THE GOVERNMENT OF THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

Ministry of Technology

BIDDING DOCUMENT – SCHEDULE OF REQUIREMENTS

Volume 02 of 03 - Annexure 5: Demand Capacity

Single Stage Two Envelopes Bidding Procedure

FOR THE

PROCUREMENT OF A MASTER SYSTEM INTEGRATOR (MSI) FOR DESIGNING, DEVELOPING, SUPPLYING, DELIVERING, INSTALLATION, IMPLEMENTING, SUPPORT AND MAINTAINING THE SOFTWARE, HARDWARE AND INFRASTRUCTURE FOR SRI LANKA UNIQUE DIGITAL IDENTITY (SL-UDI) PROJECT OF GOVERNMENT OF SRI LANKA

INVITATION FOR BIDS No: **ICTA/SLUDI/IS/2022/01**

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5.1.Demand Capacity

5.1.1. Population Statics Information

Reference	Parameter	Description	Sizing Estimation
Overall Population			
A	Population (at 2012) - As per the Census of Population and Housing – 2012 Department of Census and Statistics.	Population (15 years and above)	15,227,773
B		Population (0 – 14 years)	5,131,666
C		**Total Population**	**20,359,439**
D	Average No. of Births per year	15.431 births per 1000 people	326,626
E	Total No. of Births (at 2022)		**3,266,271**
F	Average No. of Deaths per year	6.818 deaths per 1000 people	144,316
G	Total No. of Deaths (at 2022)		**1,443,162**
H	Annual Population Growth rate (%)	1,823,109 * 100 / (10 * 20,359,439)	0.89%
I		15 years and above	17,154,802
J	Estimated population (at 2022)	0-14 Years	5,027,745
K		Total Population (C + E - G)	**22,182,548**

Table 1: Population Statics Information

5.1.2. Registration Statics Information

Reference	Parameter	Description	Sizing Estimation
1	Registrations within Period of Re-registration (2023-2024) - Phase 1	Re-registration	16,851,019
2		New Registration	670,840
3		**Total Registration (2023 – 2024)**	**17,521,859**
4	Total Expected Registrations within 2023 - 2032	Re-registrations + New Registrations	20,242,185
5	Total Expected Renewals (after 10-year expiry) within 2033 - 2042	Citizens Registered between 2023 – 2032	23,944,033
6	Average Annual New Registrations	Citizens who attain 15 years	363,430
7	Average Annual Lost Cards	Re-issuance of NIC	242,523
8	Average Annual Information Changes	Re-issuance of NIC	220,208
9	Average Annual Renewals	Re-issuance of NIC after 10 year expiry	2,394,403
10	Average Annual Biometric Updates with Issuances of NIC	New Registrations + Re-Issuances	3,220,564

Table 2: Demand Capacity

Note: The numbers in above table may vary +3% from the given values

5.1.3. Registration and Transaction Volumes

Parameter	Estimation
Peak Registrations per day	38,000
Peak registration packet to be uploaded per day (incl. backlog)	40,000
Number of verifications per day (Average)	38,000
Number of issuances per day (Average)	38,000
Enrolment Cluster (Permanent in Divisional Secretariats)	340
Enrolment Clusters (Temporary for Period of Re-registration)	466
Total Enrolment Units (Fixed) (Two per Cluster – 806 x 2)	1,612

Parameter	Estimation
Enrolment Units (Mobile)	40
Estimated time for registration per person	20-25 minutes
Number of Concurrent internet users	4,984
Bandwidth at each Fixed Registration Centre provided by DRP	2 Mbps (being upgraded to 4 Mbps)
Number of authentication and e-KYC requests (at peak load)	1.75 million per day

Table 3: Registration and Transaction Volumes

5.1.4. *Estimation of Foundational ID platform users and Supporting Application Users*

Parameter	Description	Sizing Estimation
Total User		6,362
Operators (Field Person involved in Enrolment)	Total Operators	5,028
	Studio Operators	2,240
	Operators at Divisional centres (340*4)	1,360
	Operators at other registration centres (466*3)	1,398
	Field Supervisors	30
	Working Hours	8 hours x 6 days per week
Verification and Quality check (Backend Staff involved in Registration)	Total	762
	Sinhala Transliteration	60
	Tamil Transliteration	90
	Authorization Green	50

Parameter	Description	Sizing Estimation
	Authorization Red	60
	Authorization Amber	120
	Biometric Verification	3
	Legal	212
	Legal AC	55
	DIVU	8
	DIVU AC	2
	Other Organization	16
	CAM Unit	2
	Number Book Inquiry	70
	Special Approval	8
	CG Approval	6
	Working Hours	8 hours x 6 days per week
Manual Adjudicators	Manual Adjudication	85
	Working Hours	8 hours x 6 days per week
Card Issuance		234
Contact Centre	Contact Centre Seats	11 (minimum)
	Personnel	10 x 2 Shift
	Number of Supervisors	4
	Waiting time	2 Minutes (maximum)

Parameter	Description	Sizing Estimation
	Working Hours	8 hours per shift x 2 Shift
IT Helpdesk	Helpdesk Personnel	5 (First Shift) + 5 (Second Shift) + 2 (Third Shift)
	Number of Supervisors	4
Security Operations Centre (SOC)	Number of Users	5 (First Shift) + 5 (Second Shift) + 5 (Third Shift)
	Number of Supervisors	1 (First Shift) + 1 (Second Shift) + 1 (Third Shift)
	Working Hours	8 hours per shift x 3 Shifts
Network Operations Centre (NOC)	Number of Users	5 (First Shift) + 5 (Second Shift) + 5 (Third Shift)
	Number of Supervisors	1 (First Shift) + 1 (Second Shift) + 1 (Third Shift)
	Working Hours	8 hours per shift x 3 Shifts
Administrators	DBA, Network Admin, Server Admin, Storage Admin, etc.	21 (DC) + 4 (DR)
	Working Hours	8 hours per shift x 3 Shift
Other Staff	IT, Finance, Admin, R&D, Internal Audit, Media	151
Internet Subscribers and External Users		
Internet Subscriber	No. of Internet Users	75% from total population
	Annual growth rate	Annual growth of 5%

Parameter	Description	Sizing Estimation
Estimated Users	No. of Internet Subscribers	10% of Internet Subscribers
Concurrency Citizen	Concurrency of Internet Users	2.5% of estimated users

Table 4: Estimation of Foundational ID platform users

5.1.5. Data Size

This section provides the details of the data size required to be handled in the SL-UDI information system

Parameter	Description	Sizing Estimations
Size of Enrolment Packet	Demographic, 10-Fingerprint, 2 Iris, Photograph and Documents	Please refer to Volume-2 for details.
Authentication Packet	Demographic, OTP, Fingerprint, Iris, Facial	
e-KYC Packet	OTP, Fingerprint, Iris, Facial	

Table 5: Data Size

5.1.6. Infrastructure

S. No.	Parameters	Indicative Units
1.	CPU utilization upper limits	60%
2.	Re-size/ headroom (Virtual Cores, Memory, and Storage Seamlessly)	25% of the base capacity
3.	Backup Window (Incremental data as well as full back up)	6-8 hours
4.	Online data retention (Personal ID Data)	Always
5.	Online data retention (Biometric data)	Always

Table 6: Infrastructure

5.1.7.   Other Performance Measures

The performance of the Foundational ID platform should be enhanced by caching master/reference data to minimize database access. Indexes should be created in the database to enable the rapid retrieval of data.

The following performance criteria are provided as a guideline only. If the actual performance is falling below the stipulated figures, the consultant is to justify the reasons. However, the performance level must be accepted by the technical evaluation committee appointed by the ICTA. The bandwidth is assumed at 1 Mbps (shared) with 1,000 concurrent users (50% load factor) in total.

The following estimated values should be verified during the requirements gathering phase.

S. No	Parameter	Description	Threshold Value
1	Page Speed	Time taken to load a page	<4 seconds
2	Time to Title	the amount of time it takes for a website's title to appear in a browser tab after an individual requests a website	<500 milli-seconds
3	Time to Start Render	The amount of time it takes for content to begin loading — even if it does not fully load.	<1 second
4	Time to Interact	The time it takes before individuals can begin to click on links, type in text fields, scroll on a page, and interact in other ways with a website.	<4 seconds
5	DNS Lookup Speed	The amount of time it takes for your Domain Name System (DNS) provider to translate a domain name into an IP address.	< 30 milli-seconds
6	Bounce Rate	Number of users with single page visit of the UDI website.	25%
7	Requests Per Second	"Throughput" or "Average Load," this metric refers to the number of requests your server receives every second	2000
8	Error Rate	Error rate measures the number of errors occurring at any given time, keeping track of how many occur within a specific time frame	< 0.50%

S. No	Parameter	Description	Threshold Value
9	Time to First Byte/Last Byte	How long it takes for the first bit of personalized information (Dynamic Content) to reach a user's browser, which in this case is referred to as the time to first byte or TTFB. Similarly, time to last byte or TTLB refers to the moment when a user has received all of their information	TTFB < 30 milli-seconds
10	Peak Response Time	The longest response time for all the requests coming through the server	<10 seconds

Table 7: Other Performance Parameters

#	Description	Target Performance
Response Time		
1.	Enrolment Request (time between receipt of enrolment packet by ABIS until the result either successful deduplication or flag for manual adjudication)	No daily backlog i.e., maximum of 24 hours at peak registration packet upload This includes time up to 4 hours of periodic maintenance, backups, etc.
2.	Authentication Request (Overall) 1:1 [This time is the overall authentication time (from receipt of authentication request at authentication server till providing response from the authentication server) which includes time of Biometric SDK]	Within 3 seconds
3.	Authentication Request (Biometric SDK) [This time is matching time of Biometric SDK upon receipt of biometric data as input till providing result of matching as output]	Within 0.5 seconds
Accuracy		
4.	De-duplication	FPIR <= 0.1% and FNIR <=1%

5.	Authentication Services	• **For Fingerprint:** FMR <= 0.01% and FNMR <= 2% • **For Iris**: FMR <= 0.001% and FNMR <= 0.5% • **For Face**: FMR <= 0.01% and FNMR <= 2%
Uptime and Availability		
6.	De-duplication (1:N)	99.5 % uptime evaluated on monthly basis on 24*7 service window
7.	Authentication Services	99.99% uptime evaluated on monthly basis on 24*7 service window
Data Size		
8.	Size of Enrolment Packet (Demographic, Photograph, 2 Iris, 10 Fingerprints and Documents)	5 MB Raw Packet
9.	Authentication Packet (Demographic, OTP, Fingerprint, Iris, Facial or approved combination)	3-5 KB (estimates only)
10.	e-KYC Packet (OTP, Fingerprint, Iris, Facial or approved combination)	30 KB (estimates only)

Table 8: Target Performance Parameters