DEPARTMENT OF SCHOOL EDUCATION
GOVERNMENT OF NAGALAND

REQUEST FOR EXPRESSION OF INTEREST
(CONSULTING SERVICES – FIRMS SELECTION)

REOI Ref. No.: PMU-NEP-15/PROC-TAMS-1/2021-22

SELECTION OF AGENCY OR SI TO DESIGN, SETUP, AND MAINTAIN TEACHER ATTENDANCE MONITORING SYSTEM (TAMS) USING FACE RECOGNITION.

NAGALAND EDUCATION PROJECT – THE LIGHTHOUSE
"NAGALAND: ENHANCING CLASSROOM TEACHING AND RESOURCES"
(NECTAR)

Principal Director
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Government of Nagaland
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REQUEST FOR EXPRESSIONS OF INTEREST

Country - India

Project – NAGALAND EDUCATION PROJECT-THE LIGHTHOUSE (NAGALAND ENHANCING CLASSROOM TEACHING AND RESOURCES) (P172213)

Assignment Title: Selection of Agency or SI to design, setup, and maintain Teacher Attendance Monitoring System (TAMS) using Face Recognition.

Reference No.: PMU-NEP-15/PROC-TAMS-1/2021-22

1. The Department of School Education (DSE), Government of Nagaland (GoN) has received financing from the World Bank toward the cost of the Nagaland Education Project – The Lighthouse / Nagaland: Enhancing Classroom Teaching and Resources (NECTAR) Project and intends to apply part of the proceeds for consulting services.

2. The project has been prepared with the development objective of improving the learning experience in select schools and enhancing school education governance and management across the state. The project development objective is to (i) enhance the governance of schools across the state; and (ii) improve teaching practices and learning environments in selected school complexes.

3. The DSE now invites eligible Agency or SI or System Integrator ("Agency" or "SI") to indicate their interest in providing the services. The services ("Services") are to support the Project Management Unit (PMU) of "Nagaland: Enhancing Classroom Teaching and Resources (NECTAR)" project with requisite experience and capabilities. The support will be as per Terms of Reference (TOR). The detailed Terms of Reference for the assignment can be found at the following weblink: https:// https://nagalandtenders.gov.in/nicgep/app and https://education.nagaland.gov.in   The TOR for the assignment is attached as Annexure-I.

   More details about the project can be found in the Project Information Document (PID) on the World Bank Website:

   https://documents.worldbank.org/en/publication/documents-reports/documentdetail/367221603096245045/project-information-document-nagaland-enhancing-classroom-teaching-and-resources-p172213

4. The Services will be delivered for a tentative period of forty-eight (48) months out of which nine (09) months for design, development implementation and thirty-nine (39) months for operation and maintenance of the facility, subject to extension, if necessitated by the requirements of the project, for a duration to be determined by the DSE, GoN at the close of the contract.

5. Interested Agency or SI should provide information demonstrating that they have the required qualifications and relevant experience to perform the Services. The short-listing criteria are:

   a. The Agency or SI should be eligible as per applicable Procurement Regulations of the World Bank.
   b. General experience of the Firm(s) in the areas of application-based software development, system integration (specially projects involving central web-based solutions and hosting services), facility management services, real time data tracking, experience in implementation of Attendance Monitoring System (AMS) for entities like department/PSU/Corporation etc. The experience of implementing such project in schools/educational institutions/offices would be an added advantage. Copy of work order/ PO along with experience certificate should be enclosed with proposal

c. Financial soundness: The firm/SI should have a minimum average annual turnover for the last three years (FY 2017-18, 2018-19, 2019-20) of INR 3 (three) crores. Further, the Agency or SI should have a positive net worth in each of the three mentioned financial years.

d. The Agency or SI should have at minimum 10 (ten) nos. of software developers in company's payroll to achieve and manage the project. A copy of certificate issued by Company's HR/Company Secretary should be submitted as the supporting document or any statutory compliance proof w.r.t employee proof.

e. Working experience in north-eastern states will an added advantage. In that case details along with valid documentary evidences (such as assignments contracts / certificates etc.) should be submitted by the Agency with the EoI proposal

Agencies or SI are requested to submit the following supporting documents against the above- mentioned criteria:

(a) Registration paper of the firm(s);

(b) JV agreement/letter of intent (if applicable);

(c) Firm's informational brochure/booklet outlining its services.;

(d) Audited financial reports for last 5 years;

(e) Relevant Service experience record (including nature, total cost, total input in terms of staff month, employer, location of service, scope of services etc.)

6. The attention of interested Consultants is drawn to paragraphs 3.14, 3.16, and 3.17 of the "**World Bank Procurement Regulations, 2016**" for IPF Borrowers (Revised November 2020), setting forth the World Bank's policy on conflict of interest.

Agencies or SI may associate with other firms in the form of a **joint venture or a sub- consultancy** to enhance their qualifications. In the case of an association, all members of such "association" should have real and well-defined inputs to the assignment and the total number of firms including their associates shall be maximum of three. While indicating information relating to status of association, it shall be made clear whether responsibility of the firm is in the capacity of a Lead firm (lead partner) or as an associated firm (sub-consultant) or Joint Venture or a Consortium with detail scope of the services. In case of association in the form of sub-consultancy, the experience of sub-consultant shall not be considered in the evaluation. In case of a Joint Venture or a Consortium, all the partners in the Joint Venture and Consortium shall be Jointly and Severely liable for the entire contract, if selected.

Further, the experience of a parent company, subsidiary company, group of companies or associates (whatever the names) of the Agency shall not be considered in evaluation

7. Agency will be selected in accordance with the Quality and Cost Based Selection (QCBS) method as set out in Section VII, paragraph 7.3 of the World Bank's "Procurement Regulations for IPF Borrowers" July 2016, revised November 2020 ("Procurement Regulations").

8. Further information can be obtained at the address below during office hours. Queries may also be mailed at contact@nagalandeduproject.com with the subject line – "**Query _TAMS_<Name of the Firm>**" upto 23:59 Hrs 10th March, 2022. Please account for delays in response to queries.

9. Expressions of interest must be submitted on https://nagalandtender.gov.in w with the subject line – "**EoI_TAMS _<Name of the firm>**" by 1300 Hrs, 17th March 2022.

10. The Agency will need to enroll themselves on https://nagalandtenders.gov.in using the option "Online Bidder Enrolment". This enrolment is free at this point of time. Possession of a valid Class III Digital Signature (DSC) in the form of smart card/e-token in the Company's name is a prerequisite for registration and participating in the EOI submission activities through the website. For any further clarification on how to enrol and how to submit your proposal can be found at the following weblink

https://nagalandtenders.gov.in/nicgep/app?page=BiddersManualKit&service=page

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Terms of Reference

Selection of Agency to design, setup, and maintain Teacher Attendance Monitoring System (TAMS) using Face Recognition

1. **Introduction**

   Public school education in Nagaland consists of about 1953 government schools catering to around 150,000 students. Private schools in Nagaland constitute 717 private schools, 40% of which are in urban areas, enroll about 220,000 students.

   The public school system is characterized by systemic weaknesses in teaching quality and teacher workforce management, including a lack of reliable data on teachers, especially their classroom presence and performance. There is a lack of systems for reliably registering teacher presence/absence, detecting teacher proxies, and following up with measures/sanctions for these kinds of professional faults. The Department of School Education (DSE) realizes that while teaching positions at all levels of schooling were filled with regular teachers, there was a phenomenon of 'proxy-teachers' across the state, particularly in the more remote areas. This involved appointed teachers not taking classes themselves and instead sending unknown substitutes on their behalf. Overall, Nagaland has gaps across the education service delivery chain that ranges from basic issues, such as poor Infrastructure and student access challenges, to teaching quality and school performance.

2. **Overall Program Objective**

   2.1 The aim of the NECTAR project is to improve the overall quality of education in the state. Given the current state of educational access, equity, and quality in Nagaland, it is imperative that any intervention within the state takes a holistic approach to improving teaching-learning practices. This project intends to focus on specific areas, across different levels:
   - Enhancing the capabilities of the state to deliver quality education services, and
   - Improving the quality of learning environments in schools.

   2.2 Improving system and school management will focus on creating a more resilient and tenacious education system, which will enhance the capabilities of the system thereby strengthening it and establish outcome-based information system. Technological intervention will be critical to support teaching and learning. Enhancing teaching and learning environment will need a roadmap for quality improvement, case studies and live examples of how to improve teaching and learning for efficient governance. The project will also require technical assistance to manage communication along with a strategy for managing contingency.

   2.3 Nagaland State Government intends to build a Teacher Attendance using Face Monitoring System Recognition technique, as part of the World Bank supported "Nagaland: Enhancing Classroom Teaching and Resources (NECTAR)" project. The purpose of TAMS is to provide all the schools, teachers, and school leaders in Nagaland with the necessary software and hardware tools in order to report daily teacher attendance in a reliable and timely manner. For this purpose, TAMS will specifically employ the facial recognition technology for person identification, along with location and time stamping.

   2.4 **The objectives of the TAMS for Agency or SI are as follows:**

   a. To develop an exclusive software with specific features that can work in Tablet + Mobile (Android and iOS) and Web (all major browsers).

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b. To deploy and provide maintenance services of developed software in every school.
c. To provide periodic analytics of attendance data of school leaders, teachers, and other staff through in-school hardware and their personal devices.
d. To ensure the data privacy norms as instructed by GoN are always met.

3. Scope of Services by the Agency or SI:

The goal of the Agency or SI is **to design, develop and deploy software, and maintenance services for TAMS, for all 1953 schools across 16 districts of Nagaland for a period of 48 months. Agency or SI need to propose necessary server requirements to DSE. DSE will provide the server to Agency or SI for deployment and operations.** Please note that the services are 'indicative' and may be detailed by the GoN at a later stage.

3.1 Project Implementation Phase

a) Requirement Analysis and Solution Design

The selected Agency or SI is required to carry out detailed level of requirement analysis and current system study in consultation with the identified stakeholders. Agency or SI is required to understand the exact scope of the application, detailed list of schools, existing teachers' data to be collected from the department during this phase. The Agency or SI has to prepare discovery questionnaire, requirement traceability matrix etc. to finalize the high-level Business Requirement Document (BRD) before proceeding to create the functional design. Agency or SI has to prepare a functional design for the application. The functional design for the system to be developed by the Agency or SI will be approved and signed off for implementation by the DSE after proper review and discussion. The implementation Agency or SI will then submit the technical design which has to be prepared based upon the approved functional design detailing out the technical components and module designs.

b) Data Collection and Validation

The SI is required to collect all data pertaining to the existing teachers, school of the states to prepare them for data entry into the proposed system. Data collection shall be performed at department level, district level and sub-divisional headquarter level. The Agency or SI is required to get the collected data verified and validated by the department before updating the data in the system. Data collection and up-dation in the system will be one time as well as incremental in nature as and when required as per the project.

c) Application Development/Customization

The Agency or SI can either propose bespoke development of the application based on the system study done or can opt for COTS implementation after required customization if any off-the-shelf product meets the requirement of the proposed system. The Agency or SI is advised to provide their quote accordingly on the implementation approach they deem fit. In both the approaches the Agency or SI is expected to complete development/ customization of the application following best practices of software engineering including unit testing, systems testing, performance testing and security testing. Department should be updated regularly on all the status of the development cycle and submit reports after completion of each phases of activities.

The Agency or SI can carry out the development/ of the system in the DSE office premises. However, they are required to ensure that the final product developed can be hosted in the server infrastructure commissioned by the GoN.

d) Data Digitisation/ Data Entry

The Agency or SI is required to digitize all the data collected for teachers, schools in the system developed after proper validation is done by the department. The Agency or SI is required to get a sign off from the department on the accuracy of the data digitalization performed in the system by them.

e) Application Hosting

The Agency or SI is required to host the final production version of the application in DSE Server, The Server Details and requirements have to be suggested by the Agency or SI to DSE during the submission of SRS and FRS. DSE will start a separate procurement process for the same. The Agency or SI has to communicate their choice of data center for hosting TAMS in writing to the department for its consideration and approval. The Agency or SI should also host a copy of the application in their own server. GoN/DSE is not responsible for commissioning any servers, software's for development or testing purposes. Any server, software required for development and testing must be procured by the SI, at their own cost which may be accessed by the department for training, testing or demo purpose.

f) Application Demo

The Agency or SI has to make presentations of the application to the department and other stakeholder before UAT from time to time or as and when required by department, for sign off by the department for the security certification.

g) Security Certification

The Agency or SI is required to get the developed application security certified by any CERT-IN empaneled Agency or SI before rolling out the application in the production environment. The SI shall also ensure that the software systems supplied has all the contemporary security-related features and features related to the security as prescribed under relevant security standards. The SI shall get the system audited before and after the start of the go-live.

h) Capacity Building / Training

The Agency or SI is expected to conduct detailed application training to 400 users before UAT and obtain sign off from the department for the same before proceeding for UAT.

i) UAT and Go-Live

Comprehensive User Acceptance Testing(UAT) has to be conducted by the Agency or SI and corresponding sign off to be obtained from the department on successful completion. Once the approval is obtained the production software can be rolled out.

j) Licenses

The Agency or SI is required to procure/ supply required licenses for software for production/ hosting as necessary. The agency should factor the prices for such licenses required for their solution in the financial proposal.

3.2 Scope of Services - Operation and Maintenance Phase (O&M)

a) Overview of Post Implementation Services

After the Go-Live, the Agency or SI is to provide operation and maintenance of the Tablet + Mobile (Android and iOS) and Web (all major browsers) for a period of thirty-nine (39) months from the date of Go-Live. During this period the Agency or SI is required to provide all the necessary support and resolution for any technical or functional issue in the applications including any enhancement or bug fixing. If the Agency or SI is opting to engage any other third party for the application hosting, then Agency or SI is expected to carry out all required co-ordination with the third party.

b) Data Collection and Data Entry/ Data Up-dation

The Agency or SI has to enter new records for teachers, schools into the system to keep both the modules updated at all times during the O&M period on case-to-case basis when new teachers are appointed or new schools are introduced in the system or in case any information pertaining to teachers, school needs to be updated by the department. Moreover, in case of approved change requests from teachers for correction of their personal information, Agency or SI is expected to carry on the necessary data correction and updating as required for those records.

c) Technical Support

The Agency or SI is expected to provide continuous technical support accordingly till the end of the project period.

d) Operation Support and Handholding

The Agency or SI has to setup a support phone (local Number or Toll Free for two (2) parallel line numbers) based helpdesk for the application support and issue resolution and a dedicated team of personnel to be available with the department for the entire period of Operation and Maintenance phase. The operations executives may have to provide application handholding to the users of the application on case-to-case basis. Moreover, the operations executives may have to engage in data collection from the departments for any new records to be created or data to be updated.

e) Collection and Maintenance of Attendance Records of Teachers

The Agency or SI is required to collect monthly attendance records of all teachers of each school from district and sub-division levels and to update the same into the system on a regular basis. The attendance records have to be collected and updated in the system and made available for the department within the first week of the next month for the records of the previous month. This scope will be part of operations & maintenance activity of the Agency.

3.3 Ownership of TAMS Application Source Code

The DSE shall be the sole owner of the TAMS application source code and the TAMS database. The Agency or SI shall hand over the source code and the related developer documentation inclusive but not limited to application architecture documentation, UML files, README files, configuration and installation guides, and API documentation (in a suitable media) immediately after the successful acceptance testing of the main version of the TAMS application and at every subsequent revision of the TAMS application

3.4 Ownership of TAMS Database

The Department of Education, Govt. of Nagaland shall be the sole owner of the TAMS database.
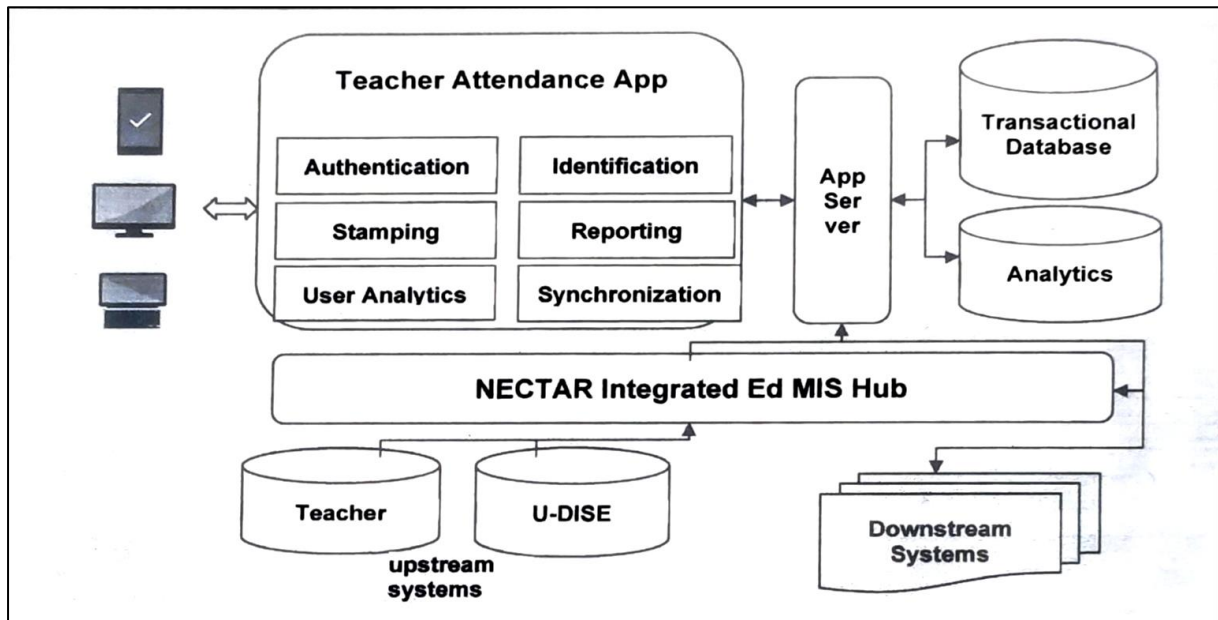
3.5 Exit Management

After the successful completion of the operation and maintenance period, the Agency or SI is expected to carry out the following activities required to complete the exit formalities:

I. Functional and Technical Knowledge Transfer of both the modules of the application to the personnel identified by the department.
II. Transfer the source code and digital database to the department.
III. Obtain Completion Certificate from the department.
IV. Submission of self-certificate declaring adherence to non-disclosure agreement and data privacy.

3.6 System architecture

The attendance management system will manage attendance in school setting to minimize learning loss due to Teacher's absence. The Tablet + Mobile (Android and iOS) and Web (all major browsers) will show real time attendance data automatically through using real time location systems, which also allows for cross linking between attendance data and performance via API (Application Program Interface). The system should be a light weight and modular in nature with potential web services/ API ready for any future integration with other similar system.

- Staff that have their smartphones:

  They will install the app on their mobile phones and register themselves to TAMS from their specific device (non-registered devices should not allow marking of attendance). They will record their attendance during **entry and exit** in campus, from the app installed in their registered mobile device. For recording, they must be present within the defined **geo-fence** of the school campus. The system will match their face data with the database. After verification, the attendance process is completed.
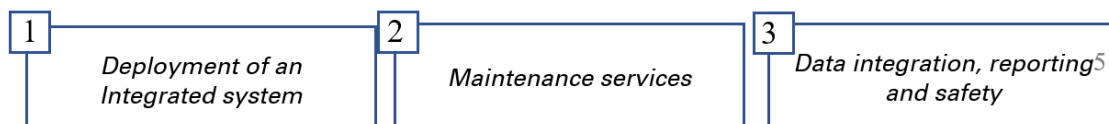
- Staff that don't have their smartphones:

  They will mark their attendance from the **Android Tablets** provided in every school campus. Such staff should stand in front of the tablets with a fair distance. The high-resolution front camera of the tablets will check the face data of the staff standing in front of it and matches their face data with the database

- Additional staff (such as CRC, BRC, visitors etc.):

  They will mark their attendance from the smartphone app of the super user (i.e. principal or anyone nominated by principal) or the designated school campus tablet (Clock in and out).

Note: The super user (as nominated by the GoN) should be able to mark the attendance of such staffs who don't have a smartphone or the registered device

3.8. The System Integrator (SI) is required to provide services as mentioned:

1	2	3
Deployment of an Integrated system	*Maintenance services*	*Data integration, reporting5 and safety*

3.8.1. <u>Deployment of an integrated system</u>

An integrated system here refers to a comprehensive packaged system of software. The Agency or SI must ensure installation and commissioning of Browser/Mobile/ Tablet based TAMS along with MIS analytics dashboard. The internet and electricity facility at school level will be provided by the DSE and GoN. The SI is required to deploy the integrated system that works under such conditions and offline as well.

The Agency or SI must also provide necessary training to the trainer and system integrator as and when required. Training to various stakeholders including teachers (primary & secondary) and administrative staff at each school, officials at district & at Head office (HO) level to be conducted before handing over the facility to GoN. At least one resource from each block to be identified and trained and will be in charge of the facility.

All required technical documentation pertaining to the below mentioned points needs to be created and shared with GoN beforehand:

➢ Software Requirement Specification (SRS)- It should as per latest IEEE standards.
➢ Functional Requirement Specification (FRS)- the Agency or SI will study the existing process, analyses the present cases, collecting the data, set up the data migration strategy etc.
➢ SMS email integration, load testing performance.
➢ E-signing, availability of Master data.
➢ User Acceptance Test (UAT).
➢ User Requirement Specification (URS).
➢ Change Request.
➢ User Manual.
➢ Specific format for maintaining MIS along with defining the time period.
➢ Back up policy, duration, strategy for disaster recovery plan. Recovery plan to be aligned with latest technology.
➢ Training and capacity building plan.
➢ Test cases
➢ Test Manuals etc.
➢ Assist in setting up of helpdesk or helpline for the facility. The SI will provide necessary training for smooth functioning of helpline facility.

3.8.1.1. Indicative Hardware: SI is expected to recommend the technical specifications for both Tablets and Server to DSE. Procurement of tablets and Server will be undertaken by DSE. These costs are not to be factored in the financial proposals by the agencies.

➢ **Indicative list of hardware is as below, however final requirement is required to assessed by the Agency/SI.**

Item	Quantity per school	Total quantity
Tablets (with sim and camera)	1	1953
Server	To be suggested by Agency or SI to DSE. DSE will procure the same to run the application.	

3.8.1.2. Software

The TAMS should be developed exclusively for DSE and GoN. The Agency or SI should keep the following specifications before heading to the software development:

➤ Not enforce any specific dependencies such as a proprietary tablet computer or a software subscription during development as well as for operation and Maintenance.

➤ As the software can be distributed via a variety of app stores and URL mediums, therefore should be capable to allow downloading in-
   ▪ At-least one tablet in each of the 1953 schools. the software must be developed for unlimited downloads via web (via a GoN/DSE owned URL and servers) and mobile+tablet (via Android and iOS app stores). If for any reason, the app or playstore distribution is denied (by Google or Apple), then app installers must be provided via a GoN hosted URL.
   ▪ The App installation must be provided for govt IT personnel's review and distribution in special circumstances such as complete lack of internet access as and when required by GoN.

➤ Following are the functional software specifications:

Features	Specifications
Functional requirements that software should support	
Authentication	- Offline-only as well online authentication - Acceptable methods of authentication- Username and password (should work offline)/ Phone and OTP/ Email
Identification	- Reliable, on-device face-recognition algorithm, licensed for perpetuity to the concerned Government Department - Following is a list of desired features of the face recognition-based identification module: a) Should consider facial hair changes, and hair, head gear or eyewear changes b) Should work with a facial mask on c) Should have an acceptable tolerance (+-10%) for changes in face postures - Be able to complete one round of identification within 2-5 seconds. If not, the technical glitch should automatically be reported to the system manager. For multiple failed attempts, the software freeze and an automatic notification goes to the super user
Stamping	- Mandatorily record tamper-proof *time and location stamps* (lat, long) at the start of the attendance capture as well as on successful completion of face recognition - Plan for backup in case of flitches in attendance recording/ face recognition/ stamping - It is important that face+time+location: all three parameters are authenticated together for a user to be marked PRESENT - In case of non-operability of any of the three parameters, the super user designated in school should be able to mark attendance
Reporting	- The software should allow for reporting both absence and presence data for the designated super user at the school level, typically the school principal. - Following details should be captured in the reporting module. a) User lD of the Reportee b) Reporting time and location c) If marking absence, then: *Reason for absence, Full or half day absence*
User Analytics	- The app should provide a set of in-app analytics for consumption by

Features	Specifications

	a variety of users
	- An additional all-access application analytics for administrators and super users shall be developed to provide insights into following areas:-
	  a) App downloads, installs, and uninstalls
	  b) App telemetry data
	  c) User demographics
	  d) All attendance and reporting records

Offline Access and Data Synchronization	- Key design principles for the offline functionality are as follows
	  a) Self-sufficiency with-in the local software for marking daily attendance i.e. zero dependency on a server module or third-party API for fulfilling the data capture especially facial recognition
	  b) Automated data synchronization with zero manual intervention
	  c) Capacity to hold at-least 30 days of attendance data locally. In case the app storage limit is reached, the user should be duly informed to synchronize the data with the app server
	  d) Notification for data synchronization in the event of reaching local data storage threshold
	  e) Real time synchronization of the attendance and app telemetry data from user device to application. For locations that have unreliable internet connection, data should be synched intermittently and automatically upon connection

API Integration	- Allow for cross-departmental and cross-app data access, providing set of APIs for two-way data sharing. Follow Open API standards for maximum interoperability.
	- The system should have REST API endpoints for both data access as well as triggering a transaction from an authenticated, third-party application. The key candidates for REST APIs include, but are not limited to:-
	  a) User registration
	  b) Daily attendance
	  c) Analytics
	  d) Telemetry data
	-

Language Support	- The software must support English and Nagamese languages as prescribed by the DSE and GoN.
IT Infrastructure (Server, Firewall, Storage, Networking etc.)	- DSE in a process of establishing a Server Room at it premises and will be undertaking IT procurement of servers and relevant IT infrastructure. SI will be required to finally host the TAMS application on the servers thus procured and be mindful of the compatibility and interfaces thus required to host TAMS in the given IT environment.
Installation / Distribution Mechanism	- In-school deployment of the integrated system - The software shall also be distributed to the teacher owned devices (smartphones, tablets, laptops, desktops). For such distribution the software shall be hosted under State Ed Department's credentials on a state commissioned and owned IT infrastructure and made available via App/Play store and an SSL secured URL under nagaland.gov.in domain.
Scalability	- The system should be benchmarked to handle at-least 100,000 user responses per minute i.e. 5 times the general traffic and data storage required to cover all schools in Nagaland. - Once deployed in production, the system should be scaled on a pro-rata basis, accounting only for the resources used to fulfil system

Features	Specifications
	functionality.
	- The scalability benchmark shall apply to all the system components i.e. end user applications, APIs, transactional databases, and search & analytics databases.

3.8.2. Maintenance services

After successful installation and commissioning, the function of the proposed system will officially start. This will be called as "Go live". After effective date of Go-live, the selected Agency/ System Integrator will have responsibility to provide support for technical and allied issues. The interested agencies are directed to mention the proper mode of backup support during the contract period i.e., 24 months. All power availability and internet access to mobile tablets shall be insured by GoN.

➢ Provide technical support during all working days.

➢ Provide ongoing support and maintenance, through the life of the contract.

➢ Any technical problem occurring during the contract period will have to be attended within 4 hours & fault rectified within 48 hours

➢ Maintenance support services will continue till the end of the services from the date of Go live of the project.

➢ The availability of the system shall be at least 98%. This will be calculated and confirmed on monthly basis on a 24X7 calculation. Any downtime beyond 2% would attract a penalty and that would be 5% reduction in the monthly O&M payment for every 1% additional downtime. This penalty shall be calculated on pro-rata basis. The Firm /SI will suggest a formula on how to calculate the downtime.

3.8.3. Data reporting and safety

➢ The System Integrator shall provide one or more dashboards to analyze teacher attendance data, customized to the specific requirements of the state education department. The deployment shall happen in phases preceded by a pilot deployment. It will be the duty of Agency or SI to generate all the required user credentials for users of schools, block, district and DSE

➢ The Agency or SI will collaborate with EMIS developer for integration of Attendance monitoring dashboard with the effective MIS under data policy norms as specified by GoN. The implementation of such integrations shall be taken up after a detailed due diligence during the solution design phase. The Agency or SI should setup centralized monitoring system with Servers and other networking equipment for monitoring and MIS generation purpose in consultation with the DSE. It can be in State Data Center (SDC) or at DSE office depending upon the decision given by DSE.

➢ The Agency or SI should design and develop MIS Analytics dashboard, reports and statistics for DSE, GoN

➢ The Agency or SI should provide handholding support for Periodical Generation of Project Status Reports for attendance tracking.

➢ If any Agency or SI requires site survey, then the same has to be done at Agency's own cost

➢ Privacy Protection:

　　o No individual user information (including device details) must be collected without a consent, duly signed by the user and the user only

　　o All Personally identifiable Information (PII) data sets must be decoupled from the non-Pll datasets and be encrypted using SHA256 algorithms when both at rest (user device, app server) as well as in transit (internet)

　　o No PIІl attributes must be exposed to unauthorized users

　　o All trained datasets of a user's facial images must be destroyed when the user account is deleted. Records of a user's attendance may be preserved subject to state's data storage policy

- Data Import and Export
  - The system should allow for bulk data import and export facility available in the following formats: - CSV/ JSON/ JSON Delimited/ Avro
  - The same teacher with the unique ID should be able to access attendance data and also mark attendance from other school's system in case of transfer. Agency/System Integrator needs to set out processes and conditions for such use cases.
- Data Migration
  - The Agency/System Integrator may have to take up data migration activities for one-time migration of the official school and teacher records. Such migration activity shall be taken up adhering to the data protection rules discussed above.

- Data Backup, Archival and Restoration
  - The failure or occurrence of a delay in performance of any of the obligations of either party shall constitute a Force Majeure event only where such failure or delay could not have reasonably been foreseen war or hostility, acts of the public or enemy ,civil commotion, sabotage, fires, floods, Vandalism(due to law& order Situation),terrorism, explosions, epidemics, quarantine restriction, strikes, lockouts or act of God(hereinafter referred to as events) or where despite the Presence of adequate and stipulated safeguards the failure to perform obligations has occurred at any location in scope .In Such an event ,the affected party shall inform the other party in writing within five days of the occurrence of such event .Any failure or lapse on the part of Agency or SI in performing any obligation as is necessary and proper ,to negate the damage due to projected force majeure events or to mitigate the damage that may be caused due to above mentioned events or the failure to provide adequate disaster management/recovery or any failure in setting up a contingency mechanism would not constitute force majeure as set out above.

  - The Agency or SI will propose disaster recovery center of tier III or above rating. It should be situated in India in a seismic zone different from that of Kohima, Capital of the state.

  - The system shall take daily, weekly, and monthly backups on a cold storage facility. The archives shall be versioned and extracted using the same specifications as the underlying database

  - It must be ensured that any ongoing changes to the database schema do not cause the archives to be invalidated.

  - Implementation partner should also make a one-click restoration facility available for easy and error-free data restoration

The system integrator is expected to provide the following data insights and usage:

	Output
Mobile/ Web application (*recorded via in-school tablets or personal devices*)	**For various end-users:** The app should provide a set of in-app analytics for consumption by a variety of users. The nature of analytics will vary depending on the granularity of the details sought by a given user. Attendance reports to be made available in the system for below users: *School Leader (Super user):* - Attendance data per user of All School Members - School Data Analytics such as attendance data aggregated at school, block, district, state level *Teachers:* - Individual attendance records - Self- Data Analytics: Days absent, reason for absence analysis

	Output

	Cluster Administrator
	  - Attendance status and trends for all schools in a cluster
	  - Absence and reason for absence insights at cluster level
	  - School rankings with-in cluster
	  - Cluster ranking with-in block, district, and state
	
	Block Administrator
	  - Attendance status and trends for all schools in a block
	  - Absence and reason for absence insights at block level
	  - School rankings with-in block
	  - Block ranking with-in district, and state
	
	District Administrator
	  - Attendance status and trends for all schools in a district
	  - Absence and reason for absence insights at district- level
	  - School rankings with-in district
	  - District ranking with-in state
	
	State Administrator
	  - Trends for all schools in the state
	  - Absence and reason for absence insights at state level
	  - School rankings with-in state
	  - Cluster, block, and district rankings

MIS analytics dashboard	An additional all-access application analytics for administraand super users shall be developed to provide insights into following areas:-
	  a) *App downloads, installs, and uninstalls*
	  b) *App telemetry data*
	  c) *User demographics*
	  d) *All attendance and reporting records*

4. Timeline:

Following table depicts a tentative schedule of services: -

Stages	Deliverables (all deliverables must be approved by DSE for payment purposes)	Time schedule from the date of signing contract (T) (as of signing of contract)	% of the contract amount to be paid
1.	System Analysis and Requirement Study and SRS, SDS Preparation	T+1Month	5%
2.	System Design and Development and Data Migration and Software Development	T+5 Months	20%
3.	Pilot Deployment - 100% Schools	T+7 Months	15%
4.	Acceptance Testing and Go live	T+9 Months	8%
5.	Training and Capacity Building of identified staff (To be initiated phase wise along with Software deployment).	'Train the Trainer' approach to be adopted. Block wise teachers to be identified.	12%
6.	Operation & Maintenance (to be initiated from the date of Go live)	39 months from Go live	Remaining 40% in equal quarterly installments after approval of the quarterly reports.

Modules required under	Description

Service 1,2,3,5,6	
Attendance Module	The facial recognition (desired system must only use "face recognition" and no other biometric method) attendance module for teachers records of login and logout time and stores along with geo-tagging information. The module will cultivate a positive environment among good teachers by recognizing their punctuality and teaching hours being devoted at the school.
Real-time dashboards in mobile app	The attendance data synced to central server which can be accessed anywhere through the mobile app. It will assist DEO/BEO/State, education department and other authorities in easily accessing authenticated school information. The system which relied upon manual inspections will now shifted to real time dashboards.
Online Leave Management System	Facilitating teachers in non-teaching work was one of the core objectives of this initiative. The teacher will simply download a mobile app form Google Play Store developed by Agency or SI and apply for Casual leave, earned leave, etc. anytime, and at other end, authorities can process and grant the leave application through the mobile app. It will also have facility to apply leave through SMS short codes or through Tablets Bio-Metric device available at the school premise (or through web-based interface by visiting an online portal). The language for software development should be same as earlier if it has already been developed.
Inspection Module	Physical inspection routine will be fixed by the system to ensure that every school will get inspected minimum twice a year. An SMS alert will be sent to the concerned flying squad/inspection teams indicating the school to be inspected as per the inspection calendar. The teams will be allowed to choose their flexible dates but the school to be inspected will be assigned by the system. The teams will also have to get their biometric done at the school tablet to ensure that they have physically inspected the location. The teams will also be facilitated a mobile app with pre-filled details such as school name, principal name, etc. to assist them in data entry and reporting.
Reports	The software should produce various on-demand reports in desired language for real-time monitoring.
Trainings	The Training Manager's will conduct training of Trainers and provide monitoring and support during the district level trainings. The trainings Manager's will further monitor select block level trainings across all districts.

Note: The deliverables shall be integrated solutions with various modules. Number of modules can be increased as per requirement of DSE during the contract period.

5. Staffing for Agency:

Sl.No	Designation	Roles and Responsibilities	Qualification and Experience	Total (No.)	Total person months
Key Experts					
1	Project manager	- To manage the project development, resource management, stakeholder management,	Project Manager must be PMP/Prince 2 Certified with minimum 10 years of Experience on Similar Projects, Total 15 years of experience. Hands on experience in Software development and deployment. Resource Management and Managing large	01	48 Months

Sl.No	Designation	Roles and Responsibilities	Qualification and Experience	Total (No.)	Total person months
Key Experts					
		communication and delivery of project, progress update to DSE	scale project. Experience in maintaining SLA.		
2	Project - Coordinators	- Communication with the Project Manager managing District level implementation, monitoring and controlling of project development and implementation	Graduate in Computer Science/ BCA/ or equivalent -Minimum 5 years of experience in software implementation, commissioning attendance management system and experience in managing medium scale projects in educational institution, Government Organization..	04	96 (24 Months each)
3	Site Engineer	- Installation and management of hardware, testing of live devices, pilot deployment of each site.	Graduate. Experience in Networking. Minimum – 5 Years of Experience in installation and commissioning of projects	06	288 (48 Months each)
4	Software Developer	- Design and development of Dashboard MIS, API implementation, managing	BE/BTech/MCA/ equivalent Minimum 4 Years of experience in software development, application development and API implementation, knowledge of HTML 5, CSS 3, Bootstrap	05	45 (09 Months each)
5	Manager (Training)	- Training of software application, hardware operations etc.	- BA/BSc/BCom Minimum – 5 Years of Experience in training of at least 40 nos of resources at a time. In total need to Train 20,000 teachers.	08	40 (05 Months each)
Non-Key Experts					
6	Software Support Executive	- Provide support to developed customized application and resolve issues on Priority	BE/BTech/MCA/ equivalent Minimum 4 Years of experience in software support and maintenance	03	144(48 Months each)

6. **Duration of the Assignment:** The Services will be delivered for a tentative period of forty-eight (48) months out of which nine (09) months for design, development and implementation and thirty-nine (39) months for operation and maintenance of the facility, subject to extension, if necessitated by the requirements of the project, for a duration to be determined by the DSE, GoN at the close of the contract.

7. **Monitoring and Reporting:** The Agency or SI will report to the Project Director, unless specified otherwise. The Agency or SI will be required to submit periodic progress reports to this effect. The format and the frequency will be decided in consultation with the PMU.

8. **Facilities provided by the Department:** The DSE shall provide the Agency or SI access to, database of teachers and schools information, geo-locations, assist in site visits, workspace in PMU (Project Management Unit), application production servers, backup servers, hosting and domain access and internet connections needed for timely delivery of the project.

9.1 Mobile Attendance App Specifications

a) OS Supported
b) Android 4.0 Onwards
c) iOS 3.0 Onwards
d) App Installer Size- 15 MB or less
e) Local Storage- Upto 30 days of data
f) Display Modes- Portrait and Landscape
g) Accurate GPS location tracker
h) GPS fencing
i) GPS Lock (Attendance shall be allowed only at the specified location)
j) Real time monitoring
k) Tracking past location history
l) Provision for third party attendance from another device
m) Leave Management (Submission of Application, Sanction from approving authority)

9.2 Browser App Specifications

Browsers Supported

a) Chrome v25 or later
b) Mozilla Firefox v10 0 or later
c) Safari v11 or later
d) Microsoft Edge - All Versions Tl Date
e) Max. Payload Size- 15 MB or less
f) PWA Support- Yes