GOVERNMENT OF TAMIL NADU

Tamil Nadu e-Governance Agency

Request for Proposal

Selection of System Integration Partner for TNeGA to develop and deploy State Family Database (SFDB), Data Integration and Exchange Platform for Government of Tamil Nadu

Tender Ref No: TNeGA/OT/SFDB /2020-21

Tamil Nadu e-Governance Agency
807,2ⁿᵈ Floor, PT Lee Chengalvarayan Naicker Building
Anna Salai, Chennai - 600 002.
Tel No: +91-44-40164907
Email: tenders.tnega@tn.gov.in , mngr1tnega@tn.gov.in
Website: www.tnega.tn.gov.in

Important Notice

This Tender (RFP) process is governed by The Tamil Nadu Transparency in Tenders Act 1998 and The Tamil Nadu Transparency in Tenders Rules 2000 as amended from time to time.

In case of any conflict between the terms and conditions in the tender document and the Tamil Nadu Transparency in Tenders Act 1998 and The Tamil Nadu Transparency in Tenders Rules 2000, the Act and Rules shall prevail.

Letter of Undertaking

To

Chief Executive Officer,

Tamil Nadu e-Governance Agency (TNeGA),

807, 2nd floor, P.T.Lee.Chengalvarayan Naicker Maaligai,

Anna Salai, Chennai - 600 002.

Sir,

Sub: Undertaking for participating in **Selection of System Integration Partner for TNeGA to develop and deploy State Family Database (SFDB), Data Integration and Exchange Platform for Government of Tamil Nadu** -Reg

Ref: Tender Ref: TNeGA/OT/SFDB/2020-21

I/We do hereby submit my/our bid for the Selection of System Integration Partner for TNeGA to develop and deploy State Family Database (SFDB), Data Integration and Exchange Platform for Government of Tamil Nadu in accordance with the Terms and Conditions of this RFP.

I/We have examined the details of the tender document (RFP) and have carefully noted the conditions of contract and the specification with all the stipulations of which I/We agree to comply. I/We hereby undertake to complete the assigned tasks as **Selection of System Integration Partner for TNeGA to develop and deploy State Family Database (SFDB), Data Integration and Exchange Platform for Government of Tamil Nadu** at the places mentioned in the specification of all the articles within as per RFP & tender schedule from the date of communication of acceptance of my/our tender.

I/We further agree that the acceptance of this tender shall result in a valid and concluded contract binding on me/us the terms whereof shall be taken to be those mentioned in the form of agreement here to annexed notwithstanding the non-execution of the said agreement.

I/We hereby declare that I/We agree to do the various acts, deeds and things referred to herein including the condition relating to non-withdrawal of this tender above set out in consideration of the TNeGA and considering this my/our tender.

I/We --- hereby confirm that our Company was not blacklisted by any State Government/ Central Government/ Public Sector Undertakings during the last three years. We also hereby confirm that our EMD/SD was not forfeited by any State Government / Central Government / Public Sector Undertakings during the last three years due to our non-performance, non-compliance with the tender conditions etc.

I/We --- hereby confirm that our Company has not filed for bankruptcy during the last three years.

I/We --- hereby confirm that our Company has not violated / infringed on any Indian or foreign trademark, patent, registered design or other intellectual property rights any time anywhere in India.

I/We…………………………. shall not sub-contract any works to any contractor from a country which shares a land border with India unless such contractor is registered with the Competent Authority.

I/We……………………………. have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India, as per Government of Tamil Nadu G.O.Ms.No.343, Finance (Salaries) department, dated 18.9.2020; I certify that this bidder is not from such a country or, if from such a country, has been registered with the Competent Authority. I certify that this bidder fulfils all requirements in this regard and is eligible to be considered.

I/We --- hereby declare that all the particulars furnished by us in this Tender are true to the best of my/our knowledge and we understand and accept that if at

any stage, the information furnished is found to be incorrect or false, we are liable for disqualification from this tender and also are liable for any penal action that may arise due to the above.

I/We _____ certify that we are liable and responsible for any disputes arising out of Intellectual Property Rights.

I/We _____ certify that I/we shall not form any new consortium other than with the partner declared at the time of bid submission, with other firms/ organizations/agencies/ companies for carrying out the tasks specified in this RFP.

In case of violation of any of the conditions above, I/We ....understand that I/We are liable to be blacklisted by TNeGA/Government of Tamil Nadu for a period of three years.

Note:

a) Declaration in the company's letter head should be submitted as per format given above

b) If the bidding firm has been blacklisted by any State Government/ Central Government/ Public Sector Undertakings earlier, then the details should be provided.

1 Table of Contents

1 Introduction

1.1 Tamil Nadu e-Governance Agency

Tamil Nadu e-Governance Agency (TNeGA) is responsible for driving all technology initiatives for the Government of Tamil Nadu. Its primary aim is to develop low cost, technology enabled scalable solutions to impact Governance in a significant way. It aims to create an inclusive, equitable, and universally accessible G2C service delivery mechanism for barrier free access to Governance. TNeGA offers IT solutions and consultancy services to Government departments for their technology needs. Tamil Nadu e-Governance Agency has also established Centre of Excellence (CoE) in the emerging technologies and is functioning under the Information Technology Department, Government of Tamil Nadu.

The Government of Tamil Nadu and its various departments have embraced computerization and automation to conduct their day-to-day operations. Volumes of department data reside in different data platforms and technology stacks. The current data management architecture with multiple platforms create challenges in delivering efficient, transparent and seamless delivery of services to the residents of Tamil Nadu. The SFDB project, by enabling cross-department data harmonization and synchronization, will not only streamline government service delivery, but also assist the policy makers in making the right decisions providing data-driven policy making support.

TNeGA is inviting proposals from Companies who specialize in the domain of big data, open source technologies, data analytics, data warehousing, master data management solutions to develop and deploy a data integration and exchange platform called SFDB. This platform will host the details of the State's residents. Since the SFDB will be the single source of truth on all details with respect to the state's residents, the data hosted in the SFDB should be the most current, relevant, complete, logically consistent and comprehensive that can be used by all the departments. Further functionalities for this platform like reporting and analytics should be built using open source technology as far possible.

2   Tender Schedule and Data Sheets

S.No.	Activity	Description and Details
1	Tender inviting Authority, Designation and Address	Chief Executive Officer, Tamil Nadu e-Governance Agency, 807,2nd Floor, PT Lee Chengalvarayan Naicker Building, Anna Salai, Chennai - 600 002. Tel No: +91-44-40164907
2	Name of the Work	Request for Proposal for Selection of System Integration Partner for TNeGA to develop and deploy State Family Database (SFDB), Data Integration and Exchange Platform for Government of Tamil Nadu (State-wide Tamil Nadu Data Integration Platform which would enable all Government departments to exchange data and support Government services)
3	Tender Reference Number	TNeGA/OT/SFDB /2020-21
4	Earnest Money Deposit (EMD)	Rs. 5,00,000/- (Rupees Five Lakhs only) should be paid through online mode.
5	Contract Period	55.5 Months (7.5 months of Development + 12 month Free Warranty + 36 month O&M after free warranty period)
6	Tender Document	The Tender document can be downloaded from the URL

		https://tntenders.gov.in https://www.tnega.tn.gov.in http://www.tenders.tn.gov.in
7	Mode of Submission	e-Submission through https://tntenders.gov.in and the Bids cannot be submitted after the due date and time.
8	Date and Place of Pre-bid Meeting	On **17.02.2021 @ 11.30 Hrs.** Pre-bid meeting is scheduled online through Video Conference and the link for the VC is given below. https://tnega.webex.com/tnega/j.php?MTID=m01fb9e38a0b6d6ed707ca0dcbb1c9ebf
9	Due date and Time for Bid Submission	On **15.03.2021 upto 11.00 Hrs**
10	Date, Time and Place of Opening of Technical Bid	On **15.03.2021 @ 11.30 Hrs**
11	Date, Time and Place of Opening of Financial Bid	Price Bid Opening Date & Time will be communicated to Technically Qualified Bidders Only

Note:

Neither the TNeGA nor their representatives are obligated to inform any bidders who have not qualified in any of the stages of bid process management

3   General Instructions

3.1   General

a) The Bidders are requested to examine the instructions, terms and conditions and specifications given in the Request for Proposal (RFP). Failure to furnish all required information in every respect will be at the Bidder's risk and may result in the rejection of bid.

b) It will be imperative for each Bidder(s) to familiarize itself/ themselves with the prevailing legal situations for the execution of contract. TNeGA shall not entertain any request for clarification from the Bidder regarding such legal aspects of submission of the Bids.

c) It will be the responsibility of the Bidder that all factors have been investigated and considered while submitting the Bids and no claim whatsoever including those of financial adjustments to the contract awarded under this tender will be entertained by TNeGA. Neither any time schedule nor financial adjustments arising thereof shall be permitted on account of failure by the Bidder to appraise themselves.

d) The Bidder shall be deemed to have satisfied itself fully before Bidding as to the correctness and sufficiency of its Bids for the contract and price quoted in the Bid to cover all obligations under this Tender.

e) It must be clearly understood that the Terms and Conditions and specifications are intended to be strictly enforced. No escalation of cost in the Tender by the Bidder will be permitted throughout the period of Agreement or throughout the period of completion of contract whichever is later account of any reasons whatsoever.

f) The Bidder shall make all arrangements as part of the contract to Develop Software Applications of Government Departments at various locations at their own cost and transport.

g) The Bidder should be fully and completely responsible to TNeGA and State Government for all the deliveries and deliverables.

3.2   Clarifications to the RFP

a) A prospective Bidder requiring any clarification in the RFP may notified by E-mail to tenders.tnega@tn.gov.in or through online mode in https://tntenders.gov.in (Clarification Forum).Clarifications to the queries (if any) by the bidders and corrigendum's (if any) will be

published in the websites https://www.tnega.tn.gov.in, https://tntenders.gov.in and http://www.tenders.tn.gov.in.

3.3   Amendments to the Tender

a) A Pre-bid meeting will be held for addressing the clarifications on the date and time mentioned in the Tender Schedule and Data Sheet (Section 2) or any other date to be decided by TNeGA. The Bidders are requested to participate in the Pre-bid meeting and get the clarifications.

b) Before closing of the Tender, clarifications and corrigendum (if any) will be notified in the websites mentioned in the Tender Schedule. The Bidders shall periodically check for the amendments or corrigendum or information in the websites till the closing date of this Tender. TNeGA will not make any individual communication and will in no way be responsible for any information missed out by the bidders.

c) No clarifications would be offered within **48 hours** prior to the due date and time for submitting the Tender.

d) Before the closing of the Tender, TNeGA may amend the Tender document as per requirements or wherever it feels that such amendments are absolutely necessary.

e) Amendments also may be given in response to the queries by the prospective Bidder(s). Such amendments will be notified in the websites mentioned in the tender schedule. It is bidder responsibility to keep checking the website for any changes or clarifications or corrigendum to the tender document.

f) TNeGA at its discretion may or may not extend the due date and time for the submission of bids on account of any amendments.

g) TNeGA is not responsible if bidder misinterprets any provision of this tender document.

3.4   Language of the Bid

a) The bid prepared by the Bidder as well as all correspondences and documents relating to the bid shall be in English only. The supporting documents and printed literature furnished by the Bidder may be in another language provided they are accompanied by an accurate translation in English duly notarized, in which case, for all purposes of the bid, the translation shall govern. Bids received without such translation copy are liable to be rejected.

3.5   Bid Currency

a) Price should be quoted in Indian Rupees (INR) only and Payment shall be made in Indian Rupees only.

3.6   Contacting Tender Inviting Authority

a) Bidders shall not make attempts to establish unsolicited and unauthorized contact with the Tender Accepting Authority, Tender Inviting Authority or Tender Scrutiny Committee after the opening of the Tender and prior to the notification of the Award and any attempt by any Bidder to bring to bear extraneous pressures on the Tender Accepting Authority shall be sufficient reason to disqualify the Bidder

b) Notwithstanding anything mentioned above, the Tender Inviting Authority or the Tender Accepting Authority may seek bonafide clarifications from Bidders relating to the tenders submitted by them during the evaluation of tenders.

3.7   Force Majeure

a) Neither the Purchaser / nor the Successful Bidder shall be liable to the other for any delay or failure in the performance of their respective obligations due to causes or contingencies beyond their reasonable control such as:

   i. Natural phenomena including but not limited to earthquakes, floods and epidemics.
   ii. Accidents or disruptions including, but not limited to fire, explosions, breakdown of essential machinery or equipment, power and water shortages.

3.8   Arbitration

a) In case of any dispute, the matter will be referred to a sole Arbitrator to be appointed by the CEO, Tamil Nadu e-Governance Agency (TNeGA) under the "Arbitration and Conciliation Act 1996". The arbitration shall be held in Chennai, Tamil Nadu, India and the language of arbitration shall be English. The Courts at Chennai alone shall have jurisdiction in the matter.

4 Minimum Eligibility Criteria (MEC) & Technical Evaluation System (TES)

a) The Bidders should have the following MEC for participating in the Tender. The Bidders should enclose documentary evidence for fulfilling the MEC in the Technical Bid. **If a Bidder fails to enclose the documentary proof for MEC, their bid will be summarily rejected.**

4.1 Consortium of Bidders

a) A consortium of 2 partner companies can bid, with one of them designated as a lead partner.

b) The consortium agreement should bind partners of the consortium to be liable jointly and severally for the execution of the contract in accordance with the contract terms. The consortium agreement should precisely indicate the role of each partner of the consortium in respect of the contract.

c) Consortium agreement should be registered in Chennai.

d) The consortium agreement shall authorize one of the partners of the consortium as Lead Partner and the Prime Bidder by submitting of Power of Attorney signed by the legally authorized signatories of both partners.

e) Consortium agreement shall be enclosed with the technical bid. Alternatively, a letter of intent to execute a consortium agreement in the event of a successful bid shall be signed by both the partners and submitted with the bid along with the copy of the proposed agreement.

f) The lead partner and prime bidder of the consortium shall be authorized to incur liabilities and receive instruction for and on behalf of both partners of the consortium through the entire execution of the contract. Payments shall be done exclusively to the Lead Partner/Prime Bidder. All correspondence will only be made with the lead partner.

g) The lead partner/prime bidder would be considered successful bidder should the consortium qualify in the final evaluation of the bid.

4.2   Minimum Eligibility Criteria (MEC)

a) The Bidders should have the following Eligibility for participating in the Tender. The Bidders should enclose documentary evidence for fulfilling the Eligibility in the Technical Bid. **If a Bidder fails to enclose the documentary proof for eligibility, their bid will be summarily rejected.**

S.No.	Minimum Eligibility Criteria	Document to be uploaded
4.2.1	The bidder should be a company registered in India incorporated under Indian Companies Act 1956/ 2013 and must have at least 3 years of operations in India as on date of submission of bids. In case of a consortium, the lead partner can bid as primary bidder. Each of the partners should be a company registered in India incorporated under Indian Companies Act 1956/2013 and have at least 3 years of operations in India as on date of submission of the bids.	Valid copy of the Certificate of Incorporation of the bidder (each partner in case of a consortium). Power of Attorney signed by both partners of the consortium. The Consortium Agreement between the partner stating clearly that both partners of the consortium shall be liable jointly and severally for the execution of the contract in accordance with the contract terms. Or A letter of intent signed by both partners stating that the partners intend to execute a consortium agreement in the event of a successful bid.
4.2.2	The Bidder should be software development firm and should be in operations in successful software development, software customization & implementation anywhere in India during the last 3 years as on date of submission of	Work Orders / Client Certificates confirming proof of delivery per scope of work order.

S.No.	Minimum Eligibility Criteria	Document to be uploaded
	bid. In case of a consortium, each of the partners should be a software development firm and should be in operations in successful software development, software customization & implementation anywhere in India during the last 3 years as on date of submission of bid.	
4.2.3	The Bidder should have an average annual turnover of at least Rs. 10 Crores during the last three financial years (2017-18, 2018-19 and 2019-20) In case of consortium bidders, the lead partner should have an average annual turnover of at least Rs 8 Crores during the last three financial years (2017-18, 2018-19 and 2019-20) and the secondary partner should have an average annual turnover of at least Rs 4 Crores during the last three financial years (2017-18, 2018-19 and 2019-20)	Audited and Certified Balance Sheet & Profit/Loss Account of last 3 Financial Years. For 2019-20, provisional statement/ certificate is accepted.

S.No.	Minimum Eligibility Criteria	Document to be uploaded
4.2.4	The bidder should have successfully implemented, at least 2 large Data Integration/ warehousing projects and 2 large data intensive web applications, for Government/ PSUs/ Banks/ BFSI/ Telecom/e-commerce sector during the last 3 years (counted from the date of submission of bids). Value of each project should be at least Rs 1.5 Cr. In case of a consortium, partners should jointly satisfy the above condition and the secondary partner should have successfully implemented, at least 1 large Data Integration/ warehousing projects and 1 large data intensive web applications, for Government/ PSUs/ Banks/ BFSI/ Telecom/e-commerce sector during the last 3 years (counted from the date of submission of bids). Value of each project should be at least Rs 50 Lakh.	Work Order / Project Contract Document / Agreement with details of project value and clear scope, and satisfactory completion certificate from the client/ Payment receipt/ UAT sign-off/ Implementation certificate.
4.2.5	The Bidder should have an office in Tamil Nadu else bidder should submit a letter of undertaking to open an office in Tamil Nadu within 15 days from the date of issue of work order if he/she is awarded the work. In case of a consortium, it is sufficient for	The copy of Property tax bill/Electricity Bill/Telephone Bill/G.S.T.-C.S.T. Registration/ Lease agreement should be submitted as proof Or A letter of undertaking that the office would

S.No.	Minimum Eligibility Criteria	Document to be uploaded
	the lead partner to meet the above condition.	be open within 15 days.

b) The bidders who have submitted required documents and meet the eligibility criteria as mentioned above and as determined by the Tender Scrutiny Committee (TSC) shall only be eligible for further technical evaluation as per clause 4.3.

4.3 Technical Evaluation System (TES)

a) The Bidders should enclose documentary evidence for fulfilling the following TES and the Tender Scrutiny Committee will evaluate the bids as per the criteria set below:

Technical Evaluation		
S. N	**Evaluation Criteria**	**Maximum Marks**
Quality Certifications		
4.3.1	The bidder should have valid ISO and CMMI certifications on the date of submission. Copy of certification should be attached. In case of a consortium, only the certificates of the lead partner would be considered for evaluation.	3
	ISO 9001:2015 or above = 1 marks	
	ISO 27001: 2013 = 1 marks	
	CMMI level 3 or above = 1 mark	
Turnover		
	Average Annual Turnover for last 3 years (combined turnover in case of a	

	Technical Evaluation	
S. N	**Evaluation Criteria**	**Maximum Marks**
4.3.2	consortium):	3
	For sole bidder:	
	More than Rs. 15 Cr. = 3 marks	
	Rs. 10 Cr to Rs. 15 Cr. = 1 mark	
	For consortium:	
	More than 18 Cr = 3 marks	
	Rs 12 to 18 Cr = 1 marks	
	(Bidders are required to submit audited Financial Statements for last 3 years)	
Past Project Experience		
4.3.3	**Web/ mobile application development experience:** Bidder should have experience in implementing end to end IT solution - development and O&M of large data intensive web and mobile applications (that has workflows for more than 100 users accessing at least 1 million rows of data concurrently), with value more than or equal to Rs. 1.5 Cr for Government/ PSU/	The projects would be evaluated for fitment of the solution against size & complexity of the problem and similarity to the current project. Up to 5 marks per project completed successfully subject to a maximum of 10 marks. Projects delivered to any Government departments/	18

Technical Evaluation		
S. N	**Evaluation Criteria**	**Maximu m Marks**
	BFSI/Telecom/eCommerce sectors. The solution should have web applications with more than 1000 users, data driven workflows with size of database more than 1 million rows. The projects should have been executed in last 3 years. Supporting Documentation to be submitted for each project: 1. Work order/PO and SoW copy indicating the value and scope of the project 2. Successful completion certificate/ UAT sign-off/ Implementation certificate/ proof of payment received from the client. 3. For each project a case study be submitted elaborating how data intensive the applications are, the complexity of workflows in terms of users, stages and volume of data updates.	agencies/ entities would be given 2 additional marks per project subject to a maximum of 4 marks. Projects that are supported/ maintained for over 3 years would be given 2 additional marks per project subject to a maximum of 4 marks. The maximum marks allowed for this section is 18 marks.	

	Technical Evaluation	
S. N	**Evaluation Criteria**	**Maximum Marks**
4.3.4	**Experience with Large databases, datasets and Big Data technologies** Bidder should have experience in the design and development of Database applications, ETL pipelines, maintain Master Data Management, Data warehousing, Data integrations using multiple database technologies. The data that is being processed should be millions of rows, preferably related to People/ Customer data and project delivered to Government/PSU/BFSI/Telecom clients. The value of the projects should be above 50 Lakh. If data work is included in a large application related projects, then a substantial effort should have been spent on the data. Supporting Documentation to be submitted for each project: 1. Work order/PO and SoW copy indicating the value and scope of the project **2.** Successful completion certificate/ UAT sign-off/ Implementation certificate/ proof of payment received from the	The projects would be evaluated for fitment of the solution against size & complexity of the problem and similarity to the current project. Up to 6 marks per project subject to a maximum of 18 marks. Projects delivered to any Government departments/ agencies/ entities would be given 2 additional marks per project subject to a maximum of 6 marks. Projects that are supported and maintained for over 3 years would be given 2 additional marks per project subject to a maximum of 6 marks. The maximum marks allowed for this section is 30 marks.	30

Technical Evaluation		
S. N	**Evaluation Criteria**	**Maximum Marks**
	client. **3.** For each project a case study may be submitted elaborating the scope, size and value of various data components - Master Data Management (MDM), Data warehousing, ETL pipelines, big data applications. The solution detail should include size of the tables, number of databases, use of any big data tech stack, use of proprietary or third-party MDM tools. The solution should clearly explain the fitment of the stack for the problem defined.	
Technical Leadership Team		
4.3.5	**Project Manager** a. Should have B.Tech/ B.E or equivalent degree in Computer Science /Information Technology/ Electrical/ Electronics/Any other Engineering discipline b. Overall Experience of 10 years in software design, development,	a. Experience managing large data projects = 1 mark b. Managing multi-year project for Govt = 2 mark c. Tamil language proficiency = 1 mark d. For lesser experience, marks will be on pro-rata basis	4

Technical Evaluation		
S. N	**Evaluation Criteria**	**Maximu m Marks**
	testing and implementation c. At least 4 years of experience as a Project Manager managing large multi-year projects. d. Tamil language proficiency is desirable	
4.3.6	**Lead Data Engineer** a. Should have B.Tech/ B.E or equivalent degree in Computer Science /Information Technology/ Electrical/ Electronics/Any other Engineering discipline b. Overall Experience of 7 years in IT c. Experience of 4 years or more in Database design, development, testing and implementation using Python/SQL. d. Experience of 4 years or more in Data Engineering solutions using Big data stack like Hadoop/Spark	a. Experience with big data stack and community editions/ open source RDBMS = 2 marks b. Experience with master data management of people/customer data = 1 mark For lesser experience, marks will be on pro-rata basis	3

Technical Evaluation		
S. N	Evaluation Criteria	Maximum Marks
4.3.7	**Lead Data Analyst** a. Should have B.Tech/ B.E or equivalent degree in Computer Science /Information Technology/ Electrical/ Electronics/ Any other Engineering discipline b. Overall Experience of 7 years in IT c. Experience of 5 years or more in Data exploration, testing, reporting and analysis	a. Experience working with People/Customer data = 1mark b. Experience working with open source databases and BI tools = 2marks For lesser experience, marks will be on pro-rata basis	3
4.3.8	**Lead Front-end Software developer** a. Should have B.Tech/ B.E or equivalent degree in Computer Science /Information Technology/ Electrical/ Electronics/ Any other Engineering discipline b. Overall Experience of 7 years in IT c. Experience of 5 years or more in design and development of web applications.	Experience with multiple stack LAMP, ASP.Net, MEAN/ MERN, Hybrid cloud, developing large consumer applications = 3 marks For lesser experience, marks will be on pro-rata basis	3
4.3.9	**Lead Back-end Software developer** a. Should have B.Tech/ B.E or equivalent degree in Computer Science	Experience building high performing APIs for real-time transactions using multiple	3

Technical Evaluation		
S. N	**Evaluation Criteria**	**Maximum Marks**
	/Information Technology/ Electrical/ Electronics/ Any other Engineering discipline b. Overall Experience of 7 years in IT c. Experience of 5 years or more in design and development of web applications.	stack Java, Python, Node.JS consumed by multiple applications = 3 marks For lesser experience, marks will be on pro-rata basis	
Technical Presentation (With Screen Shots/URLs)		
4.3.10	Approach & Methodology a. Understanding of Project requirement& work plan b. Identified project risk & Mitigation c. Proposed solution and architecture	a. Understanding & work plan = 5 marks b. Risk & Mitigation plan = 5 marks c. Proposed solution and architecture = 20 marks Proposed solution would be evaluated on the following parameters: a. Simplicity and fitment of the solution b. Extensibility, scalability, maintainability and reliability of the architecture	30

Technical Evaluation		
S. N	**Evaluation Criteria**	**Maximum Marks**
	c. Adherence to timelines and time to delivery d. Use of latest and emerging technologies e. Development of tools/ frameworks and reusable components in the context of Indian demography	
Total marks (TES)		**100**

The bidder shall be required to get at least 70 marks out of 100 marks to qualify for next stage i.e. opening of the financial bids.

Evaluation of technical proposal:

a) TSC will evaluate whether all the points/ requirements mentioned in the RFP are understood and addressed well. TSC will also evaluate whether the implementation methodology is in line with the requirement. The bidder must make a technical presentation and live demonstration of projects as per cl. 4.3.10 to the TSC.

b) To declare a bidder as technically qualified, the bidder has to score a minimum of 70 marks based on the above said cl.4.3 (TES) and the financial bids of only those bidders who score 70 or above in the TES shall be opened.

4.4 Final Evaluation of Bid

The Final Evaluation will be done on Quality-cum-Cost-Based-System (QCBS) with the weight age of Technical & Price Bid score in the ratio 80:20. The final evaluation of shall be done as described below

a) The marks scored in Technical Bid will be evaluated as follows:

$T_N = T_B / T_{Max} * 100$

T_N = Normalized technical score of the bidder under consideration

T_B = Evaluated technical score for the bidder under consideration

T_{Max}= Maximum technical score for any bidder

b) For Technically Qualified Bidders, the commercial scores will be calculated as

$F_N = F_{Min} / F_B * 100$

Where

F_N = Normalized financial score of the bidder under consideration

F_B = Evaluated cost for the bidder under consideration

F_{Min}= Minimum evaluated cost for any bidder

c) Both the Technical Bid mark & Price Bid mark will be added to arrive at the total mark as follows:

$B_N = 0.8 * T_N + 0.2 * F_N$

Where

B_N = overall score of bidder under consideration

T_N = Normalized technical score for the bidder under consideration

F_N = Normalized financial score of the bidder under consideration

The total mark will be arranged in the descending order. The Highest scorer (H1) will be declared as the Successful Bidder. In the event the Final scores are 'tied', the bidder securing the highest technical score will be adjudicated as the Best Value Bidder for award of the Project.

5 Bid Preparation and Submission

5.1 Cost of Bidding

a) The Bidder should bear all costs associated with the preparation and submission of Bids. TNeGA will in no way be responsible or liable for these charges/costs incurred regardless of the conduct or outcome of the bidding process.

5.2 Earnest Money Deposit (EMD)

a) An EMD amount as specified in the Tender Schedule should be paid through ONLINE mode. The EMD of the unsuccessful Bidders will be auto-refunded to their bank account within a reasonable time in consistent with the rules and regulations in this behalf. The EMD amount held by TNeGA till it is refunded to the unsuccessful Bidders will not earn any interest thereof.

b) The EMD amount of the Successful Bidder shall be converted as part of the Security Deposit (SD) for successful execution of the work and will be returned only after the successful fulfillment of the Contract.

c) The EMD amount will be forfeited by TNeGA, if the Bidder withdraws the bid during the period of its validity specified in the tender or if the Successful Bidder fails to sign the contract or the Successful in Bidder fails to remit Security Deposit within the respective due dates.

5.3 Letter of Authorization

a) A letter of authorization from the Board of Directors / appropriate authority authorizing the Tender submitting authority or a Power of Attorney should be submitted in the tender; otherwise the Bids will be summarily rejected.

5.4 Two Part Bidding

a) Bidders should examine all Instructions, Terms and Conditions and Technical specifications given in the Tender document. Failure to furnish information required by the Bid or submission of a Bid not substantially responsive in every respect will be at the Bidders risk and may result in rejection of Bids. Bidders should strictly submit the Bid as specified in the Tender, failing which the bids will be non-responsive and will be rejected.

5.4.1 Technical Bid

a) The first part relates to Technical Bid submitting all the required details and documents complying with all the MEC conditions and the other tender conditions/instructions as well as the statement of compliance consisting of the following.

   i. A Letter of Undertaking in company's letter head in pdf

   ii. Copy of supporting documents for MEC & TES (cl.4.2 and 4.3) as .rar file (Zipped) /pdf file have to be submitted.

5.4.2 Financial Bid (Price Bid Form)

a) Second part relates to Price Bid which should be submitted in the **Bill of Quotation (BoQ)** as given in the Tender.

b) The rate quoted by the bidder in the price bid for "**Development of Platform (one-time)**" (line item 1.0) should be inclusive of manpower, software development, UAT, pilot run, Go-Live of SDK, Data Ingestions, Data and application integrations, Web portal & Supervision, Training, Administration, Overheads, Travel, Lodging, Boarding, In-station & Outstation expenses, etc. and any other cost involved in the successful implementation of **full Scope of Work** mentioned and no other charges will be allowed by the TNeGA other than the service charges quoted.

c) The rate quoted by the bidder in the price bid for support team under "**Support team costs for continuous improvement during Free Warranty period**"(Line item 2) is all inclusive cost of deploying team at TNeGA during the period of Free warranty after Go-Live. It includes pay-roll costs, training, administration, replacements (if need be), travel and any other incidental expenses for the members deployed during free warranty period.

d) The rate quoted for '**O & M including for 36 months after Free Warranty period**' includes all such costs incurred to maintain the applications defect free, performant and scale with users and usage.

e) Bill of Quotation (BoQ) should not contain any conditional offers or variation clause, otherwise the Bids will be summarily rejected.

f) The Prices quoted shall be only in INDIAN RUPEES (INR) only. The tender is liable for rejection if BoQ contains conditional offers.

g) The cost quoted by the Bidder shall be kept firm for a period specified in the Tender from the date of opening of the tender. The Bidder should keep the Price firm during the period of Contract including during the period of extension of time if any. Escalation of cost will not be permitted during the said periods or during any period while providing services whether extended or not for reasons other than increase of duties / taxes payable to the Governments in India. The Bidders should particularly take note of this factor before submitting the Bids.

5.4.3 Details of the Documentary proofs to be uploaded in portal

Letter of Undertaking		Upload Format
A Letter of Undertaking in company's letterhead (template of this is given in page2 of the RFP) *(in case of consortium, along with the Letter of Undertaking, document as stated in Cl.4.1 to be uploaded)*	1	PDF (Max 2 MB)
Minimum Eligibility Criteria (MEC) (4.2)		**Upload Format**
1	Copy of documentary proof for clause 4.2.1 as PDF	
2	Copy of documentary proofs in chronological order for clause 4.2.2 as merged PDF	
3	Copy of documentary proofs for clause 4.2.3 as merged PDF	5	RAR (WinRAR) (Max 20 MB)
4	Copy of documentary proof for clause 4.2.4 as PDF	
5	Copy of documentary proof for clause 4.2.5 as PDF	
Technical Evaluation Criteria (4.3)		**Upload Format**
1	Copy of documentary proofs for clause 4.3.1 as merged PDF	10 (All these PDF have to be placed	RAR (WinRAR) (Max 30 MB)

2	Copy of documentary proofs for clause 4.3.2 as merged PDF	in a folder, and zipped as .rar file before submission)	
3	Copy of documentary proofs for clause 4.3.3 as merged PDF		
4	Copy of documentary proofs for clause 4.3.4 as merged PDF		
5	Copy of documentary proofs for clause 4.3.5 as merged PDF		
6	Copy of documentary proofs for clause 4.3.6 as merged PDF		
7	Copy of documentary proofs for clause 4.3.7 as merged PDF		
8	Copy of documentary proofs for clause 4.3.8 as merged PDF		
9	Copy of documentary proofs for clause 4.3.9 as merged PDF		
10	Approach & Methodology a) Understanding of Project requirement& work plan b) Identified project risk & Mitigation c) Proposed solution and architecture		
Price Bid			**Upload Format**

Bill of Quotation (BoQ)	1	.XLS
Total	**17**	

Note: **Total Documents = 17**

- Under Technical bid = 16 documents

- Under Price bid = 1 document (pre-defined template)

5.5   Bid closing date and time

a)   Bids cannot be submitted not later than the date and time specified in the tender schedule or corrigendum if published. Hence bidders should be cautious to submit the bids well in advance to avoid disappointments.

5.6   Online Submission of Bids - https://tntenders.gov.in

a)   Bidder should read all the terms and conditions and accept the same to proceed further to submit bids. Tendering system will give a successful bid update message after uploading all the bid documents submitted. A print out of Bid Submission Confirmation showing the bid number, the date and time of submission of the bid with all other relevant details can be taken from the website and kept as an acknowledgement for submission of bid. This acknowledgement will act as a proof of bid submission.

b)   The bidders can resubmit the bid as many times as possible till the closing time of the bid submission. Withdrawal of the bid is also possible before the closing time of the bid submission.

c)   The time settings fixed in the server and displayed at the top of the tender site, will be valid for all actions of bid submission, bid opening etc., in E-Tender system.

6   Tender Opening and Evaluation

6.1   Technical Bid Opening

a)   The Technical Bid will be opened on the date and time as specified in the Tender schedule or in the Corrigendum issued by TNeGA (if any).

<u>NOTE:</u> **If the date fixed for opening of the tender happens to be a Government holiday**, the e-tender will be opened on the next Working day at the time specified in the Tender Schedule.

6.2   Tender Validity

a)   The offer submitted by the Bidders should be valid for a minimum period of 120 days from the date of opening of the Tender.

6.3   Initial Scrutiny

a)   Initial Bid scrutiny will be conducted, and incomplete details as given below will be treated as non-responsive. If Tenders are:

1)   received without the Letter of Authorization

2)   received without the Letter of Undertaking on the company letter head per the template given in RFP

3)   received without EMD amount

4)   found with suppression of details

5)   with incomplete information, subjective, conditional offers and partial offers

6)   submitted without support documents as per the Eligibility Criteria and Evaluation Criteria

7)   non-compliance of any of the clauses stipulated in the Tender

8)   lesser validity period

b)   All responsive Bids will be considered for further evaluation. The decision of TNeGA /Government will be final in this regard.

6.4   Clarifications

a)   When deemed necessary, TNeGA shall seek bona-fide clarifications on any aspect from the bidder ONLY through**https://tntenders.gov.in** (online mode) under short fall of documents sections in e-tender portal. However, that would not entitle the bidder to change or cause any change in the substance of the Bid or price quoted. During the course of technical bid evaluation, TNeGA may seek additional information or historical documents for verification to facilitate decision making. In case the bidder failed to comply with the requirements of TNeGA as stated above, such bids may at the discretion of TNeGA, shall be rejected as technically non-responsive.

6.5 Tender Evaluation

6.5.1 Suppression of facts and misleading information

a) During the Bid evaluation, if any suppression or misrepresentation is brought to the notice of TNeGA, TNeGA shall have the right to reject the Bid and if, after selection, TNeGA would terminate the contract. Termination of the contract will be without any compensation to the Bidder and the EMD / SD shall be forfeited.

b) Bidders should note that any figures in the proof documents submitted by the Bidders for proving their eligibility is found suppressed or erased, TNeGA shall have the right to seek the correct facts and figures or reject such Bids.

c) It is up to the Bidders to submit the full copies of the proof documents to meet out the MEC and TES. Otherwise, TNeGA at its discretion may or may not consider such documents.

d) The Tender calls for full copies of documents to prove the Bidder's experience and capacity to undertake the project.

6.5.2 Technical Bid Evaluation

Mininum Eligibility Criteria (MEC):

a) TSC will examine the technical bids as per Cl.4.1 MEC given in the tender document. The documents which did not meet the MEC in the first stage of scrutiny will be rejected in that stage itself and further evaluation will not be carried out for such bidders. The eligible Bidders satisfying all the criteria in cl. 4.1 – MEC alone will be considered for further evaluation as per TES (cl.4.2). The decision of TNeGA will be final in this regard.

Technical Evaluation system (TES):

b) TSC will examine the bids as per clause 4.2 - TES from documentary evidence enclosed by bidder in the Technical Bid. The bidder shall be informed to demonstrate their projects to TSC as per cl.4.2.10 of TES and marks will be awarded. If the bidder fails to demonstrate, their bid will be summarily rejected. Minimum marks to be scored by the bidders in the TES as per cl. 4.2 above is 70 (seventy) out of 100, to declare the bid as technically qualified. Bidders who score 70 and above marks in the cl. 4.2 – TES shall be deemed technically qualified and financial bids of those only bidders will be opened.

6.5.3   Financial bid evaluation

a) Bidders should fill price quote details ONLY in Bill of Quotation (BoQ).

b) All the taxes indicated in the Price Bid will be taken for the Price Bid evaluation as per the Tamil Nadu Transparency in Tender Rules 2000 with latest amendments.

c) The Bidders should quote for all the items. Failure to submit the price for all the items or partial offer will be liable for rejection of the bid itself. The decision of TNeGA will be the final.

d) Bidders who satisfy the MEC (4.1), scored 70 or more out of 100 in TES (4.2) and has highest QCBS score (H1) per Cl. 4.3 (Final evaluation of bid) would be declared as the successful bidder (H1).

6.6   Negotiations

a) Negotiations will be conducted with the Successful (H1) Bidder for improvement in the Scope of Work, Specification, further reduction in price and advancement of delivery schedule.

6.7   Award of Contract (through https://tntenders.gov.in)

a) Award of Contract (Letter of Acceptance) shall be issued online through https://tntenders.gov.in to the successful bidder (H1). After acceptance of the tender and LOA issued by TNeGA, the successful bidder (H1) shall have no right to withdraw their tender or claim higher price.

b) No dispute can be raised by any Bidder who's Bid has been rejected and no claims will be entertained or paid on this account.

6.8   TNeGA reserves the right to:

a) Modify, reduce or increase the quantity requirements to an extent of tendered quantity as per the provisions of Tamil Nadu Transparency in Tenders Act 1998 and Tamil Nadu Transparency in Tenders Rules, 2000.

b) inspect the Bidders' Premises/Company before or after placement of orders and based on the inspection, reserves a right to modify the quantity ordered.

c) withhold any amount for the deficiency in Quality/Service aspect of the ordered items supplied to the customers.

d) accept or reject any or all of the tenders in full or in parts without assigning any reason whatsoever. The Tender Accepting Authority may also reject all the tenders for reasons such as change in Scope, Specification, lack of anticipated financial resources, court orders, calamities or any other unforeseen circumstances.

7 Execution of Contract

7.1 Acceptance/Rejection of the Tender

a) The final acceptance of the tender is entirely vested with TNeGA, who reserves the right to accept or reject any or all of the tenders in full or in parts without assigning any reason whatsoever. The Tender Accepting Authority may also reject all the tenders for reasons such as change in Scope, Specification, lack of anticipated financial resources, court orders, calamities or any other unforeseen circumstances. After acceptance of the Tender by TNeGA, the Successful Bidder shall have no right to withdraw their tender or claim higher price.

7.2 Letter of Acceptance (LOA)

a) After acceptance of the Tender by TNeGA, a Letter of Acceptance (LOA) will be issued to the Successful (H1) Bidder by TNeGA.

7.3 Payment of Security Deposit (SD)

a) The successful Bidder will be required to remit a **Security Deposit (SD) of 5% of contract value** by way of **Demand Draft or Banker's Cheque** payable at Chennai or in the form of unconditional irrevocable Bank Guarantee valid for a period of 60 months from the date of acceptance of the tender on receipt of confirmation from TNeGA. **The SD shall be paid within a week from the date of issue Letter of Acceptance (LOA) by TNeGA.**

b) The EMD/Security Deposit will be forfeited if the Successful Bidder withdraws the Bid during the period of Bid validity specified in the Tender or if the Bidder fails to sign the contract.

7.4 Execution of Contract

a) The Successful Bidder should execute a Contract in the INR 100 non-judicial Stamp Paper bought in Tamil Nadu only, in the name of the bidder within a week from the date of Letter of

Acceptance issued by TNeGA, with such changes/modifications as may be indicated by TNeGA at the time of execution and on receipt of confirmation from TNeGA.

b) The Successful Bidder shall not assign or make over the contract, the benefit or burden thereof to any other person or persons or body corporate for the execution of the contract or any part thereof without the prior written consent of TNeGA. TNeGA reserves its right to cancel the work order either in part or full, if this condition is violated. If the Successful Bidder fails to execute the agreement within the stipulated period of one week, the SD of the Successful Bidder will be forfeited and their tender will be held as non-responsive. In case of consortium, the lead partner can assign any to the partner and submit the same to TNeGA for approval.

c) The expenses incidental to the execution of the agreement should be borne by the Successful Bidder.

d) The conditions stipulated in the agreement should be strictly adhered to and violation of any of the conditions will entail termination of the contract without prejudice to the rights of TNeGA and also TNeGA have the right to recover any consequential losses from the Successful Bidder.

7.5 Release of Work Order

a) After execution of the contract and payment of security deposit, TNeGA will issue the award of contract to the successful bidder through online mode.

7.6 Refund of EMD

a) The EMD amount paid by the successful bidder will be adjusted towards security deposit payable by them. If the successful bidder submits security deposit for the stipulated value in full by way of cash/bank guarantee, the EMD will be refunded. The EMD amount of the unsuccessful bidder will be auto-refunded upon finalization and issue of work order to the successful bidder.

7.7 Release of SD

a) The Security Deposit will be refunded to the Successful Bidder on completion of 3 months after the Contract Period subject to satisfaction of TNeGA. Such completion would be arrived at

when the entire Scope of Work is executed by the Bidder as per the Contract Agreement and as per Order(s) issued by TNeGA from time to time.

7.8   Forfeiture of EMD and SD

a) If the successful Bidder fails to act according to the tender conditions or backs out, after the tender has been accepted, the EMD will be forfeited.

b) If the Successful Bidder fails to remit the SD, the EMD remitted by him will be forfeited to TNeGA and the tender will be held void.

c) If the Successful Bidder fails to act up on to the tender conditions or backs out from the contract, the SD mentioned above will also be forfeited by TNeGA.

7.9   Termination of Contract

7.9.1   Termination for default

a) TNeGA may without prejudice to any other remedy for breach of contract, by written notice of default with a notice period of 7 days, sent to the Successful Bidder, terminate the contract in whole or part, (i) if the Successful Bidder fails to deliver any or all of the service within the time period(s) specified in the Contract, or fails to supply the items as per the Delivery Schedule or within any extension thereof granted by TNeGA; or (ii) if the Successful Bidder fails to perform any of the obligation(s) under the contract; or (iii) if the Successful TNeGA, in the judgment of TNeGA, has engaged in fraudulent and corrupt practices in competing for or in executing the Contract.

b) In the event TNeGA terminates the Contract in whole or in part, TNeGA may procure, upon terms and in such manner as it deems appropriate, the goods and services similar to those and delivered and the Successful Bidder shall be liable to TNeGA for any additional costs for such similar goods and service. However, the Successful Bidder shall continue the performance of the contract to the extent not terminated.

7.9.2   Termination for Insolvency

a) TNeGA may at any time terminate the Contract by giving written notice with a notice period of 7 days to the Successful Bidder, if the Successful Bidder becomes bankrupt or otherwise insolvent. In this event, termination will be without compensation to the Successful Bidder,

provided that such termination will not prejudice or affect any right of action or remedy that has accrued or will accrue thereafter to TNeGA.

7.9.3   Termination for Convenience

a) TNeGA may by written notice, with a notice period of seven days sent to the Successful Bidder, TNeGA may terminate the Contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for TNeGA's convenience, the extent to which performance of work under the Contract is terminated, and the date upon which such termination becomes effective. On termination, the successful Bidder is not entitled to any compensation whatsoever.

7.10 Single point of contact and Project Lead

a) The successful bidder should nominate a single point of contact from their side to lead the project full-time and be available to respond to all requests from TNeGA or the Govt departments. This person should be responsible for delivery of work in compliance with all the terms and conditions.

7.11 Liquidated Damages (LD)

a) The Bidder must strictly adhere to the implementation schedule, specified in the RFP issued by TNeGA to the successful Bidder and any delay will enable TNeGA to resort to any or both of the following:

1) Claim liquidated damages at 0.5% of the contract value for delayed performance per week of such delay and the Maximum LD applicable is 10% of the contract value. However, LD clause will not be applicable if the delay is not due to issues related to the bidder.

2) In case of the termination of the contract by TNeGA due to non- performance of the obligations arising out of the RFP & LOA, the Earnest Money Deposit / Security Deposit will be forfeited.

3) In addition, TNeGA reserves the right to award the work to any other party / parties and the loss / expenses incurred thereafter will be recovered from the successful bidder.

b) The RFP, bid submitted by the successful bidder, negotiated offer of the successful bidder, contract and the work orders will form part of this contract. Wherever the offer conditions

furnished by the successful bidder are at variance with conditions of this contract or conditions stipulated in the work order, the latter shall prevail over the offer conditions furnished by the successful bidder.

c) Notwithstanding anything contained in this clause, TNeGA reserves the right to blacklist the successful bidder from taking part in any of the procurement operations of TNeGA for a minimum period of three years from the date of blacklisting for failure to carry out supply in time or according to the quality and quantity prescribed or any such similar reasons. This penalty shall be over and above all other penalties. Such bidders would be automatically banned for 3 years from taking part in TNeGA's tenders.

7.12 Penalty for Non-Fulfillment of Tender

a) A penalty will be levied at the rate specified in the Agreement Format in the event of non-fulfillment or non-observance of any of the conditions stipulated in the Agreement, Terms and Conditions and Work Order.

7.13 Other Conditions

a) The final decision would be based on the technical capacity and pricing of the bidder. TNeGA does not bind itself in selecting the bidder offering lowest prices.

b) TNeGA reserves the right not to accept lowest price, to reject any or all the tenders without assigning any reason, to relax or waive any of the conditions stipulated in the terms and conditions of tender as deemed necessary in the best interest of TNeGA for good and sufficient reasons.

7.14 Arbitration and Jurisdiction

a) Except as otherwise provided elsewhere in the contract, if any dispute, difference, question or disagreement arises between the parties hereto or their respective representatives or assignees, at any time in connection with construction, meaning, operation, effect, interpretation or out of the contract or breach thereof, the same shall be decided by Sole Arbitrator to be appointed by the CEO, TNeGA.

b) If the Arbitrator so appointed dies, resigns, incapacitated or withdraws for any reason from the proceedings, another Arbitrator shall be appointed by the CEO, TNeGA. The Arbitrator so

appointed shall proceed with the reference from the stage, where his predecessor had left if both parties consent for the same.

c) It is a term of the contract that the party invoking arbitration shall specify all disputes to be referred to arbitration at the time of invocation of arbitration and not thereafter.

d) It is also a term of the contract that neither party to the contract shall be entitled to seek interest and the arbitrator should not grant interest.

e) The Arbitral Tribunal shall give reasoned award and the same shall be final, conclusive and binding on the parties.

f) The venue of the arbitration shall be Chennai and language English. The fees of the Arbitrator and expenses incidental to the arbitration proceedings shall be borne equally by the parties.

g) Subject to as aforesaid, the provisions of the Arbitration and Conciliation Act, 1996 and any statutory modifications or re-enactment in lieu thereof shall apply to the arbitration proceedings under this Clause.

h) Subject to the above, the Courts in Chennai alone shall have jurisdiction in this matter.

8 The State Family Database (SFDB) Platform

a) The SFDB platform has been conceived with the purpose of enabling data-driven decision making by state departments. The platform would help the departments harmonize and synchronize their data such that they share a unified view. This seamless information flow enables inter-department synergies and efficiencies in policy crafting and delivery.

b) For launching new schemes, identifying the poorest of poor, targeting of vulnerable beneficiaries, and improving transparency in benefit transfer there is a need for a common people database that is accurate and reliable.

c) SFDB would be used for Scheme Planning and monitoring and planning and monitoring of Sustainable Development Goals (SDG).

d) Following are the broad objectives of the State Family Database (SFDB) platform infrastructure:

   1) Provide a platform for Governance-as-a-Service model. New services can be easily designed and integrated in a plug-and-play fashion.

   2) Quick identification of beneficiaries using criteria that cut across departments for new Government schemes.

3) Provide a platform for Data-driven policy support

4) Provide the data foundation for Dashboards, Reports

5) Provide GIS integration for data-driven governance

6) Enhance transparency in benefit transfers and government service delivery with better accessibility for people.

7) Provide Aadhaar authentication to various department applications to ensure the scheme benefit reaches the eligible beneficiary.

8) Alternate authentication mechanisms that allow for different department applications leverage SSO mechanism.

9) Improve governance by improved beneficiary targeting, effective service delivery, greater accountability, and more efficient monitoring of schemes.
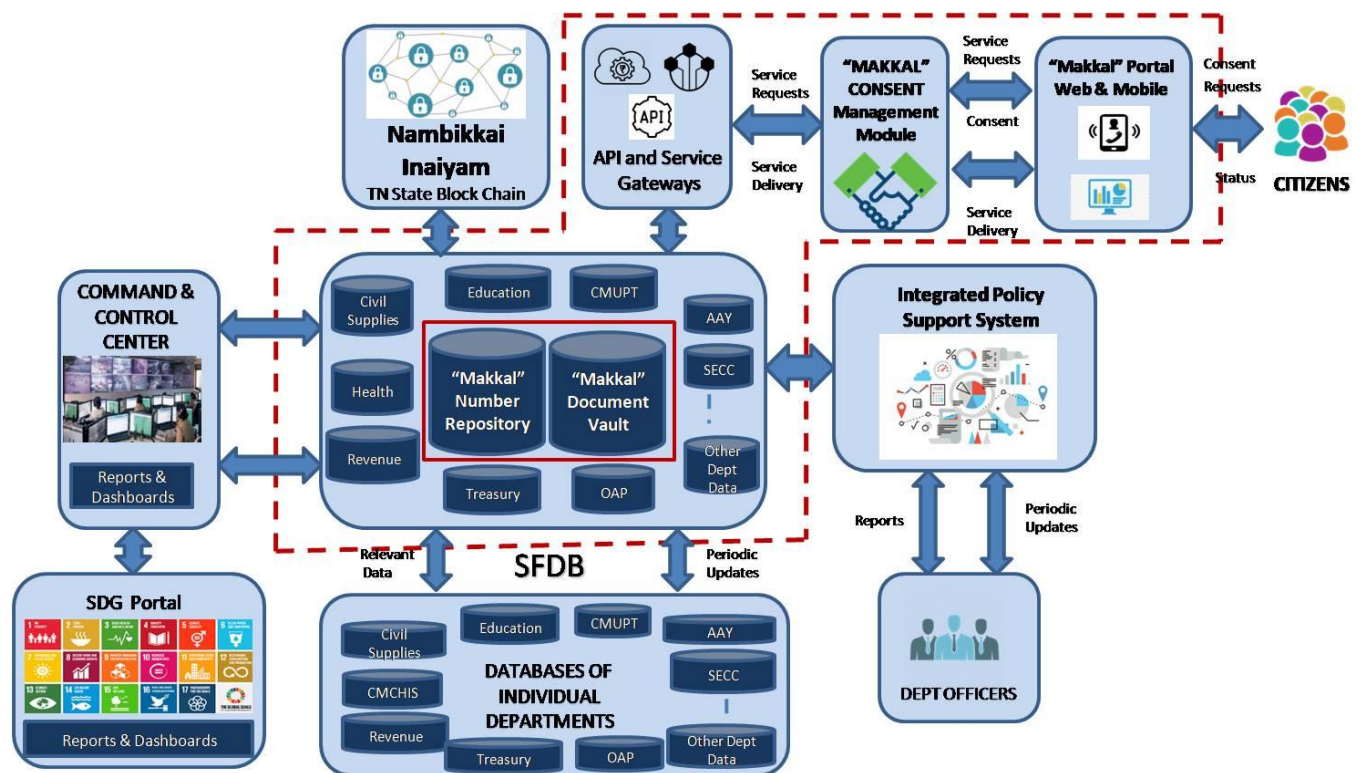

Figure 8-1 - Conceptual diagram of SFDB Platform and other key system interactions

e) This platform should be industrially scalable, should grow linearly with time and independent from the number of transactions or queries that are run on the system. The SFDB platform should be able to on-board new departments incrementally, without disruption the operations

of the existing system. It should also be possible to incorporate and integrate additional reporting requirements in a seamless fashion.

f) The SFDB in its final form (ref: Figure 8.1) will also support other government initiatives as the primary, up-to-date, sanitized data source. These include initiatives like Nambikkai Inaiyam-the TN State Blockchain Platform, Predictive Service Delivery, Central Command and Control Center, Sustainable Development Goals (SDG) dashboards and others.

9   Proposed Scope of Work

a) The selected bidder must develop, and deploy a data integration and exchange platform called SFDB. This platform will host the details of the State's residents. Since the SFDB will be the master data, the data hosted in the SFDB should be the most current, relevant, complete, logically consistent and comprehensive that can be used by all the departments. Further functionalities for this platform like reporting and analytics should be built using open source technology as far possible. Data deduplication & matching is a key feature for an effective linking of records and arriving at an enriched golden record of the Citizen. The solution should be able to identify the duplicate records and its record reference numbers from source data. The solution should be comprehensive, complete, correct, scalable, seamless, interoperable, configurable which can solve all the challenges in Entity Resolution.

1) The solution should be able to resolve multiple instances of the same individual with attribute variations like father name, mother name, spouse name, address, date of birth, mobile number etc

2) The solution should be capable of handling variations in all the person attributes in both English and Tamil (full name, fathers name, mothers name, spouse name, address etc.) on account of spelling mistakes, abbreviation, sequence variation, missing/ extra   parts, differences in date/ month/ year, variations in city/ pin codes/ locality / sub localities etc.

3) The solution should be able to resolve variations in different components of the address like house number, street name, village/town panchayat/city, taluk, district etc.

b) SFDB platform has several components as listed below and are detailed further in in next sections.

1) SFDB core database

2) Participating and certified databases

3) Master databases and other third-party databases

4) SFDB Internal SDK, APIs and Services

5) SFDB External APIs

6) SFDB – Makkal Portal

7) SFDB – Backoffice Portal

8) Dashboards & Reports

9) Interactive Analytics Platform
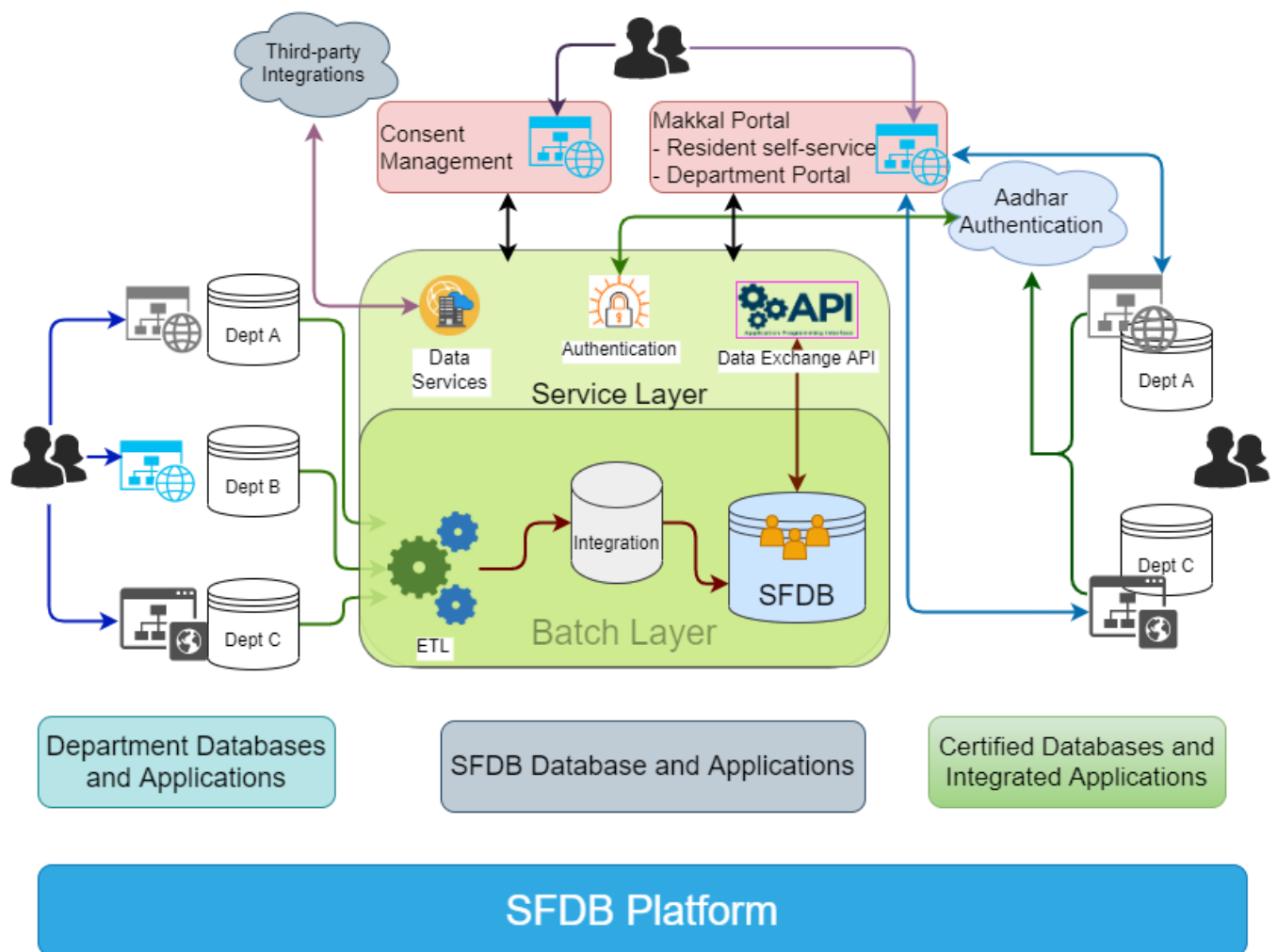
Figure 9-1 SFDB Platform and integration with Department Databases and Applications

9.1   SFDB Core Database

a)   The existing SFDB Core Database schema is built in PostgreSQL and contains demographic details about the state's residents. This database is being built with ePDS data as the base with data from 7 other departments being seeded with Makkal numbers based on match with PDS data. The current database covers about 7 cr residents.

b)   Successful bidder would de-dupe and enrich the existing data filling nulls where possible comparing data available in English vs Tamil, standardize address fields and such.

c)   As successful bidder ingests data from participating databases, the data would be further enriched drawing attributes from each of these databases.

9.2   Participating and Certified Databases

a)   Participating databases – Each of the departments of Government of Tamil Nadu have their own applications and associated databases. All those databases (for the current scope 15 of them are being taken up in two phases of 8 and 7 each) would be compared against the SFDB core and assigned with a Makkal number so that data exchange across these databases is bseamless. All these databases are collectively called as participating databases.

b)   SFDB Certified Databases – As a first step Makkal number would be seeded in a participating database wherever the people demographic matches with that in SFDB. Successful bidder would develop necessary systems like reports, APIs for the departments to seed Makkal_ID in their respective databases. To improve the match % successful bidder would develop the necessary reports so the departments can carry out field verification to capture complete demographic. There would be various levels of certifications issued to participating databases depending on % of Makkal number assigned and other parameters like data quality index and such. The participating databases would be rated accordingly.

9.3   Master data and third-party databases

a)   Master data databases and Catalogs – usually those that are published in data.gov.in and tn.data.gov.in. SFDB platform would use these sources either for validations or additional reporting and analytics. For example, list of pin codes, names of districts, blocks, villages, etc.

b) Tamil Nadu Geographic Information System (TNGIS) database – Addresses in SFDB would be geocoded so that it can integrate with the GIS for all spatial demographic analysis.

c) Any other open govt database (if needed).

d) Successful bidder would use these master databases to develop necessary data enrichment services or data services. In some cases, bidder may need to maintain local copy of such master databases through web scrapping/file loading or any other appropriate mechanism.

9.4 SFDB internal SDK, APIs and services

a) SFDB internal SDK provides the framework, libraries, APIs and documentation that allows interactions and data exchanges between the SFDB Core, participating databases and Makkal Portal and Backoffice portal. Major components of the SFDB internal SDK are as follows:

1) Database ingestion framework

2) Data enrichment services

3) Makkal_ID assignment services

4) Language services

5) Data quality framework

6) Certification of participating database

7) Search services

8) Application and user activity

9) Audit and History services

9.4.1 Database ingestion framework

a) Database ingestion framework would have several libraries and tools to enable the initialization of participating database. Participating Databases can publish the data to SFDB either as a db file or csv feed or using an API. This framework uses Open source big data frameworks like Spark or like to develop the following meta-data driven libraries.

1) Load

2) Extract

3) Cleanse

4) Transform and

5) Map

b) The framework allows creation of multiple pipelines for ingesting full files, differentials using multiple channels like flat files posted in SFTP, using external APIs.

c) The pipelines built for the ingestion process would be orchestrated using open source libraries like Apache Airflow or similar.

d) Successful bidder would design and develop this framework repurposing some of the existing components of the framework.

9.4.2 Data enrichment services

a) As more Participating databases get integrated with SFDB core, the data in SFDB would be enriched. The enrichment process includes filling missing values using reference master databases or data available across different departments or data available in one language and missing in the other. Successful bidder would develop the necessary logics for enriching the data mostly using metadata driven approach where possible instead of all code by hand.

b) When multiple values are available for the same attribute, successful bidder would develop necessary logics to maintain the data in a chronological order and assign preference for the most current value.

9.4.3 Makkal_ID assignment services

a) Makkal_ID service is at the core of SFDB that allows assigning of a Makkal_ID for records that are new to SFDB Core so that there is no duplication of people data in SFDB.

b) The logic for identifying a duplicate depends on completeness, accuracy, integrity of the people data being ingested. The additional identifier data like Aadhar number, Ration card number and such, captured in the participating database could also be used to find an appropriate match.

c) During the initialization and any subsequent updates from the participating databases, data ingestion framework would be using this service to segregate the matching and non-matching records.

d) MakkalID service can be consumed in the ETL pipelines in both batch and real-time situations.

e) Applications built on top of certified databases call this Makkal Service directly from their application whenever they are adding a new beneficiary.

f) Successful bidder would develop necessary tools and techniques to identify each person uniquely based on the core attributes like name, father name, mother name, date of birth and

gender. We may use additional attributes like personal identifiers, address and mobile number for disambiguation.

g) To identify duplicates and assign unique Makkal number, data available in both English and Tamil must be considered.

h) The successful bidder would disclose use of any proprietary tool for identifying the duplicates and potential matches. **No additional license costs would be paid through the contract period irrespective of volume of transactions, data ingested through the proprietary tool**. Any such proprietary tool/software should be deployable on-premises using commodity hardware. The tool/software should allow for both horizontal and vertical scalability using commodity hardware.

9.4.4 Language services - Tamil

a) SFDB would have demographic data in multiple languages and for enriching the data and validating the quality of data we would have following language services

1) Synonym services – we would have built name synonym dictionaries in both Tamil and English for person names and place names.

2) Transliteration services – we would have built a custom name transliteration service using combination of synonyms and public cognitive services like Google Transliterate, Azure transliterate API and such.

b) Successful bidder would enhance some of the existing components and continue to evolve these through the course of contract period.

9.4.5 Data quality framework

a) Several business rules would be run to identify potential data errors, data consistency errors, data integrity errors through the different stages of data ingestion till standardization.

b) Based on the invalidation of business rules described in a) above, data quality framework defines the quality of both SFDB core and participating databases at both field level as well as database level.

c) Field level - based on the volume of data impacted in cleansing, transforming (like fielding coalesced data), validating for integrity and accuracy, scores would be computed at field level.

d) Table level – factors like coverage, completeness, standardization (enumeration), strong typing and such would be used to calculate score for the tables.

e) Database level – scores of fields, tables and few additional factors like update frequency, consistency would determine the quality Index at the database level.

f) Successful bidder would design and develop this framework in consultation with the departments and mature through the implementation phase.

9.4.6 Certification of participating Database

a) Each of the participating databases would go through the following steps

   1) Initialization

   2) Makkal seeding (assignment for matched data)

   3) Data Quality Index

   4) Regular update ingestion (Batch)

b) Makkal Portal – Department Portal would have the functionality for viewing the outcome reports from each of the above steps and accepting/rejecting the suggested changes. This is explained in section 9.7.1

c) This certification service evaluates the eligibility criteria as defined in section 9.2 and certifies the participating database.

d) Successful bidder would ingest 15 participating databases in two tranches of 8 and 7 each and develop this service to use c) above to report the matches and mismatches in SFDB backoffice portal as described in 9.7.1

9.4.7 Search Services

a) There would be multiple search services defined by the scope and result sets (that can be filtered further):

   1) Simple search service – that can return basic demographic based on the standard identifiers like Makkal Number, Aadhar Number, Mobile Number.

   2) ID search service – allows departments to search with their native IDs and returns Personal Identifiers as well as IDs from other departments.

   3) Full search – allows search on any known identifiers and returns a full data object including the historical data which would be useful for e-KYR

4) Advanced Search – search based on several fields with and/or operators used appropriately.

5) Search service would log all search patterns for future analysis and improved features.

9.4.8 Application and User Activity

a) For SFDB Makkal Portal and Backoffice portal, application and user activity such as login, reads, searches, authentication, updates, activity duration and all related events would be saved in SFDB Backoffice DB for further reporting and analysis.

b) For all batch processing jobs detail like runID, duration, volumes, stages, statuses and all related stats would be maintained in SFDB Backoffice DB for further reporting and analysis.

c) Successful bidder would design and develop these internal services that would be used by batch processing jobs, SFDB internal APIs &services, SFDB external APIs, Makkal portal, Backoffice portal, department applications, interactive analytics platform and all other components.

9.4.9 Audit & History Services

a) Audit and History service provides a complete audit and history of all changes that have happened for a given Makkal_ID

b) SFDB Core would maintain complete history of changes including any machine generated changes with a clear data lineage.

c) Audit is to be maintained for all transactions made through the application integration including department user detail, authentication mechanism used and all such.

d) Successful bidder would design and develop these internal services that would be used by both batch processing jobs and real-time changes to SFDB Core made through Makkal portal and department applications.

9.5 SFDB External APIs

a) SDK also includes data services for use in department applications, Nambikkai Inaiyam-the TN State Blockchain Platform, Predictive Service Delivery, Central Command and Control Center, Sustainable Development Goals (SDG) dashboards, Makkal-Citizen Portal and others. Major components of the SFDB SDK are as follows:

1) Authentication services

2) Consent management services

3) GIS integration services

4) Data services

9.5.1 Authentication Services

a) SFDB authentication services can use any of the non-Aadhar identifiers and authenticate the resident for use of department applications.

b) Authentication services integrate with Aadhar authentication and offer Aadhar authentication using the ID search and translating IDs. For initiating Aadhar e-KYC, authentication service would verify the availability of consent provided by the consumer application.

c) Authentication services would log all access granted and denied for future audits.

9.5.2 Consent Management Services

a) Consent Management services would be used by Consent Management Portal as well as other department applications to obtain, record the consent from citizens for verifying their Aadhar, authenticating using Aadhar, sharing of their personal data across government departments for specified purposes.

b) SFDB is the master repository of any consent obtained from the state residents. While saving the consent for any of the services, all user detail, the device IP, timestamp are all recorded.

c) Consent Management service would integrate with Nambikkai Inayam to save/retrieve all the citizen consent data.

9.5.3 GIS integration Services

a) GIS integration services would be used for enriching the address data, adding geo codes.

b) For spatial data services, GIS integration services would combine the data across SFDB Core and TNGIS databases for geofence based queries.

c) Successful bidder would develop necessary APIs to be used by other applications.

9.5.4 Data services

a) Data services are basic building blocks for data exchange, analytics, reports, and dashboards, integrating platforms like Predictive Service Platform, Blockchain backbone, and consumer

applications. There would be several custom data services built over time and below is an indicative list.

1) Basic Demographic service – would return the base demography of given Makkal Numbers.

2) Aggregate data services for sharing of aggregate data like population count of diversity % in a district and many such.

3) Aggregate Spatial data services – would return demography aggregates for a given place name, pincode or some like that.

4) Any other services for the specific purpose

5) Data dispatch would be a special event based service that runs on a schedule with the parameters configured by consumer applications like predictive service platform or Makkal portal.

9.6   SFDB - Makkal Portal

a) SFDB - Makkal Portal provides a single window access to all residents the demographic data available across the participating databases. It allows residents to make changes to their personal information after due Aadhar authentication and allows them to manage consent . The major features and interfaces of the portal are described below.

1) Resident self-service portal/Mobile App

2) Citizen Consent Management Portal/Mobile App

9.6.1   Resident self-service

a) Residents will be able to search for their detail after logging in using mobile/OTP and update the following after Aadhar authentication using Registered mobile/OTP–

1) Add additional identifiers like PAN card, Passport or any other Government issued personal documents.

2) Update the residential address along with uploading necessary supporting documents

3) Submit requests for change in demographic detail like name, date of birth

4) Enroll for e-KYC/Offline KYC

9.6.2 Citizen Consent Management (CCM) Portal/App

a) Citizens give necessary consent for obtaining services from various Government departments.

1) Citizens can give consent to share their information across various Government Departments.

2) Citizens can give consent to authenticate using Aadhar.

3) Citizens can opt-in to predictive service delivery.

4) Consent Management App would allow citizens to read, edit the consent at any time and will also be able to view the instances of the consent being used.

9.7 SFDB – Backoffice Portal

a) SFDB – Backoffice portal allows the departments to view the status of integration with SFDB, view the unmatched records, mark 'done' for the records that are to be field verified and so on. When integrated with the department application allows the real-time linking of beneficiaries to Makkal number, edit personal data in SFDB or add new beneficiary through the respective department applications.

9.7.1 SFDB Department portal

a) Department portal allows to search for makkal numbers and compare demography data across several departments.

b) Departmental portal would have the detail of level of certification and summary statistics of their respective databases.

c) For departments where the applications are integrated with 'SFDB validate and update' Department portal would have the reports on addition of new beneficiaries, their match status with SFDB, changes made based on SFDB, changes made into SFDB and all such aggregated detail of transactions.

d) Along with the dashboards and reports, the certification portal would have the business workflows to accept/reject changes compared against the SFDB platform.

1) Matched against SFDB core and Makkal Seeded – Accept – would generate the file for ingesting the Makkal_ID into participating database.

2) Unmatched against SFDB core – for such records, the portal allows for assigning rows for field verification. Field staff will be able to mark 'complete' when they edit the data using their respective department application and SFDB back office.

3) Data Quality Index – There would be multiple reports with drill-down to a field level indicating the quality of data. The reports also suggest measures that can be taken to improve DQI with next integration of participating database with SFDB core.

e) Generate beneficiary list – this allows departments to identify the list of beneficiaries based on criteria given. Departments would use this to initialize the beneficiaries at the time of scheme launch or whenever required.

9.7.2 SFDB Validate and update

a) SFDB validate and update allows validation of department data against SFDB at an individual beneficiary level. This page also allows department users to sync and update the data between SFDB and department applications at the time of beneficiary registration and changes to beneficiary demographic detail.

1) At the time of registration – new beneficiary ID to the department can be added to SFDB where the person already exists in SFDB. If the person doesn't exist in SFDB, the same would be processed through Makkal_ID assignment process.

2) At the time of changes to demography – after due Aadhar authentication, changes would be made to SFDB core where the match exists and if not the change would be processed through Makkal_ID assignment process.

9.7.3 SFDB Management portal

a) SFDB management portal allows internal users to view the data dictionary, monitor the state of databases, schedules and job run status, activity stats internal to platform, usage and performance of services and such

b) Validations and error log clearance - this would have the reports and necessary workflows for resolving the data validation errors and/or conflicts in data coming across the different sources.

c) This portal allows to manage the configuration of data dispatch as part of data services. Users can configure the criteria, triggers and schedules, delivery endpoints for the data dispatch.

d) This portal would have tools and utilities to serve adhoc requests from the departments to match and validate any lists they may have provided

9.8 Dashboards and Reports

a) Several dashboards of SFDB platform would be made available for the following purpose:

1) Checking the certification levels of various departments that gives insights into level of integration completed (Makkal Seeded), pending verification, progress made over time and such.

2) Use of Makkal portal, data services by department consumers

3) Statistics around changes and data exchanges between SFDB core and SFDB distributed databases

4) Statistics and profile of data within SFDB core and insights into the data enrichment.

9.9 Interactive Analytics Platform

a) Interactive Analytics platform is to be used for scheme planning and monitoring.

b) Analytics platform would be using the data services to access data in SFDB core and similarly would be connecting to different API from Master Databases and Third-Party Databases.

c) Details of benefits utilized across the departments would be accessed using respective department APIs.

d) The platform would have necessary workspaces, ability to call the APIs, build models and run models.

e) Successful bidder would setup the analytics platform such a way that from a common workspace, various APIs from SFDB Platform and APIs from departments would pull the data and the Analyst/Data Scientist can build and run their models.

9.10 Integration with Predictive service platform and Blockchain Backbone

a) SFDB platform would be integrated with Predictive service for the use case of modifying ration card based on the Birth and Death data from CRS database.

b) The other predictive service that would be delivered is issuance of community certificate based on citizen consent and certain criteria.

c) Data services would deliver the necessary data based on how Predictive service platform configures and subscribes to changes and events within SFDB Core.

d) Like Predictive service platform the applications built on top of the Blockchain backbone can also subscribe to changes in SFDB or add triggers for data dispatch.

e) All consent data obtained using Citizen Consent Management (CCM) Portal/App would be recorded in the blockchain backbone using data services.

f) Successful bidder would develop all necessary APIs required for this integration.

9.11 Stakeholders and users of the SFDB Platform

a) Government of Tamil Nadu – Govt would use this SFDB platform as foundational for all data driven governance and policy making. Govt from time to time could be requesting for customized reports and analysis during welfare scheme planning and monitoring. Govt would be directing different departments and agencies to integrate their applications consuming the data services for reporting. Successful bidder would deliver such adhoc requests through the contract period. Any such report generation should be included in the regular O&M and not considered a change request.

b) Government departments and agencies – departments whose databases participate in SFDB and have their department applications for beneficiary registration and management, would be both contributing to enrich SFDB and benefit from in managing latest and accurate beneficiary information. For other departments/agencies that are initializing a beneficiary database or want to validate beneficiary lists against SFDB, would be using the SFDB back office portal.

c) Chief Secretary, Secretaries, HoDs, District collectors and other senior officers will be using the reports and dashboards that are pertinent to their departments/jurisdictions.

d) Residents of state of Tamil Nadu would use SFDB platform to maintain their personal detail updated so they are not left behind in any welfare scheme planning and delivery.

e) Successful bidder would build systems to maintain users, roles and access levels across the platform and log all usage detail for reports and dashboards published through SFDB Management portal.

10 Scope of implementation and deliverables

a) Developing of the following components –

1) SFDB Internal SDK, APIs and Services

2) SFDB External APIs

3) SFDB - Makkal Portal

4) SFDB – Backoffice Portal

5) Dashboards & Reports

6) Interactive Analytics Platform

7) Integration with Predictive service platform.

b) Certifying 15 department databases (in 2 tranches of 8 and 7) that includes following:

1) Initialization

2) Data enrichment of SFDB Core

3) Assigning Makkal_ID (ensure no duplicates in SFDB core and get maximum possible matches for the department)

4) Improving Data Quality Index iterating with the departments.

c) Integrate 'SFDB validate and update' with existing department applications. Integration can use appropriate technology based on the extensibility of department application through APIs or webhooks or any similar inter process communications. The integration should be seamless and repurpose existing user authentication mechanisms of the department applications. All user activities and data changes made would be written in SFDB Core and SFDB Backoffice databases as appropriate.

d) Set up end-end monitoring for Application performance using either off-shelf tools or custom scripts. While this helps the successful bidder in managing the SLA requirements and maintenance of the platform, key metrics on availability and performance can be included in SFDB Backoffice Management Portal.

e) Documentation and Training – prepare functional and technical documentation of the entire platform. Necessary training modules would be prepared about use of portals, business rules in processing and maintenance of SFDB platform, etc. Successful bidder would also conduct

necessary training sessions to all the department users whose participating databases are integrated with SFDB and applications integrated with SFDB -Backoffice Portal.

10.1 Agile development and continuous improvement

Initializing databases, certifying the databases, enriching core SFDB database, integrating SFDB with department applications is a continuous process. The solution developed would be extended to cover all other departments over time. During the development phase we would have developed and deployed the SFDB data platform per the scope mentioned in cl 10, but to improve the data quality, data matches across, we need to enrich the data continuously and add necessary validations and check-points in the department level applications. For supporting this continuous improvements and additional integrations, successful bidder would setup a support team of 8 members stationed at TNeGA. This support team would handle all necessary changes and integration with other departments.

11 Development and support team on-premises

11.1 Teams on-premises

a) During the development phase, for better coordination and follow agile practices, successful bidder would deploy 4 members of the core development team and a project manager in TNeGA office. (Solution Architect, Business Analyst, Project Manager)

b) After Go-Live, for the continuous development and support, successful bidder shall setup a 8-member support team at TNeGA for the 12-month Free Warranty period. The quoted cost for support team for a period of 12 months shall be used for financial evaluation purpose.

11.2 Workspace for the teams deployed at TNeGA

a) TNeGA will provide necessary workspace and internet connection for team deployed at TNeGA. Successful bidder must ensure that the team members deployed at TNeGA are fully equipped in terms of providing laptops, phones or any other accessories etc. and be operational from day one.

11.3 Separation or replacements within the support team

a) The successful bidder shall maintain the support team deployed on the project, with the approval of TNeGA.

b) Successful bidder would ensure that there is no change in the support team. However, TNeGA may ask for the replacement of any resource due to reasons such as behavioural, delivery, punctuality etc.

c) In case any of the support team members are to be replaced, successful bidder must ensure that proper handover process to be completed and has to share the confirmation mail to TNeGA with checklist.

11.4 Support team profiles for continuous improvement and handling changes

a) Following experts (are inclusive and not limiting to) would be necessary to extend and manage the continuous improvement and change requests of the project after Go-Live. The team would be evaluated as such at the technical proposal stage and the successful bidder must station the support team at TNeGA. Successful bidder must continuously support the team with necessary technical and domain specific knowledge of the company to enable them to perform their duties as per requirement of this RFP. TNeGA may request for additional members of the specified categories depending on the work or delivery requirement at the same quoted rates. Therefore, successful bidder must have/maintain the resource pool corresponding to technologies used for SFDB platform project.

Table 10.5 – Support team required for continuous improvement during Free Warranty period

Data Engineer (2 Resources)	• Bachelors or Master's degree in Computer Science, Mathematics with 5+ years of experience in Data Engineering with excellent coding skills in Python and SQL • Knowledge of Big Data technologies (such as Hadoop, Spark, Kafka, Cassandra, Hive/Pig, and Java/MapReduce), tuning, troubleshooting and

	scaling these big data technologies, where having a curiosity with the internal workings of these systems is key to being successful.
	• Experience in gathering and processing raw data at scale including writing scripts, web scraping, calling APIs, writing SQL queries, etc
	• Must have experience in Data Visualization tools.
	• Experience with SQL Database and NoSQL databases, such as CouchDB, MongoDB, Cassandra, HBase, DynamoDB
	• Working experience various ETL tools
	• Working experience in Linux Environments
	• Exposure to data and machine learning services from Azure, Amazon Web Services (AWS), and/or Google Cloud a plus
Data Scientist (1 Resource)	• Bachelors or Master's degree in Computer Science, Mathematics with 3+ years of experience in Data Science with excellent coding skills in Python and SQL
	• Development and enhancement of machine learning and statistical models.
	• Proficiency in working with Python, R, SQL
	• Experience with both Machine Learning and Deep Learning algorithms.
	• Must have some experience working with Scikit Learn, TensorFlow, Keras, OpenCV and NLTK libraries in Python.
	• Liaise with members of the team.
	• Must be flexible to work on different projects across a range of industries such as retail, banking, insurance and travel.
	• Strong mathematical and statistical skills and understanding, not only how but why
	• Proven ability to lead a project from inception to end deployment stage
Data Analyst (1 Resource)	• B.E./B.Tech with 3+ years' experience in integrating Data Visualization tools successfully with Big data ecosystem

	• Experience in implementation of end-to-end BI life-cycle projects including dimensional modeling, ETL/integration processes and metadata modeling • Data visualization tools like Tableau, Power BI, Qlix View etc. • Experience in handling structured and unstructured data. • Expertise with SQL and experience working with different data bases • Experience with data management (data quality, data lineage, data mapping) • Experience developing using the following technologies: JavaScript, JQuery, SQL and HTML/HTML5, Bootstrap
Front-end developer (1 Resource)	• B.E./B.Tech with 5+ years of front-end development experience is mandatory • Strong JavaScript fundamentals and knowledge of ES6+, HTML 5, CSS3 • Experience with UI frameworks such as React, Angular, Vue.js • Solid knowledge of common JavaScript design patterns • Good working knowledge of CSS pre-processors, webpack, JSX, and Node.js, task runners • Good working knowledge of UI component libraries like Bootstrap, Material UI • Proficient in view layout and rendering technologies (e.g., responsiveness, progressive enhancement, browser/device support) • Understands how to optimize the delivery of code and assets (e.g., images, fonts) to a browser or device (e.g., lazy loading assets, caching, compression, etc.) • Proficient understanding of cross-browser compatibility issues and ways to work around them. • Familiarity with Maps APIs and with the process of rendering geospatial data and information into interactive visualizations • Good understanding of SEO principles and ensuring that application will adhere to them.

	• Hands on experience in writing unit tests using frameworks like Jasmine, Jest • Hands on experience with state management libraries like Redux, RXJS and data structure libraries like Immutable JS • Familiar with accessibility standards and tools used to tests for accessibility
Back-end developer (1 Resource)	• B.E/B.Tech with 5+ years of strong experience in Java developing REST APIs • Experience in modern programming languages including JavaScript based frameworks like Node.js, React.js and/or Angular • Infrastructure experience: Maven, GIT/GERRIT, Apigee/ API gateways, Jenkins, Linux Environment • Databases - PostgreSQL, MySQL, MongoDB • Frameworks - Spring Framework (MVC, Core, Boot), Hibernate Framework • Sound Knowledge in Database, SQL queries on (MySQL/PostgreSQL) database. • Having clear idea about API development and Management Strategy. • Experience with API automation testing
Quality Engineer (2 Resources)	• B.E/B.Tech with 5+ years of strong experience in ETL/Database and Data testing • Strong Analytical, Development and Testing skills, including a thorough understanding of how to translate requirements into design specs, coding and creating test scenarios for functional and end-to-end testing • Apply business and functional knowledge including testing standards, guidelines, and testing methodology to assure the quality of data and application functionality. • Ensure all testing results are easily accessible and understandable. Track defects to closure and keep defect repository up-to-date. • Test Automation preferably in scripting language Shell/Perl/Python on UNIX

	• Knowledge of web automation frameworks like Selenium, Protractor etc. is an added advantage
	• Experience in ETL Testing for Source to Target and Testing Transformation Business Logics.
	• Should have experience and Strong Knowledge in SQL/Python

12 Key application and Design principles

a) The section contains the description of the key design principles which are expected to provide indicative measures to define the functional requirements for the services. The following architecture principles which have been considered while designing the proposed solution

Application Design Principles	Detail
Multi-Tenancy	The proposed solution should work for any other similar kind of organization without doing any change in the software
Interoperability	a) Software solutions and hardware infrastructure should conform to the defined industry standards that promote interoperability of data, applications and technology. b) Keeping in view the evolving needs of interoperability, especially the possibility that the solution would become the focal point of delivery of services, and may also involve cross-functionality with the e-Government projects of other departments / businesses in future, the solution should be built on Open Standards.
Extensibility & Scalability	a) Applications must evolve to support new business requirements and make use of new technologies. The system

	shall be extensible and scalable to allow additional capacity/ bandwidth/ volume of users in future.
Design for performance and reliability measurement	a) Applications and technology components (processors, network, etc.) should be implemented in such a manner that Service levels required like a sub-second response to authentication is complied with. b) The application must allow efficient utilization and performance of underlying compute, network and security infrastructure. The deployment architecture must allow for fault tolerance and load balancing, and enable horizontal scaling of servers and storage upgrades without affecting solution uptime
Security	a) The System to be implemented under this project should be highly secure, considering the requirements of handling sensitive data. The overarching security considerations are described below. b) The security services used to protect the Solution shall include: Identification, Authentication, Authorization, Role-based Access Control, Administration and Audit with support for industry standard protocols. c) Where feasible sensitive data should be encrypted both at rest in motion. d) The solution should provide a facility for maintaining an audit trail of all the transactions. e) Tamper proof data storage system needs to be used to prevent unauthorized operations. f) The login ID, passwords any other information should be securely stored using encryption technologies.

Ease of Use	a) This is a big design consideration given that common citizens should be able to use this application. It should be intuitive, use-friendly to even the illiterate.

12.1 Proposed system

a) The proposed application would be an internet-based application running from a centralized location. The application would follow a modular architecture where in different modules would interact and share data between themselves.

12.2 Application Components

a) The solution must be accessible over the various Network platforms including Internet, Internet through Broadband and Mobile Networks, using devices such as Desktop Computers, Laptop Computers, Tablet PCs and Smart Phones for Data Entry, Download / Upload, Viewing and other applicable forms of access.

b) The Solution shall be governed and supported by the Standard Operating Procedures, which includes Security Audits, established Policies, Maintenance components such as SLA, AMC, etc., System Administration and Database Administration support, besides the infrastructure maintenance support for the Application Server, Database Server, OS and Middleware, Security Systems, Network Monitoring, Replication / Backup, Disaster Recovery Setup, etc.

c) The Application must interface with the external applications and systems as follows:

1) Other Applications/portal/APIs

2) Exporting Options (Reports/data in PDF and Excel formats)

3) SMS Gateway (for sending acknowledgements and alerts from the Application)

4) Data Warehousing Servers and Business Intelligence / Reporting Servers

5) Any other

12.3 Use of Proprietary and Third-party software

a) Successful bidder would use open source software as much and possible and in case there is need for use of any proprietary software bidder would disclose well before and seek approval for the same.

b) If there is any system software or application software belonging to the bidder is being used in developing the system, no additional license cost would be paid beyond the development cost quoted. TNeGA would be authorized to use that software to perpetuity (even if the contract is terminated for any reason) and bidder would continue to upgrade through the contract period.

c) If bidder uses any third-party software, system or application or any other, bidder will purchase all such licenses and support in the name of TNeGA and all such license costs would have to be factored in development costs. No additional license or support costs would be paid outside of the development costs.

12.4 Data Principles

a) The data strategy needs to be founded on clear, agreed-upon principles, such as the following:

Sl. No.	Data Principle	Rationale	Implication to proposed solution
1	**Data Availability**	Data should be readily available to those with a legitimate need for it.	Data will be organized and managed to maximize its value.
2	**Data simplicity**	Enhance intuitiveness and minimize change management with respect to data interpretation and usage	The way of storing data in database should be simple
3	**Data Creation** All organization data should be captured once at the point of its creation	i) Processes for data capture, validation, and processing should be automated wherever possible. ii) Data should only be	i) Minimize multiple touch points of input data and capture it at source. ii)Details are captured at the time of registration and only

		entered once. iii) Data should only be collected if it has known and documented use and value.	service transaction details are updated subsequently
4	**Data Update** Processes that update a given data item should be standard across the departments.	Ease of tracking of data update	Ensure that there is a known method of data update and tracking subsequently.
5	**Data duplication** Data should not be duplicated unless duplication is essential for practical reasons.	Data duplication leads to loss to data integrity over a period and must be minimized.	Data duplicated from the primary data source to be clearly identified as copies.
6	**Data Security**	Minimize losses due to inappropriate usage of sensitive data	Adequate data security standards to be adhered to.

12.5 Requirements on Adherence to Standards

a) The proposed solution should be designed based on open source and open standards, to the extent feasible and in line with overall system requirements, in order to provide interoperability with multiple platforms and avoid any technology or technology provider lock-in

b) The list of standards is indicated for reference but may not to be treated as exhaustive:

1) GIGW guidelines as per Government of India

2) W3C standards for Web pages

3) SOAP, HTTP/HTTPS for information access / transfer protocol

4) SOA and other Open standards for Web services Interoperability

5) RSA standards for Digital Signature

6) PKCS specifications for encryption

7) SSL protocols for secure communication

8) ISO 27001 for Information Security

9) IEEE/ ISO/ CMMI specifications of Documentation

10) Open Source for Software Development& Deployment

c) Architecture should be built on Internet involving n-Tier and should not be based on any proprietary standards. Application should be developed using web-based technology and run independent of Operating System and web browsers. Architecture should support multi-tenancy and should be compatible to host in any environment.

d) The coding and documentation should be compliant with the standards for quality of software and services as prescribed by the State Government and Government of India.

e) The application must support standard browsers like Firefox, Chrome, IE, and compatible with prevalent mobile browsers.

f) The solution must support complete scaling and growth without performance deterioration.

g) The response time to open / load a page should not exceed 03 seconds.

h) The time taken to complete a database transaction should not exceed 5 seconds.

i) Generation of MIS reports shall not take more than 15 to 30 seconds to display the same.

j) In addition to above, the proposed architecture must be scalable and flexible for modular expansion. It should ensure ease of integration with software / applications developed using common industry standards since the solution would be linked and connected to other sources (websites, contents, portals, systems of other Agencies).The proposed system must also adhere to any standards defined by GoI.

12.6 Compliance with UIDAI

a) Successful bidder would ensure that all data security and privacy infrastructure, practices, processes comply with Aadhar Act 2016, Rules and Regulations issued by UIDAI from time to time.

12.7 Compliance with Data protection bill

a) Successful bidder would ensure that all data security and privacy infrastructure, practices, processes comply with proposed Data protection Bill 2020, Rules and Regulations issued on the same from time to time.

12.8 Compliance with Open Standards

a) The proposed solution shall be compliant with industry standards, wherever applicable. This will apply to all the aspects of solution including but not limited to design, development, security, installation and testing.

13 Development methodology and approach

13.1 Application Study and Analysis of Requirements

a) The successful bidder would be required to study the existing applications and functioning of the departments in a manner that will enable the Successful Bidder to meet all the requirements of this RFP. Find the gaps in the existing process& application and suggest re-engineering (if required).

b) The successful bidder may gain an understanding of the existing application and requirements of the proposed system through gathering the requirements, Bidder shall analyze these requirements to ensure the requirements are complete, accurate, consistent and unambiguous.

13.2 Solution Design

a) Based on the requirements study completed, the design of the solution would be done by the selected System Integrator. An indicative list of documentation to be prepared as part of this phase:

1) Detailed Design document detailing Technical architecture (application, network, and security)

2) Data Architecture, interface architecture and integration architecture, appropriate load balancing and clustering techniques should be adopted by the Successful Bidder in the Solution design for meeting the requirements of the RFP.

3) UI/UX design with design principles 'keep it simple', 'easy to use', 'bi-lingual', 'intuitive', 'lesser clicks' and such.

4) SRS document shall be prepared and validated with TNeGA and to meet the standards specified in this RFP. The SRS Validated and approved by the TNeGA for all subsequent phases of application development and deployment from an Application requirements perspective.

5) The Successful Bidder is required to keep all such documentation up to date to reflect the latest enhancements/modifications made to the application.

b) Successful bidder would catalog each tech stack component open source, proprietary and third-party and seek explicit approval from TNeGA.

13.3 Code Management

a) Successful bidder would check-in all the code to the central repository provided by TNeGA every day.

b) Along with the code all automated test scripts of, unit test cases, integration test, performance test, penetration tests (if any) all such would be checked in the same code repository.

13.4 Application Development

a) The Successful Bidder would be responsible for developing, testing and implementing the end-to-end application. The application developed would be evaluated against the SRS as approved by TNeGA.

b) The Successful Bidder would be required to deliver the overall application including the web-portal and mobile app along with all the services and documentation in line with best practices.

c) The successful Bidder should consider appropriate open source technology stack for the development & production environment

d) The site will be best viewed with standard web browsers such as IE, Mozilla Firefox, Chrome, etc.,

e) Web portal shall have single view of all contact and basic information related TN Government including departments, citizens and others related agencies. The basic information related to TN Government shall be updated on regular basis whenever required using content management system.

f) All interface/pages performing similar functionality will have consistent look and feel. Appropriate titles will be given to each page. The titles will specify the functionality of the Page.

g) Access to the functionality of the application will be controlled based on the user type.

h) Navigation facilities will be provided to navigate from one page to another page with minimum number of clicks.

i) The Administration module would enable the system administrator to create the users, their roles and, configure the application for the business.

13.5 Application Testing & User Acceptance Testing(UAT)

a) Once the application development has been completed successful bidder will thoroughly test the application at his end. Selected successful Bidder should carryout unit testing, integration testing, system testing and performance / load testing. The inputs for this activity will be the design documents approved by TNeGA.

13.5.1 Unit Testing

a) Unit Testing will be done in parallel to the development by successful bidder also the test cases, test matrix and the snapshots of the test results will be submitted to TNeGA.

13.5.2 Integration Testing

a) The successful bidder shall thoroughly test theWeb Portal and mobile app at successful bidder's premises for functional testing and integrated testing as per the standards and proven

methodologies. A test report of the integration testing with snapshots shall be submitted to TNeGA at the time of submission of UAT Test cases.

13.5.3 Performance Testing/Load Testing

a) The successful bidder shall conduct performance testing on many parameters per the standard industry practices. At the time of requirement sign off the successful bidder may provide their study results for the number of concurrent users and average transactions per day of the proposed system and plan the Performance & Load Testing accordingly.

13.5.4 UAT server Installation

a) The successful bidder shall install and make available the Web Portal along with services for the purpose of UAT.

13.5.5 User Acceptance Testing (UAT)

a) The Successful Bidder will design detailed procedures for User Acceptance and also develop the UAT plan.

b) UAT shall be done at TNeGA and selected end locations/department users/Project location. Module wise bugs report shall be submitted to TNeGA. The bugs shall be resolved and retested by Successful Bidder.The test cases for UAT will be given by the Successful Bidder and validated by TNeGA and approved by TNeGA. The Department would inform the defects identified in each round of UAT to the Successful Bidder. The Successful Bidder will be required to troubleshoot or resolve the defects and resubmit the application to Department. This process of UAT will continue in an iterative manner **till zero defects are shown by the Successful Bidder for the test cases developed.**

c) The Successful Bidder also needs to ensure that errors/ defects detected in previous round of tests do not get repeated in successive tests.

d) The changes if any at this stage shall be made in the software without any additional cost and it shall be updated in SRS. The UAT shall be completed and signoff shall be obtained from TNeGA.

13.6 Release Management

a) The successful bidder should maintain the source code and other artifacts in a repository system. Every release the release build along with its release note should be maintained the repository. Anytime, the production environment can be rolled back to any of its previous versions without any difficulty.

13.7 Capacity Building and Training

a) Training plan for State, District and Block level offices must be prepared based on the training needs and objectives. The major components of capacity building and training programs are:-

   1) Identification training objectives

   2) Planning and Scheduling

   3) Preparation of training materials, help files etc.

   4) Provide the required training materials, manuals, help files in both soft and hard copies during the training session for all trainees.

   5) Conduct the training programme

   6) Address the user issues and resolve if required.

   7) Get feedback and close the feedback loop

b) The successful bidder should work out a training and capacity building plan with proper schedule and submitted as part of the plan for the project.

13.8 Software freezing

a) After UAT and pilot testing, the software shall be finalized for all the standardized parameters. The Web Portal and mobile app shall be ready for rollout.

13.9 Rollout and Deployment

13.9.1 Data Center and DR installation

a) The successful bidder shall size the hardware and software requirements for hosting & deployment and install the application in the production servers. The successful bidder shall finalize the architecture and server configuration and submit to TNeGA for validation and approval. The successful bidder shall install the Operating System, Database and Web services,

Web, Application, DB servers and other required components and services and support & install the necessary software The web server/middle ware servers shall be configured for the parameters standardized during the UAT and pilot. The application shall be replicated from staging server.

b) Any modification or corrections in the Web Portal and mobile application should be done in the staging server and pushed into the production server after testing. The application should comply with all the standardized parameters.

13.10 IT Infrastructure

a) The successful bidder shall do the capacity planning and estimate the HW requirements.

b) The Successful Bidder shall be responsible for hosting the Web Portal (responsive). TNeGA will buy the H/W & licenses and the successful bidder will support the installation, commissioning and other deployment activities with the OEMs and other stakeholders.

    1) Hosting must be done in Tamil Nadu State Data Center & the ELCOT DR Site.

    2) The proposed portal solution should provide followings without compromising in the quality & performance of the services:

        a. High Reliability

        b. High Availability (24*7*365) i.e. >99% Server Uptime

        c. High Scalability (500 concurrent users) with Load Balancing & Clustering as per the need.

        d. High Performance (The proposed solution should work even in low bandwidth like 128 Kbps using dialup connection)

        e. It should not take more than 3 seconds for responding to the users

c) The Successful Bidder shall deploy commission and configure the Software, Servers and Networks for the staging and production environment. The environment should be tested before Go-Live by the successful Bidder. The Successful Bidder should support the content management and training activities. The bidder shall ensure that the deployment strategy and solution for portal/mobile solutions is vendor neutral and not specific to any hardware.

13.11 Implementation and Support

a) The selected System Integrator's responsibilities during this phase would include:

1) Implementation and commissioning of the application.

2) Provide technical support to resolve any issues logged by internal and external stakeholders through the internet / Helpdesk.

3) Engage in patch management, testing and installation of software upgrades issued by the OEM/vendors from time to time.

13.12 Software Change management

a) Making enhancements / modifications to the application including web-portal arising from changes in legislation or regulations or change in user requirements or any other factors.

b) The Successful Bidder is expected to adopt the relevant procedures, protocols and standards of a mature Software Development Life Cycle (SDLC) including (but not limited to) the following for any enhancement / amendment done to the application during the course of the Project.

1) Feasibility study / Proposal for change

2) Requirement study

3) Design

4) Development

5) Unit and Integration testing

6) User acceptance testing

7) Rollout

c) Before proceeding to the next phase, the Successful Bidder shall ensure that formal approval of TNeGA for deliverables (including documentation) is obtained.

d) Even for enhancements/amendments to the application, the Successful Bidder will be required to prepare all documentation applicable as otherwise done for the Application as per industry standards. This includes but not limited to

1) Change request logs

2) Design documents

3) Test documents

e) Preparing at-least the following documentation as per industry standards at the implementations stage:

1) Software installation guide

2) Application release documents

3) User manuals &Training manuals

4) Detailed documentation of any changes to the application including proposed changes, impact to the system in terms of functional outcomes/additional features added to the system etc.

f) All documentation should incorporate necessary version control mechanism.

g) Change Requests, wherever applicable are to be handled by the successful bidder through support team stationed at TNeGA and **no additional cost shall be paid for change requests separately**. Successful bidder must continuously support these members with necessary technical and domain specific knowledge of the company and enable them to perform their duties as per requirement of this RFP.

13.13 Software Documentation

a) An indicative list of documents to be developed and maintained by the successful bidder is mentioned with various activities above. All documentation should be prepared as per latest Government standards and should incorporate necessary version control mechanism.

13.14 Non-Functional Requirements

a) Bug fixes and updates to the asset or the underlying software stack.

b) Bidder is required to provide scheduled operations 24 hrs a day, 7 days a week, for the portal.

c) The bidder is required to provide 99.9% system availability uptime measured over a calendar month based on Service Hours of 24/7/365 for the core modules.

d) The bidder shall provide SLA metrics for database backup, recovery and maintenance.

e) The bidder shall support resolution times for reported incidents as follows: -

1) Level 1 Severity - 4 hours

2) Level 2 Severity - 8 hours

3) Level 3 Severity - 16 hours

4) Level 4 Severity - Next release

f) The Technical & Functional requirements of State Family Database Platform have been categorized into following table:

S. No	Description	Specification
1	Design	a. Web based connected to internet
2	Architecture	a. Should support built-in fault tolerance, load balancing and high availability. b. Should have capability of providing caching functionality.
3	Platform	a. Platform independent/ capable of running on all major system environments
4	Database	a. All data (Spatial & Non-Spatial) and metadata should support standard RDBMS portability like Oracle, MS SQL, MySQL ,Postgres etc.
5	Integration	a. It should support integration based on standards such as XML b. It should support integration with Email Servers c. It should be integrated with digitization software
6	Search facility for records	Search should base on the following: a. Keyword Based Search on the metadata fields b. Nested Searches based on OR, AND, NOT operators c. Provision for automatic saving (through a log) all searches so as to track the usage pattern. d. Should mandatorily support wildcard searching. e. Search within search feature f. Advanced searches like misspelled words, typographical errors, phonetic searching, Word stem searching, etc. is preferred

7	Performance Benchmarks	a. User Login: User should be able to login within a maximum time of 3 seconds b. User Logout: User should be able to log out within a maximum time of 3 seconds c. Pages: ALL pages must open within a maximum time of 5seconds. d. Navigation: Users should be able to navigate from one to other page in maximum time of 3 seconds. Ability to go back on the previous pages by clicking back button in maximum time of 3 seconds e. Search: Searches must return results within a maximum time of 5 seconds f. Idle Time: Users should be logged out if application is not used more than 5 mins
8	Access Rights	a. Allows multiple user access levels and authorization of users depending on roles. b. Users shall not be able to delete records. c. Any changes in record shall be appended to the original record d. Security must conform to US DoD standards of records management
9	Security	a. Application should provide alerts in case of security breaches. The system requirement for security breaches is to be finalized during requirement analysis. b. Should have the ability to automatically remove temporary role assignments after a predefined period. c. Should provide security levels for classifying records as

		confidential, classified, public access etc.
10	Certification	a. Website Quality certification from STQC b. Security Auditing from Cert-in empaneled auditor.
11	Audit	a. Log all the actions done by individual users with user name with the following functions (not limited to): 1) Action which is carried out by the user 2) Object to which action is applied 3) User carrying out the action 4) Date and time for the action 5) Audit Trail Report 6) Should support both database and file system based audit logs a. Audit trail should record changes made to metadata associated with any folder or record b. Provide statistics to evaluate usage of repository

12	Reports and alerts	a. Provide statistical report on activity and status of all process flows b. Customizable dashboard view based on user rights. Provide the capability for end-users to create ad-hoc reports, that "on the-fly" c. Audit trail reports
13	Data Backup	a. Support automated backup and recovery facility for all records in tape library
14	Software Development Kits	a. Provision of all applicable software development kit and web services for interoperability for developing customized software on top of core software
15	Administration	a. It should provide web-based and desktop administration module. b. It should support multiple level of access rights like read, create, modify, soft / logical delete etc. on records and folders c. It should have inbuilt health and monitoring tool for proactive monitoring of application and services like No of active users, no of concurrent users, idle session time out etc.
16	Help	a. Proposed solution should provide context sensitive 'Help' operation.

13.15 Security Audit

a) The security audit shall be carried out by the empaneled vendors of TNeGA. The successful bidder should clear the issues (Non-Conformity) reported by the IT security audit agency. The audit certificate to be submitted to TNEGA before go-live. The cost of Security Audit shall be paid by the successful bidder.

14 Free Warranty and Operation & Maintenance

14.1 Duration of Free Warranty, Operations & Maintenance

a. The successful bidder should maintain the SFDB data platform for the entire contact period of 55.5 months – 7.5 months of development period, 12 month of Free Warranty period and 36 months of O&M period. The O&M is extendable by another 2 years with a 5% price escalation. The base price for escalation would be the average per year price quoted under O&M. The scope of work for free warranty and Operation & Maintenance consists of the comprehensive regular timely operations, maintenance, CR implementation, H/W and S/W installation & support, commissioning of H/W and S/W components, managing the system alerts & events etc.,

14.2 Continuous improvement and support team during Free Warranty

a) All change requests that may be required for any reason by the TNeGA or other Departments shall be made in accordance with the procedures to be established by the TNeGA/Department in this regard. The bidder shall ensure nil downtime of software, prompt execution of customization and enhancement requirements, version control mechanism and to develop smooth upgrades and version changes, ongoing training and feedback mechanism. change requests, wherever applicable are to be handled by the successful bidder through support team deployed at TNeGA and **no Additional cost shall be paid for change requests separately**. Successful bidder must continuously support these members with necessary technical and domain specific knowledge of the company and enable them to perform their duties as per requirement of this RFP.

14.3 Scope of work during Free Warranty, Operations and Maintenance

a) During the period of free warranty and O&M the following detailed activities should be performed one or more times based on the requirement. For the below activities, all human resources required are to be maintained and managed separately by the successful bidder, outside of the support team stationed at TNeGA, for managing any continuous improvements during the Free Warranty period.

    1) Bug fixes and updates to the underlying software/hardware stack.

2) Regular monitoring and maintenance of entire stack for optimal performance – applications, databases and servers.

3) Generation of adhoc reports requested by Government and other departments.

4) Addition/Removal/Update of content (static or dynamic) or layers including its authoring; where content includes, but is not limited to: Web pages, Style sheets, Images, Audio, Video, Maps, Animation, Scripting, AJAX interfaces, Flash interfaces/content etc. and authoring includes but is not limited to: capturing, development, testing, processing etc.

5) Server-side activities required for proper functioning, but not limited to: configuration, fine-tuning, optimization, scripting, and addition/soft deletion/updation of features for the applicable web server(s), application server(s), database server(s) etc.

6) Feedback-based continuous improvement.

7) Identification of Preventive and corrective measures with the respect to the changes occurring.

8) Maintain a log for the operations being done which can be used for further action.

9) BCP management

15 Deliverables& Timelines

a) The selected partner shall maintain and deliver the following documentation:

1) Project Plan and Schedule along with Project implementation timeline

2) Design Documents

3) Solution method and approach

4) Software Requirement Specifications (SRS)

5) Work Breakdown Structure

6) Customized dashboard and MIS Reports

7) Requirement Traceability matrix

8) Test reports

9) Release Management Plan

10) User Manuals, Help files, training materials and Trainings

11) Application Deployment Plan

12) Backup, restore procedure

13) SOP (Standard Operating Procedures) for O&M

14) Source code (complete source code with versions and latest version used in the Go-Live system)

15) Any other documentation as needed

15.1 Milestone Deliverable Matrix

S.No	Mile Stone	Deliverable(s)	Approval/Sign-off authority
1	SRS	SRS document, Use Cases, Test Cases & CRs	TNeGA
2	Design	Design Documents, Updated Plans, updated SRS & CRs	TNeGA
3	Development	Unit report, CRs & latest Source code version	TNeGA
4	System Testing (including Integration)	Test report, Action taken Report on Issues & CRs	TNeGA
5	UAT sign off	UAT report, Action Taken Report on Issues & CRs	TNeGA
6	Security Audit	Audit Report & Certificate	TNeGA
7	Training	Training materials, Participation list & Feedback form	TNeGA
8	Implementati	Server Logs for successful deployment and	TNeGA

S.No	Mile Stone	Deliverable(s)	Approval/Sign-off authority
	on	configuration, Screen shots of the portal, reports from the Live system and Source code of entire system (latest version deployed in the Go-Live system)	
9	Release Notes	Information on Build versions along with its relevant source code files and its related versions	TNeGA
10	Free Warranty Support	Bug fixing report, system Tuning report & Patch update. Incident and resolution report, Support personnel attendance, SLA compliance report, CRs, production support details report, Monthly task completion report.	TNeGA

15.2 Implementation Timeline

Milestone	Timelines (in weeks)
Award of Contract (LOA)	T1
Provide performance Bank guarantee, signing of contract and issue of work order	T2 = T1+1 Week
SRS Sign off	T3 = T2 + 3 Weeks
Development of internal SDK – Data Ingestion, Data Enrichment, Makkal_ID assignment, Data Quality Framework, Language,	T4 = T3 + 6 Weeks

Certification of Participating Databases)	
Ingest participating databases, enrich SFDB Core and prepare for certification (Priority 1 – 8 Departments)	T5 = T3 + 6 Weeks
Development of SFDB Backoffice – Department portal	T6 = T3 + 6 Weeks
Certification of participating databases (Priority1 - 8 Departments)	T7 = T6 + 4 Weeks
Development of SDK – Search, Authentication, Audit & History	T8 = T6 + 4 Weeks
Development of SFDB Backoffice – SFDB Validate and update	T9 = T8 + 4 Weeks
Application integration - SFDB Validate and Update with Department applications (Priority1 - 8 Departments)	T10 = T9 + 4 Weeks
Development of SDK - GIS, Consent Management, Data services, Data Exchange	T11 = T8 + 4 Weeks
Development of Makkal Portal - Resident Self-service, Consent Management, Department Portal	T12 = T10 + 4 Weeks
Ingest participating databases, enrich SFDB Core and prepare for certification (Priority 2 – 7 Departments)	T13 = T11 + 4 weeks
Certification of participating databases (Priority2 - 7 Departments)	T14 = T13 + 4 Weeks
Application integration - SFDB Validate and Update with Department applications (Priority2 - 7 Departments)	T15 = T14 + 4 Weeks
Integration with Predictive Service Platform	T16 = T11 + 6 Weeks
Free Warranty of 12 months after go-live	

O&M for 36 months after Free Warranty	

Note: Penalty/Liquidated damages will be levied for any delay as per clause. 7.11 and 7.12.

16 SLA Monitoring

16.1 Service Level Agreement for Software

a) The Web Portal should be developed, deployed and hosted in the state data center. Necessary application level support should be mainly at the server side. However, client level support shall be required when the issues are reported by department.

b) The successful bidder shall ensure system uptime more than 99%. The uptime will be monitored on a quarterly basis.

c) The initial contract is for a period of 55.5 months (7.5 months of development & deployment, 12 months as free warranty and 36 months for O&M support). The SLA will be monitored during this period.

d) The successful bidder will maintain logs for the entire contract period.

Sl. No.	Service	Expected service Level target	Penalty
1	System support - System Availability	99% uptime	a) 95% to 98.99%: 1% of milestone payment amount for every week from the date of SL slippage with a cap of 10% of milestone amount. b) Less than 95%: 2% of milestone payment amount for every week from the date of SL slippage with a cap of 10% of milestone amount. c) Beyond 10% penalty for the milestone, the Department may take a decision as per the exit clause.

2	Concurrent users	No performance degradation with 500 concurrent users	a) For 350 to 500 concurrent users: 1% of milestone payment amount for every week from the date of SL slippage with a cap of 10% of milestone amount. b) For less than 350 concurrent users: 2% of milestone payment amount for every week from the date of SL slippage with a cap of 10% of milestone amount. c) Beyond 10% penalty for the milestone, TNeGA may take a decision as per the exit clause.
3	Response Time for the SFDB Validate and Update page in the Application	1 second	a) For less than 2.00 second: No penalty b) For 2.00 sec to 3.00 seconds: 1% of milestone payment amount for every week from the data of SL slippage with a cap of 5% of milestone amount c) For more than 3.00 seconds: 2% of milestone payment amount for every week from the data of SL slippage with a cap of 10% of milestone amount
4	Response Time for the Resident self-service, Citizen Consent Management and SFDB Department Portals	2 second	a) For less than 3.00 second: No penalty b) For 3.00 sec to 5.00 seconds: 1% of milestone payment amount for every week from the data of SL slippage with a cap of 5% of milestone amount c) For more than 5.00 seconds: 2% of milestone payment amount for every week from the data of SL slippage with a cap of 10% of milestone amount
5	Response Time for reports on SFDB Department Portal, SFDB certification portal	3 second	a) For less than 5.00 second: No penalty b) For 5.00 sec to 10.00 seconds: 1% of milestone payment amount for every week from the data of SL slippage with a cap of 5% of milestone amount c) For more than 10.00 seconds: 2% of milestone payment amount for every week from the data of SL slippage with a cap of 10% of milestone amount

16.2 Support team deployed for continuous improvement

a) Successful bidder would manage the absenteeism of support team deployed at TNeGA by deploying similar skilled resources within 3 days. For the period of absence support team cost would not be paid prorated for the days absent for each member. In case the replacement resources are not provided within 3 days, a penalty of 2% of the per person-month support team cost would be levied for every week after 3 days, with a cap of 10% of the per person-month support team cost.

b) Successful bidder would replace the support team members on request of TNeGA for any reasons and the same should be provided within 7 days. For the period of absence support team cost would not be paid, prorated for the days unavailable. For non-replacements beyond 7 days, a penalty of 2% of the per person-month support team cost for every week after 7 days with a cap of 10% of the milestone payment.

17 Intellectual Property Rights (IPR)

a) The ownership and IPR of the deliverables made under this Contract would always rest with TNeGA. The ownership and IPR of the Proprietary tools and/or other tools used by the successful bidder or third party or parties for the purpose of making the deliverables would always rest with the respective parties. The successful bidder would disclose such tools to be used under this Contract to TNeGA.

18 Review and Monitoring

a) The successful bidder should be accountable to TNeGA for successful implementation of the web portal and mobile app. TNeGA will hold scheduled review meeting and the successful bidder should report the progress to TNeGA and adhere to the decisions made during the review meeting.

19 Exit Clause

a) At the time of expiry of contract period, as per the contract between the parties, the successful bidder should ensure a complete knowledge transfer to the new professional replacing them

within a period of 4 weeks. The successful bidder at the time of exit process will supply the following.

     i.   All information relating to the work rendered

    ii.   Project data and confidential information

   iii.   All other information including but not limited to documents, records and agreements relating to the services reasonably necessary to TNeGA or any other agency identified to carryout due diligence in order to transition the provision of services to TNEGA or any other agency identified.

   iv.   All properties provided by TNEGA shall be returned.

    v.   Before the date of exit, the successful bidder shall deliver to TNEGA all new and updated deliverables and shall not retain any copy thereof.

20 Payment Terms

a) No advance payment will be paid. Stage-wise payment will be released based on the milestone deliverables completed and approved by TNEGA.

b) The payment will be released in stages on achieving the following milestones:

Total project development cost

S. No	Milestone	% of Total Development price	Basis of Approval
1	SRS Sign Off	5%	On approval of TNeGA
2	Certification of priority1 8 Databases.	10%	On approval of TNeGA
3	Application integration – SFDB	10%	On approval of TNeGA

S. No	Milestone	% of Total Development price	Basis of Approval
	validate and update with department applications (priorit1 – 8 Departments)		
4	Go live Makkal Portal	20%	
5	Certification of priority1 8 Databases.	10%	On approval of TNeGA
6	Application integration – SFDB validate and update with department applications (priorit1 – 8 Departments)	10%	On approval of TNeGA
7	Integrating Predictive service	5%	On approval of TNeGA
8	Interactive Analytics Platform	5%	On approval of TNeGA
9	On completion of Free warranty period of 12 months	20%	On approval of TNeGA
10	Total cost	95%	

Support team and O&M Costs

S. No	Milestone	Basis of Approval
1	Support team costs for continuous	Payment will be released end of every

S. No	Milestone	Basis of Approval
	improvement during Free Warranty period	quarter on pro-rata basis, upon approval from TNeGA
2	O&M for a period of 36 months after Free Warranty period	Payment will be released end of every quarter on pro-rata basis, upon approval from TNeGA

c) 5% of the total development cost (Item 1.01 of BoQ) will be paid after successful completion of exit management clause as per cl. 17 of RFP

d) Any payment due to the successful bidder will be released within 30 days from the date of receipt of bills along with acceptance from TNeGA.

e) The TDS amount, Penalty if any, will be deducted from the payment of successful bidder.

f) The Taxes as applicable during the contract period as specified in the Tender will be paid by TNeGA. In case, the Taxes have been reduced retrospectively, the successful bidder shall be liable to return the same to TNeGA.

g) The successful bidder shall have full and exclusive liability for payment of all Taxes and other statutory payments payable under any or all of the Statutes/Laws/Acts etc., now or hereafter imposed to the respective statutory authorities. TNeGA will not be responsible or liable for default on payment of axes to the statutory authorities.

21 APPENDIX – I: Bank Guarantee Format

(To be executed in Rs.100/- Stamp Paper)

To

The Chief Executive Officer,

Tamil Nadu e-Governance Agency,

807,2nd floor, PT Lee Chengalvarayan Naicker Building,

Anna Salai,

Chennai – 600002

Bank Guarantee No:

Amount of Guarantee:

Guarantee covers from:

Last date for lodgment of claim:

This Deed of Guarantee executed by ……………….. (Bankers Name & Address) having our Head Office at …………………..(address) (hereinafter referred to as "the Bank") in favor of CEO, TNeGA, registered under Societies Act and wholly owned by Government of Tamil Nadu and having its Registered office at No.807, 2nd Floor, PT Lee Chengalvarayan Naicker Building, Anna Salai, Chennai- 600 002 (hereinafter referred to as "the Beneficiary") for an amount not exceeding Rs._____/- (Rupees _____ Only) as per the request of M/s. _____having its office address at _____ (hereinafter referred to as "Successful Bidder") against Letter of Acceptance reference _____ dated __/__/____ of M/s. Tamil Nadu e-Governance Agency for the tender ref: TNeGA/OT/SFDB/2020-2021 - **Selection of System Integration Partner for TNeGA to develop and deploy State Family Database (SFDB), Data Integration and Exchange Platform for Government of Tamil Nadu**. This guarantee is issued subject to the condition that the liability of the Bank under this guarantee is limited to a maximum Rs._____/- (Rupees _____ Only) and the guarantee shall remain in full force upto ___ months

from the date of Bank Guarantee and cannot be invoked otherwise by a written demand or claim by the beneficiary under the Guarantee served on the Bank before ___months from the date of Bank Guarantee.

AND WHEREAS it has been stipulated by you in the said ORDER that the Successful Bidder shall furnish you with a Bank Guarantee by a Scheduled / Nationalized Bank for the sum specified therein as security for compliance with the Successful Bidder performance obligations for a period in accordance with the contract.

AND WHEREAS we have agreed to give the Successful Bidder a Guarantee.

THEREFORE, we (Bankers address)……………., hereby affirm that we are Guarantors and responsible to you on behalf of the Successful Bidder up to a total of Rs._____/- (Rupees _____ Only) and we undertake to pay you, upon your first written demand declaring the Successful Bidder to be in default under the contract and without any demur, cavil or argument, any sum or sums within the limit of Rs._____/- (Rupees _____ Only) as aforesaid, without your needing to prove or show grounds or reasons for your demand or the sum specified therein. We will pay the guaranteed amount notwithstanding any objection or dispute whatsoever raised by the Successful Bidder.

This Guarantee is valid until __ months from the date of Bank Guarantee. Notwithstanding, anything contained herein, our liability under this guarantee shall not exceed Rs._____/- (Rupees _____ Only). This Bank Guarantee shall be valid up to __ months from the date of Bank guarantee and we are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only and only if you serve upon us a written claim or demand on or before_____.

In witness whereof the Bank, through its authorized Officer, has setits, hand and stamp on this……………………………….at ……………………………….

Witness:

(Signature)

(Name in Block Letters)

22 APPENDIX – II: Model Form of Contract

(To be executed on a Rs. 100/- Non-Judicial Stamp Paper bought in Tamil Nadu by the Successful Bidder)

(NO FIGURES IN NUMERALS OR WORDS SHALL BE FILLED UP INTHIS SAMPLE FORM AT THE TIME OF SUBMISSION OF TENDER)

This CONTRACT is made at Chennai on the.......... day of 2021

 BETWEEN

Tamil Nadu e-Governance Agency, registered under the Tamil Nadu Societies Registration Act 1975 and having its Registered Office at 807, P.T.Lee.Chengalvarayan Naicker Maaligai, Anna Salai, Chennai - 600 002 , being the Service recipient (hereinafter referred to as "TNeGA" which expression shall unless repugnant to the context mean and include its successors and assigns) on Behalf of Government of Tamil Nadu of the FIRST PART.

AND

……………………., a firm represented herein by ……………………., aged ….years and having its Registered office at …………………………………………(hereinafter referred to as "Successful Bidder" which expression shall unless repugnant to the context mean and include its successors and assigns) of the SECOND PART.

Whereas, TNeGA invited a tender vide Tender Ref: TNeGA/OT/SFDB/2020-21 for Selection of System Integration Partner for TNeGA to develop and deploy State Family Database (SFDB), Data Integration and Exchange Platform for Government of Tamil Nadu as per the Scope of Work (Clause 8) and Terms & Conditions (Clause 9 to 17) prescribed in the Tender document.

Whereas TNeGA and the Successful Bidder in pursuance thereof have arrived at the following terms and conditions.

NOW THEREFORE

In consideration of the mutual protection of information herein by the parties hereto and such additional promises and understandings as are hereinafter set forth, the parties agree as follows:

Purpose

The purpose of this Agreement is to maintain in confidence the various Confidential Information, which is provided between TNeGA and System Integrator (Successful bidder) to perform the considerations (hereinafter called "Purpose") set forth in below:

Definition

For purposes of this Agreement, "Confidential Information" means the terms and conditions, and with respect to either party, any and all information in written, representational, electronic, verbal or other form relating directly or indirectly to the Purpose (including, but not limited to, information identified as being proprietary and/or confidential or pertaining to, pricing, marketing plans or strategy, volumes, services rendered, customers and suppliers lists, financial or technical or service matters or data, employee/agent/ consultant/officer/director related personal or sensitive data and any information which might reasonably be presumed to be proprietary or confidential in nature) excluding any such information which (i) is known to the public (through no act or omission of the Successful Bidder in violation of this Agreement)

is lawfully acquired by the Successful Bidder from an independent source having no obligation to maintain the confidentiality of such information was known to the Successful Bidder prior to its disclosure under this Agreement

was or is independently developed by the Successful Bidder without breach of this Agreement

is required to be disclosed by governmental or judicial order, in which case Successful Bidder shall give the TNeGA prompt written notice, where possible, and use reasonable efforts to ensure that such disclosure is accorded confidential treatment and also to enable the TNeGA to seek a protective order or other appropriate remedy at TNeGA's sole costs.

Confidential Information disclosed orally shall only be considered Confidential Information if: (i) identified as confidential, proprietary or the like at the time of disclosure, and (ii) confirmed in writing within Seven (7) days of disclosure.

No Licenses

This Agreement does not obligate either party to disclose any particular proprietary information; to purchase, sell, license, transfer, or otherwise dispose of any technology, services, or products; or to enter into any other form of business, contract or arrangement. Furthermore, nothing contained hereunder shall be construed as creating, conveying, transferring, granting or conferring by one party on the other party any rights, license or authority in or to the Confidential Information disclosed under this Agreement.

Disclosure

Successful Bidder agrees and undertakes that it shall not, without first obtaining the written consent of the TNeGA, disclose or make available to any person, reproduce or transmit in any manner, or use (directly or indirectly) for its own benefit or the benefit of others, any Confidential Information save and except both parties may disclose any Confidential Information to their Affiliates, directors, officers, employees or advisors of their own or of Affiliates on a "need to know" basis to enable them to evaluate such Confidential Information in connection with the negotiation of the possible business relationship; provided that such persons have been informed of, and agree to be bound by obligations which are at least as strict as the recipient's obligations hereunder. For the purpose of this Agreement, Affiliates shall mean, with respect to any party, any other person directly or indirectly Controlling, Controlled by, or under direct or indirect common Control with, such party. "Control", "Controlled" or "Controlling" shall mean, with respect to any person, any circumstance in which such person is controlled by another person by virtue of the latter person controlling the composition of the Board of Directors or owning the largest or controlling percentage of the voting securities of such person or by way of contractual relationship or otherwise.

The Successful Bidder shall use the same degree of care and protection to protect the Confidential Information received by it from the TNeGA as it uses to protect its own Confidential Information of a like nature, and in no event such degree of care and protection shall be of less than a reasonable degree of care.

The TNeGA shall not be in any way responsible for any decisions or commitments made by Successful Bidder in relying on the TNeGA's Confidential Information.

Return or Destruction Of Confidential Information

The parties agree that upon termination/expiry of this Agreement or at any time during its currency, at the request of the TNeGA, the Successful Bidder shall promptly deliver to the TNeGA the Confidential Information and copies thereof in its possession or under its direct or indirect control, and shall destroy all memoranda, notes and other writings prepared by the Successful Bidder or its Affiliates or Directors, officers, employees or advisors based on the Confidential Information and promptly certify such destruction.

Independent Development and Residuals

Both parties acknowledge that the Confidential Information coming to the knowledge of the other may relate to and/or have implications regarding the future strategies, plans, business activities, methods, processes and or information of the parties, which afford them certain competitive and strategic advantage. Accordingly, nothing in this Agreement will prohibit the Successful Bidder from developing or having developed for it products, concepts, systems or techniques that are similar to or compete with the products, concepts, systems or techniques contemplated by or embodied in the Confidential Information provided that the Successful Bidder does not violate any of its obligations under this Agreement in connection with such development.

Injunctive Relief

The parties hereto acknowledge and agree that in the event of a breach or threatened breach by the other of the provisions of this Agreement, the party not in breach will have no adequate remedy in money or damages and accordingly the party not in breach shall be entitled to injunctive relief against such breach or threatened breach by the party in breach.

Non-Waiver

No failure or delay by either party in exercising or enforcing any right, remedy or power hereunder shall operate as a waiver thereof, nor shall any single or partial exercise or enforcement of any right, remedy or power preclude any further exercise or enforcement thereof or the exercise of enforcement of any other right, remedy or power.

This Contract shall remain in force during the initial contract period of 55.5 months as per the deliverables and scope of work from the date of signing of this contract. TNeGA may renew/extend the contract for additional 24 months with a price escalation of 5% using the average annual O&M

price quote as a base. This may be agreed to by both the parties after completion of initial contract period.

The Successful Bidder agrees to deliver the services as per the scope indicated in the Tender Scope of Work and terms & conditions of this Tender within the stipulated period prescribed by TNeGA at the cost arrived at in the financial bid. This cost is firm and not subject to enhancement.

The Contract or any part share of interest in it shall not be transferred or assigned by the Successful Bidder directly or indirectly to any person or persons whomsoever without the prior written consent of TNeGA.

Neither TNeGA nor the Successful Bidder shall be liable to the other for any delay or failure in the performance of their respective obligations due to causes, contingencies beyond their reasonable control such as:

Natural phenomena including but not limited to earthquakes, floods and epidemics.

Acts of any Government authority domestic or foreign including but not limited to war declared or undeclared.

Accidents or disruptions including, but not limited to fire and explosions.

The tender (RFP) document in relation with this contract shall be deemed to form and be read and construed as part of this Contract. The Tender enclosures, the offer submitted by the Successful Bidder, the finalized Terms and Conditions and the LoA/Work Order respectively will form part of this contract. Wherever the offer conditions furnished by the Successful Bidder are at variance with conditions of this contract or conditions stipulated in the RFP document, the final negotiated offer conditions shall prevail over the tender conditions furnished by the Successful Bidder.

Liquidated Damages (LD) – as per cl.7.11 of this RFP

Service Level Agreement – as per cl. 16 of this RFP

Implementation Timeline– as per cl. 15.2 of this RFP

Payment Terms – as per cl.20 of this RFP

The Successful Bidder shall be liable and / or responsible for the compliance of all Statutory Provisions, especially those relating to Labour Laws in respect of this Contract.

Any notice from one party to the other given or required to be given hereunder shall be given by either:

Mailing the same by registered mail, postage prepaid, return receipt requested; or

Having the same delivered by courier with receipt acknowledged at the address set forth above or with other addresses and to the attentions of such other person or persons as may hereafter be designated by like notice hereunder and any such notice shall be deemed to have been served if sent by post on the date when in the ordinary course of post, it would have been delivered at the addresses to which it was sent or if delivered by courier on the date of acknowledgement of receipt.

In case of breach of any of the conditions of the contract by the Successful Bidder during the contract period, TNeGA reserves the right to recover costs/liabilities arising directly due to such breach from the Successful Bidder.

Termination of Contract – as per cl.7.9 of this RFP.

IN WITNESS WHEREOF the Parties have by duly authorized Representatives set their respective hands and seal on the date first above

Signed by:

(Name and designation) For and on behalf of TNeGA

(FIRST PARTY)

Signed by:

(Name and designation) For and on behalf of Implementation Partner

(SECOND PARTY)

WITNESSES:

1. (for FIRST PARTY)

2. (for SECOND PARTY)