering</p> <p>1、 Supporting more than 1,300 ID template; With no additional training, data structural rate over 98.5%, end-to-end data structural rate over 93%</p> <p>International Passport</p> <p>1、 Recognition passport data fields including passport ID, name, birthdate, sex, validity period, issue country; Recognition accuracy rate for important data field over 99% ;</p> <p>2、 Support extraction of ID photo, detection and warning for photocopy ID, remake ID; Pass rate for valid passport shall be above 94% (positive samples), detection rate for invalid passports shall be over 94% (negative samples)</p>	

	<p>Facial eKYC</p> <p>Facial Comparison 1、 Facial recognition false acceptance rate (LDAFAR) $\leq 0.1\%$</p> <p>Liveness Detection 2、 Static paper based photo image attack: Rejection rate $> 99.9\%$ 3、 Static digital photo image attack: Rejection rate $> 99.9\%$ 4、 Dynamic digital image attack: Rejection rate $> 99.9\%$ 5、 Synthetic CG video attack: Rejection rate $> 99.9\%$ 6、 Paper facial mask attack: Rejection rate $> 99.9\%$ 7、 Identify facial organ replacement attacks & region: Rejection rate $> 99\%$ 8、 3 D facial mask attack: Rejection rate $> 99\%$</p>	
REQ.42	The software development and testing shall not run on the production systems and shall be running in an isolated environment	
REQ.43	The software source code shall not include clear text passwords, and shall not include insecure protocols (like FTP, telnet ...etc.).	
REQ.44	Using live data for testing is not allowed unless the sensitive information or fields are masked.	
REQ.45	Data input and output shall be validated to prevent security attacks, like SQL injection and Buffer Overflow	
REQ.46	The proposed solution shall support strong encryption for confidential data, like customer contacts, etc	
REQ.47	Public web portals shall support web-application security (i.e. OWASP top 10).	
REQ.48	Cryptographic and integrity controls for protecting information in transit shall be implemented.	
REQ.49	Restricted access to the source code shall be implemented.	

REQ.50	The proposed system shall support the password policy settings: 1. Minimum password length 2. Password complexity. The system shall not accept blank passwords 3. Maximum password age and password history 4. Account lockout 5. Enforce changing password after first login 6. Prompt for the current password on password changes (i.e. password expiration warning) 7. The password shall be saved in hashed format (i.e. irreversible encryption).	
REQ.51	User's access shall be granted only after providing valid username and password.	
REQ.52	The solution shall support secure authentication protocols, like Kerberos, LDAP-S, NTLM V2 and above, HTTPs (for web authentication).	
REQ.53	Non-secure authentication protocols are NOT allowed. Examples: NTLM v1, HTTP (for web authentication).	
REQ.54	The solution shall support secure communication protocols, like SSH V2 and above, SFTP, SCP.	
REQ.55	Non-secure communication protocols are NOT allowed. Examples: FTP, Telnet.	
REQ.56	Web-based authentication must use secured login (i.e. HTTPS), a server-security certificate is required for that purpose	
REQ.57	Default and system usernames shall not be used for user access (ex: Root, System, Administrator, Admin...etc.).	
REQ.58	The system shall support session timeout settings.	
REQ.59	The solution shall include security matrix (Role Name Vs. Access Permissions)	
REQ.60	The solution shall generate and support audit logs that contain the following fields (as a minimum): 1. Username. 2. Timestamp (Date & Time). 3. Client IP Address. 4. Transaction ID.	
REQ.61	Protection from unauthorized users' access needs to be ensured. Please describe how reports and data are protected from unauthorized users.	
REQ.62	Passwords should be stored in an encrypted form.	
REQ.63	Password can be reset by administrator.	
REQ.64	Industry standard encryption methodology should be used on data, reports, and logins.	

REQ.65	Security at different layers needs to be ensured. Please describe the following levels of security in the proposed solution: User Layer Security Transmission Layer Security Application Layer Security Data Layer Security	
REQ.66	Only industry-proven strong cryptographic algorithms (such as RSA-2048, 3-key 3DES (using CBC), AES-256, SHA-256) should be used by the System. Please provide a complete list of cryptographic algorithms/standards used by the System.	
REQ.67	All random numbers, random GUIDs or UUIDs, and random strings must be generated using secure random number generator. The seed number used for secure random number generator must be of sufficient size and randomness to minimize the impact of brute force attack.	
REQ.68	The system must be designed so that hardware and software failures are handled without the entire system going offline.	
REQ.69	The system shall have proper migration strategy from TEST to PROD environments.	
REQ.70	The system shall not have a "single point of failure" and shall provide complete fault-tolerance with full redundant hardware components.	
REQ.71	The product must have built-in backup and recovery tool and it must support important backup features like full, partial or incremental	
REQ.72	Availability of API (web-service) to connect with Licensees system & also have the capacity to receive information from MNO's system	
REQ.73	Integration capability with Email & SMS Gateway	
REQ.74	Solution should have the capacity to be deployed On Premise.	
REQ.75	Solution should be highly scalable, robust	
REQ.76	System should be inbuilt with load management functionality	
REQ.77	System internal architecture should support high availability	
REQ.78	Solution should be Platform independent.	
REQ.79	Should have provisioning for Bulk Processing	
REQ.80	System should be asynchronous in nature	
REQ.81	Availability of Role Based User Administration	

REQ.82	Availability of 2 Factor login/authentication system	
REQ.83	Availability of Dashboard based on User Roles	
REQ.84	Settings & Parameter based feature should be configurable from Back Office GUI	
REQ.85	Information exchange: information exchanged is encrypted in SSL.	
REQ.86	Application of secure authentication & authorization mechanism at the time of implementation.	
REQ.87	Supports multi-channel password reset measures.	
REQ.88	Do not store hardcode credentials in the application (hardcode credentials)	
REQ.89	Support for password strength control (length, special characters, expiration time)	
REQ.90	The proposed solution must support multiple Operating System	
REQ.91	The proposed solution must support n-tier architecture	
REQ.92	The proposed solution must be based on open systems and use industry standard platforms and technologies with n tier architecture	
REQ.93	·The supplier shall provide a project schedule plan for the project implementation.	
REQ.94	Manuals and Documentation: The Bidder shall provide all technical documentation (HLD, LLD, ICD) and manuals necessary to operate and maintain and install the solution both in Softcopy and hard Mandatory copy	
REQ.95	System shall possess automated recovery mechanisms with minimum downtime impact on end- users. Describe how faults or failures in each of your system components are handled, the DBA involvement and the downtime impact on the end-users.	
REQ.96	Failure of any storage should not impact the ongoing activity/query/loss of data. Please describe the procedure of maximum availability feature of your proposed solution.	

REQ.97	System shall possess automatic failover capabilities i.e. System shall continue to run in the event of failure of a hardware processing unit. Describe also any effect on overall performance while the failed hardware processing unit is being replaced.	
REQ.98	The vendor must provide a workaround or temporary solution within the service levels in place of a permanent fix; however, such workaround or temporary solution must be authorised by NTA Nepal as acceptable. Agreement by NTA Nepal to a workaround or temporary solution shall not affect or alter the vendor's obligation to provide a permanent fix in accordance with the service levels	
DEVICE REQUIREMENTS		
REQ.99	The bidder shall propose external peripherals and enrollment devices with full compatibility with the proposed solution for authorized user to perform subscriber registration and verification.	
REQ.100	The proposed PC based external passport scanner devices shall have the capabilities for MRZ reading for passport registration and allow full page image capture of Passport front page	
REQ.101	The proposed PC based external Web camera devices shall have the capabilities for image capturing with min. 5MP auto focus camera	
REQ.102	The proposed PC based external fingerprint scanner devices shall be capable of capturing BMP/WSQ (ANSI-378 / ISO 19794, ISO 19794-4)	
REQ.103	The proposed PC based external fingerprint scanner devices shall be certified by FBI PIV/FIPS 201 and FBI Mobile ID FAP 20 Certificates	
REQ.104	The proposed PC based external fingerprint scanner devices shall support live finger detection	
REQ.105	The proposed PC based external fingerprint scanner devices shall support 500 dpi of fingerprint scanning	
REQ.106	The proposed PC based external fingerprint scanner devices shall support minimum image resolution of 300x400	
REQ.107	The proposed PC based external fingerprint scanner devices shall be capable of performing fingerprint match on device	
REQ.108	The proposed PC based external smart card reader devices shall be capable of contact smart card reading and provide ability to ISO7816 Class contact Smart cards	
REQ.109	The proposed PC based external smart card reader devices shall be capable of contactless smart card reading and provide ability to ISO/IEC 14443 A&B, contactless cards	

REQ.110	The proposed Biometric Tablet devices shall have built-in fingerprint scanner and have the functionality of capturing BMP/WSQ (ANSI-378 / ISO 19794, ISO 19794-4)	
REQ.111	The proposed Biometric Tablet devices shall have built-in fingerprint scanner and be certified by FBI PIV/FIPS 201 and FBI Mobile ID FAP 20 Certificates	
REQ.112	The proposed Biometric Tablet devices shall have built-in fingerprint scanner with functionality to support live finger detection	
REQ.113	The proposed Biometric Tablet devices shall have built-in fingerprint scanner with functionality to support 500 dpi of fingerprint scanning	
REQ.114	The proposed Biometric Tablet devices shall have built-in fingerprint scanner with functionality to support minimum image resolution of 300x400	
REQ.115	The proposed Biometric Tablet devices shall have the built-in fingerprint scanner with functionality of performing fingerprint match on device	
REQ.116	The proposed Biometric Tablet devices shall have built-in contact smartcard reader with functionality of contact smart card reading and provide ability to ISO7816 Class contact Smart cards	
REQ.117	The proposed Biometric Tablet devices shall have built-in contactless smartcard reader with functionality of contactless smart card reading and provide ability to ISO/IEC 14443 A&B, contactless cards with 13.56 MHz frequency range	
REQ.118	The proposed Biometric Tablet devices shall have the display 7 inches LCD IPS 1024 x 600	
REQ.119	The proposed Biometric Tablet devices shall have CPU Quad core 1.1 GHz in equivalent or higher.	
REQ.120	The proposed Biometric Tablet devices shall have RAM 2 GB in equivalent or higher.	
REQ.121	The proposed Biometric Tablet devices shall have internal storage 16GB in equivalent or higher.	
REQ.122	The proposed Biometric Tablet devices shall have the capability to have external storage up to 64 GB in equivalent or higher.	
REQ.123	The proposed Biometric Tablet devices shall support the operating system of Android version 7.1 in equivalent or higher.	

REQ.124	The proposed Biometric Tablet devices shall have full compatibility with GSM 850/900/1800/1900 frequency range	
REQ.125	The proposed Biometric Tablet devices shall have full compatibility with WCDMA 900/2100 UMTS ULTRA FDD Band I/ VIII frequency range	
REQ.126	The proposed Biometric Tablet devices shall have full compatibility with LTE - FDD B1,3,7,20 E-UTRA FDD Bands 3/ 7/ 20 frequency range	
REQ.127	The proposed Biometric Tablet devices shall have full compatibility with WIFI 802.11 (b/g/n) WIFI 2412 - 2472 MHz (9 and 13 channels) frequency range	
REQ.128	The proposed Biometric Tablet devices shall have full compatibility with Bluetooth 4.0 in 2402 - 2480 MHz (40 and 79 channels) frequency range	
REQ.129	The proposed Biometric Tablet devices shall be fully compatible with Dual SIM and with Dual SIM slot	
REQ.130	The proposed Biometric Tablet devices shall have functionality to support Micro USB 2.0	
REQ.131	The proposed Biometric Tablet devices shall have functionality of internal GPS antenna with 1575.42 MHz frequency range receiver only	
REQ.132	The proposed Biometric Tablet devices shall have Camera Primary resolution 8.0 MP in equivalent or higher	
REQ.133	The proposed Biometric Tablet devices shall have Camera Secondary resolution 2.0 MP in equivalent or higher	
REQ.134	The proposed Biometric Tablet devices shall have the battery capacity 8540 mAh in equivalent or higher	
REQ.135	The proposed Biometric Tablet devices shall be certified for IP level 65 in equivalent of higher	
REQ.136	The proposed Biometric Tablet devices shall be the rugged tablet	
REQ.137	The proposed Biometric Tablet devices shall have the operational temperature range -10 to +40 Celsius degree	
REQ.138	The proposed Biometric Tablet devices shall be included the accessories for user manual, Micro USB cable, Earphone, Battery Charger	
REQ.139	The proposed Biometric Tablet devices should have the reference of device type approval from Telecom Regulator	
REQ.140	The proposed Biometric Tablet devices should be certified in the EU-Type examination certification	

REQ.141	The proposed Biometric Tablet devices should have passed the SAR test (Specific Absorption Rate)	
REQ.142	The proposed Biometric Tablet devices should have passed the EMC test (Electromagnetic compatibility)	
REQ.143	The proposed Biometric Tablet devices should have passed the RF test (Radio Frequency)	
REQ.144	The proposed Biometric Tablet devices should have passed the safety device test	
REQ.145	The proposed Biometric Tablet devices should have passed the safety battery test	
REQ.146	The proposed Biometric Tablet devices should have passed the safety charger test	
REQ.147	The proposed Biometric Tablet devices should meet the radio equipment for Health and Safety	
REQ.148	The proposed Biometric Tablet devices should meet the radio equipment for Electromagnetic Compatibility	
REQ.149	The proposed Biometric Tablet devices should meet the radio equipment for Effective and Efficient use of radio spectrum	

Specifications

Hardware and **THIRD-PARTY** software specifications at MNO's SITE Production Site:

S.#	Hardware	Details	Description	Qty.	OS	Other Third-Party Software
1	Database Server	Intel Xeon family	Number of servers	2	RHEL 8.3	CPU based licenses of: <ul style="list-style-type: none"> • Oracle DB Enterprise. Ed. 19c – 8 • Oracle DB RAC - 8 • Oracle Active Partitioning – 8 • Oracle Diagnostic and Tuning pack - 8
			Processors per server	1		
			Type of processor	8 core		
			Memory per server	96 GB		
			HDD per server	2 x 600GB (with RAID 10)		
			Network Controller per server	4 (NIC 1000Base-T)		
			Power supplies per server	2		
			PCIe Fibre Channel Host Bus Adapters (8Gb)	2		
2	Application server	Intel Xeon family	Number of servers	2	RHEL 8.3	
			Processors per server	1		
			Type of processor	8 core		
			Memory per server	96 GB		
			HDD per server	2 x 600GB (with RAID 10)		
			Network Controller per server	4 (NIC 1000Base-T)		
			Power supplies per server	2		
3	SAN			6TB Usable space (RAID 10 recommended, 12TB required inclusive of RAID 10)		

UAT Site:

1	UAT Server for Database and Application	Intel Xeon family	Number of servers	1	RHEL 8.3	CPU based licenses of: <ul style="list-style-type: none"> • Oracle DB Std. Ed. 19c – 1
			Processors per server	1		
			Type of processor	Quad core		
			Memory per server	32GB		
			HDD per server	4 x 600GB (with RAID 10)		
			Network Controller per server	4 (NIC 1000Base-T)		
			Power supplies per server	2		

**Actual SAN calculation should be provided after discussion with the NTA. Please note that SAN calculation can be optimized if less customers are required to be managed in the system. Current calculation has been done based on the maximum number of registrations per day.

Hardware and **THIRD-PARTY** software specifications at NTA

Production Site:

S.#	Hardware	Details	Description	Qty.	OS	Other Third-Party Software
1	Database Server	Intel Xeon family	Number of servers	2	RHEL 8.3	CPU based licenses of: <ul style="list-style-type: none">• Oracle DB Enterprise. Ed. 19c – 8
			Processors per server	1		
			Type of processor	8 core		
			Memory per server	96GB		
			HDD per server	2 x 600GB (with RAID 10)		

S.#	Hardware	Details	Description	Qty.	OS	Other Third-Party Software
			Network Controller per server	4 (NIC 1000Base-T)		<ul style="list-style-type: none"> • Oracle DB RAC - 8 • Oracle Active Partitioning – 8 • Oracle Diagnostic and Tuning pack - 8
			Power supplies per server	2		
			PCIe Fibre Channel Host Bus Adapters (8Gb)	2		
2	Application server	Intel Xeon family	Number of servers	2	RHEL 8.3	
			Processors per server	1		
			Type of processor	4 core		
			Memory per server	48 GB		
			HDD per server	2 x 600GB (with RAID 10)		
			Network Controller per server	4 (NIC 1000Base-T)		
			Power supplies per server	2		
3	SAN			40TB Usable space (RAID 10 recommended, 80 TB required inclusive of RAID 10)		

UAT Site:

2	UAT Server for Database and Application	Intel Xeon family	Number of servers	1	RHEL 8.3	CPU based licenses of: • Oracle DB Std. Ed. 19c – 1
			Processors per server	1		
			Type of processor	Quad core		
			Memory per server	32GB		
			HDD per server	4 x 600GB (with RAID 10)		
			Network Controller per server	4 (NIC 1000Base-T)		
			Power supplies per server	2		

DR Site(Optional):

S.#	Hardware	Details	Description	Qty.	OS	Other Third-Party Software
1	Database Server	Intel Xeon family	Number of servers	2	RHEL 8.3	CPU based licenses of: <ul style="list-style-type: none"> • Oracle DB Enterprise. Ed. 19c – 8 • Oracle DB RAC - 8 • Oracle Active Partitioning – 8 • Oracle Diagnostic and Tuning pack - 8
			Processors per server	1		
			Type of processor	8 core		
			Memory per server	96GB		
			HDD per server	2 x 600GB (with RAID 10)		
			Network Controller per server	4 (NIC 1000Base-T)		
			Power supplies per server	2		
			PCIe Fibre Channel Host Bus Adapters (8Gb)	2		
2	Application server	Intel Xeon family	Number of servers	2	RHEL 8.3	
			Processors per server	1		
			Type of processor	4 core		
			Memory per server	48GB		
			HDD per server	2 x 600GB (with RAID 10)		
			Network Controller per server	4 (NIC 1000Base-T)		
			Power supplies per server	2		

**Actual SAN calculation should be provided after discussion with NTA. Please note that SAN calculation can optimized if less customers are required to be managed in the system. Current calculation has been done based on the maximum number of registrations per day.

S. N	Site	Description	Proposed	Qty

1	Application Load Balancing	Local Traffic Manager	Dual Core CPU <ul style="list-style-type: none"> • 4GB Memory • 4x NIC 10/100/1000 Base-T • Traffic throughput 1Gbps • Power Supply: Dual • Support Session persistence/sticky session • Active/Active • Round Robin 	2
2	Local Ethernet Switch	24 Port Switch	24-port 10/100/1000BaseT, 4 x 1/10G SFP/SFP+	4
3	Additional	Rack Server and Power Distribution Units	Vertiv VR Rack 42U X 800mm X 1100mm with IP PDU	4
		Network Cable	CAT 6, UTP Patch Cord, LSZH, Blue, 5M	80
		Fibre Channel Cable	LC-LC Multimode 50/125 micron OM3 Duplex Patch Cord	30