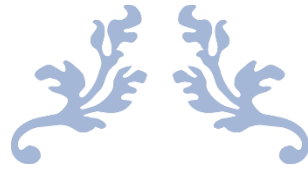# Request for Proposal

Selection of Software Solution Provider for
Development and Implementation of
Enterprise Resource Planning [ERP] Application in
Higher Education Department, Government of Odisha

RFP No.: OCAC-TH-07/2023/ENQ/23101

Vol-II | **Terms of Reference**

ODISHA COMPUTER APPLICATION CENTRE

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Abbreviation

DNS	*Domain Name System*
DR	*Disaster Recovery*
FRS	*Functional Requirement Specification*
GIA	*Grant-in-aid*
HLD	*High Level Design*
HED	Higher Education Department
LLD	*Low Level Design*
OCAC	*Odisha Computer Application Centre*
OEM	*Original Equipment Manufacturer*
OSDC	*Odisha State Data Centre*
SI	*System Integrator*
SRS	*System Requirement Specification*
SLA	*Service Level Agreement*
SSL	*Secure Sockets Layer*
UAT	*User Acceptance Testing*
CMS	*Content Management System*
OTP	*One-time Password*

1 Background

The Higher Education Department has been playing the pivotal role in improving the quality of education in the State, establishing a value-based society and molding the youth to meet the challenges of 21st Century. The opening up of institutions of national repute like IIT, IIIT & NISER in the State has not only made the State of Odisha an educational hub but also thrown open some challenges and opportunities before the Higher Education Department. To meet those challenges and make the best use of opportunities, the Higher Education Department has all out efforts to strengthen the existing educational system and simultaneously taken innovative steps to open up new avenues for the students by imparting need-based market-oriented education.

The Higher Education Department of Odisha recognizes the need for efficient and data-driven administrative processes to enhance the management and governance of higher education institutions in the state. In line with this vision, the department has initiated the Development and Implementation of Enterprise Resource Planning [ERP] application, a comprehensive digital platform aimed at streamlining administrative operations, facilitating data-driven decision-making, and improving overall efficiency within the higher education sector. The Enterprise Resource Planning [ERP] application project aims to revolutionize the management of higher education institutions in Odisha by leveraging technology and data-driven insights. By enhancing efficiency, transparency, and accountability, ERP application contributes to the overall advancement of the higher education sector and supports the state's vision for academic excellence and progress.

2 Present e-Gov Solution in HE

2.1 SAMS

Student Academic Management System (SAMS) project, is a unique initiative of Government of Odisha which was started in the year 2009 to automate the Admission and Administration processes of Higher Secondary Schools (erstwhile Junior college) and Degree Colleges across the State. Since then, the project has been running successfully. In the later stages, other educational institutions like ITI, Diploma (Polytechnic), PG, Sports, etc. came into SAMS fold.

Student Academic Management System (SAMS) is an integrated portal which provides a common platform for admission into various courses across the State through e-Admission.

The application is currently being used by following category of colleges across the state of Odisha.

Type of Colleges	No. of Colleges	Sanctioned Strength	Admission Taken in 2022
Post Graduate Colleges	79	18,844	14,506
Degree Colleges	885	2,46,896	1,88,169
Shastri (Sanskrit) Colleges	130	9,084	6,380
Junior Colleges	1,672	4,86,014	3,89,338
Vocational Colleges	223	10,012	5,823
UPA Shastri (Sanskrit) Colleges	172	13,332	9,344
Teacher Education Colleges	20	1,000	871
Industrial Training Institution (ITIs)	480	77,940	53,630
Polytechnic Schools	160	75,390	55,425
Physical Education Colleges	2	190	185
Post Diploma in Industrial Safety (PDIS) Institutions	13	810	810
Music, Dance & Drama Education	1	220	118

2.2 Scholarship Portal

In order to encourage and motivate meritorious students of Odisha pursuing their higher studies in the field of +2, +3, Post-Graduation and technical/ professional courses, the State Government is awarding several scholarships each year under the scheme Medhabruti. Hence, Odisha State Scholarship Portal envisioned to bridge the gap between the scholarship providers and scholarship seekers. Six major department of the state have on boarded onto this common platform for duplication and leakage free scholarship disbursal.

- The portal validates the applications of the students online based on Aadhaar Authentication.
- This is a one stop database for scholarships and provides a transparent dashboard for institution and department to check the status of the application.
- Through this portal the scholarship amount can directly be disbursed to the bank accounts of the selected students

Scheme Name	Total Number of Applications in 2023	Total Number of Applications in 2023 – Approved for Disbursement
Pathani Samanta Mathematics Talent (Class - 11 to 12)	1900	1745
Junior Merit (Class - 11 to 12)	16,541	16,411
Pre Matric	1,88,288	1,83,910
Pre-Matric Component-2 (Class 1 to 10)	30	30
Post Matric Scholarship	6,26,572	6,23,376
KALIA Scholarship	1,074	1,073
Sudakshya for Girls Child	5,026	5,026
BOC Scholarship	5,183	5,059
Vyasakabi Fakirmohan Bhasabruti	1,165	1,129
Gopabandhu Sikhya Sahayata Yojana	211	211
U.G Merit	3,800	3,762
Technical and Professional	2,348	2,203
PG Merit	1,859	1,855
Biju Yuba Sashaktikaran Yojana (LAPTOP DBT)	13,681	13,570

3   Stakeholders Involvement

- – H.E. Department
- – Directorate/Regional Directorates
- – Universities
- – Autonomous Colleges
- – Degree Colleges
- – Teaching/Non-teaching Staffs
- – Students/Parents

4   Scope of Work

4.1   Project Objective

Over the last few years, the Higher Education Department has been pivotal in maintaining and upgrading the quality of the higher education across the state of Odisha. While there is constant increase in the registration of college, it has become paramount to manage all the information pertaining to the administration of these college and universities which will make department official's life easier for accessing the information pertaining to these college and universities. The proposed application shall have the following broad objectives:

a) To monitor the activities pertaining to the colleges and universities.

b) To assist and enhance capability of universities to maintain and up-grade their institution ranking.

c) To monitor the activity of the Governing body and its constitution.

d) Provide GIA (Grant-in-Aid) based assistance data in real-time.

e) Enable bio-metric attendance for both students and teachers.

f) Ensure quality education across the institutions.

g) Inspect and analyze data pertaining to the facilities available across the educational institution.

h) Development of fund management system and provision for UC (Utilization Certificate) submission against the fund disbursement.

i) Managing assemble questions and their reply.

j) Universities/college shall be able to access all the information of their respective institution in a single dashboard. And the department will be able to access the summarized data of all universities/colleges in a single dashboard.

4.2   Scope Overview

a) Study, development and implementation of the software solution as per the functional requirement of modules/sub-modules mentioned in this document

b) Application Maintenance Support after it's go-live.

c) API based integration such as third-party application/utility

d) Set-up and operation of technical support unit which shall provide technical and functional support at both onsite/offsite as specified in this document.

4.3 Proposed Technology

Technology Layer	Technology Stack
Programming Language	Java™ SE Development Kit
Web UI	Java Server Pages, HTML 5, CSS 3, Bootstrap, jQuery, AJAX
Framework	Spring Boot + MVC
Caching	Radis
Persistence	Spring JPA
Email	Java Mail
SMS	Gateway service of the SMS service provider
Webserver	Apache Tomcat
App Sever	Apache Tomcat
Database	Open-Source
Reporting Tool	ireport
	JSP Reports
	Open-Source BI Tool (To be decided) like meta-base/ proprietary tool depending on the requirement
IDE	Eclipse
Version Control	SVN

4.4 Requirement Study

4.4.1 Prerequisites

The SI to follow and ensure following prerequisites before the requirement study

a) Consultation meeting with OCAC / HED officials

b) Identify and engage subject matter expert(s) as per the need

c) Readiness with the industry standard template for FRS and SRS documents

d) Readiness with the project traceability matrix template

4.4.2 Assessment and Understanding

The SI shall perform a detailed functional and system requirement study based on the modules/functions proposed under functional requirement section in this document.

Then the SI shall prepare the Functional Requirement Specification (FRS) and the System Requirement Specification (SRS) document and submit to OCAC/HED for necessary action for its approval.

a) Consult with both OCAC and HED officials to
   - Understand the value chain and core processes
   - Identify current/ planned business initiatives (strategic & tactical)
   - Key issues/ pain areas as assessed by officials

b) Conduct field visits (as per requirement)

c) Maintain traceability matrix from SRS stage for the entire implementation

d) Assess the existing IT assets and inventories related to this project.

4.5 Design

Prepare and submit updated detailed design & development plan as per the requirement. Design the solution architecture and specifications for meeting the requirements mentioned as part of this document including sizing of the required hardware.

4.6 Development

Identify, design and develop components / functionalities that are required to address proposed application requirements as mentioned in this document. Following documents shall be taken into consideration along with the developed components:

— Business process guides
— Data model descriptions
— Sample reports
— Frequently asked question (FAQ) guides
— Any other documentation required for usage of implemented solution

The SI shall implement a system for monitoring the SLAs and ensure that the system addresses all the SLA measurement requirements and calculation of applicable penalties as indicated in the document.

4.7 Integration

The system should support both push and pull of data to and from systems proposed to be integrated. It is required that a standard mechanism of data exchange should be built and implemented using an industry specified data exchange protocol through a secure channel. The SI will have to co-ordinate with the designated nodal agencies for integration and OCAC / HED will facilitate this process. In addition, the solution should be designed in such a way that any future integration does not require any changes to the system.

4.8 Data Migration

The data migration strategy and methodology to be prepared by the SI and submitted to OCAC/HED for its approval before performing the data migration activities by the SI. The following activities will be carried out as part of the data migration (if required):

a) Define all the specifications that are needed to populate the data into the proposed system

b) Prepare the data cleaning and migration plan and submit to concern authority for approval.

c) Prepare uniform codification of all data sets

d) Identification, configuration or development of the data upload / download programs for the Data Migration

e) Ensure minimum business downtime at the time of data cleaning and migration

f) Ensure the accuracy and completeness of the migrated data

g) Ensure migration of all data is completed by the time of go-live

h) Database of existing system would be migrated to the newly developed system.

i) The SI will be expected to understand the data which has been captured and devise a template so that meaningful information can be captured and entered into the proposed system

j) This template should have basic sanity check to prevent entry of incorrect information e.g. numerals should not be allowed in college/ Student name etc.

k) It is the ultimate responsibility of the SI to ensure that all the data sets which are required for operationalization of the agreed user requirements are migrated.

l) OCAC/ HED will provide the existing datasets and the SI is to manage the data extraction, normalization and migration for the proposed framework.

4.9 Testing

a) Provide the testing strategy including Traceability Matrix, Test Cases and Conduct Testing of various components of the software developed / customized as per industry standards for Software Testing Life Cycle.

b) Details of the testing strategy and approach should be provided in the response.

c) Identify, inform regarding testing requirements along with its impacts and work in a manner to satisfy all the testing requirements by adhering to the testing strategy outlined.

d) Ensure deployment of necessary resources and tools during the testing phases and perform solution testing based on the approved test plan, document the results and fix the bugs found during the testing.

e) Make sure that the end product delivered meets all the requirements specified in the document.

f) Take remedial action based on outcome of the tests.

g) Provide complete support to the departmental officials or their representatives at the time of User Acceptance Testing (UAT).

h) Ensure that all issues raised during UAT are closed and signed-off from respective authority.

i) Ensure that each module & features developed under this project is tested as per the latest version of the IEEE 730 (Software Quality Assurance Processes) standards and comply with GIGW guideline.

4.10 Cyber Security Audit

a) The SI shall ensure that the solution is in compliance with the CERT-In Security Policy and Guidelines.

b) The SI shall appoint CERT-In empanelled auditor who shall be responsible for performing the security audit of the solution.

c) The cost of audit & rectification of non-compliances shall be borne by the SI

d) Carryout security audit before go-live of application and obtain the safe-to-host certification

e) Conduct periodic audit & certification as and when it is required as per the OSDC / Cloud policy.

f) The audit shall be performed at least on the below mentioned aspects.

   – Accessibility Testing

   – Application Security Audit

   – Vulnerability Testing

g) The illustrative deliverables for this activity are mentioned below

Activity	Responsibility
First Round Audit Report	Auditor
Rectified solution and submission of next round of audit	SI
Next Round Audit Report	Auditor
If required, rectified solution & submission of next round of audit	SI
Compliance Confirmation	Auditor

4.11 SSL Certification

a) Secure connection between client and server through Secure protocol HTTPS

b) Encryption of Data during transmission from server to browser and vice versa

c) Encryption key assigned to it by Certification Authority (CA) in form of a Certificate.

d) SSL Security in the application server.

4.12 Training

a) Undertake training on a train to trainer mode.

b) Training would be done at State Headquarter in Bhubaneswar.

c) Set up the IT infra such as computer, network, LCD, etc. as required for providing the training in a successful manner.

d) Prepare training calendar and material for imparting training in consultation with OCAC/HED officials.

e) Submit a hardcopy of the training material to OCAC / HED before every training session.

f) In case of modifications, either in the training plans or substitutions of the regular trainers, proper communication with OCAC and HED need to be made.

g) Conduct training (if required) on virtual mode and bear related expenditure for licensing (fixed & recurring).

h) OCAC / HED will provide required classroom and IT infra for the class room training.

i) Training to the other users through virtual mode would be on need basis and the SI will bear related expenditure for virtual meeting licensing (fixed & recurring).

4.13 Online Help / Reference

a) It is proposed that the training contents / user manuals be made available to users in downloadable (PDF) format so that the users may refer / download it for their own personal reference as and when needed.

b) The downloadable training content should have proper indexing and internal references, mapped with key words, in order to allow any user to search and reach the desired content with the help of those key words.

c) It is envisaged that any user will be able to search and read the directions / information for the right content. On entering the key words for search criteria, the system should pull out and display the links to the content as mapped.

d) The system should support dynamic search facility i.e. as soon as the key words are changed; a new set of content links with page shall be displayed to the user.

e) Prepare Video & Audio based professional training material so that the users may refer it for their own personal reference as and when needed.

f) Availability of video & audio manual in the landing page of application in the form of YouTube link so that the end users can view it time & again.

4.14 Supply of tools and license

The SI shall procure tools and licenses for this project as per the specification and bill of quantity mentioned in this document vis-a-vis proposed in its technical proposal as part of the bid response. All the licenses shall be procured in the name of H.E. Department or OCAC as will be decided later.

4.15 Deployment & Configuration

a) Deploy the application over the hardware infrastructure provided by the OSDC / Cloud.

b) Perform detailed assessment of envisaged solution requirements and assess the infrastructure requirements including Servers, Storage and Security, etc. for operationalization of the solution.

c) Responsible for end-to-end management of hosting and deployment of the application.

d) Responsible for configuration, installation and hosting of the application in High Availability mode at OSDC / Cloud.

e) Ensure deployment of the application as per the DR policy of OSDC/Cloud.

4.16 UAT & Go-Live

a) Preparation and submission of test strategy, test cases and test results.

b) Demonstration of module-wise functionalities / features in staging environment.

c) Support designated authority for conducting the testing and provide access of the systems as required by them.

d) Rectification in the new application for any issues/ bugs/ and improvements/ Enhancements / up-gradations suggested Departments (if any) during the UAT without any additional cost.

e) After incorporation of the suggestion received during UAT the application will be declared as Go-Live.

4.17 Infrastructure Support

a) Post award of contract, it is expected the SI to provide detail hardware sizing for both production and staging instance. Based on sizing of the hardware, the additional hardware (if required) will be arranged/procured separately by OCAC/ HED.

b) Carry out the installation, maintenance & support of all the supplied software(s) on the newly procured / existing hardware for development, quality and production environment.

4.17.1 Implementing System Software & Tools

a) Design, implement/customize the solution and install supplies tools and licenses as mentioned in the BOM.

b) The observations of the audit shall be addressed and same shall be tested and verified again before go-live.

4.17.2 Business Continuity Planning

The system should be developed to support Disaster Recovery (DR) or Business Continuity Plan (BCP) to address any disruption in implementation of the system. However, in future, if it is decided to go for DR / BCP, then the SI will suggest and support for an appropriate methodology in a cost-effective manner for this purpose. The SI shall share the DC, DR sizing and OCAC shall arrange necessary infrastructure in accordance to the sizing received.

4.17.3 Documentation

a) Undertake preparation of documents including that of infrastructure solution design and architecture, configuration files of the infrastructures, user manuals, Standard Operating Procedures, Information Security Management procedures as per acceptable standards.

b) Take sign-off on the deliverables (documents), including design documents, Standard Operating Procedures, Security Policy and Procedures from OCAC / OSDC Team and shall make necessary changes before submitting the final version of the documents.

4.18 Application Maintenance Support

4.18.1 Application Support

a) Regular check-up of complete ERP application architectures all components connections, connectivity and performance.

b) Testing of new modules on staging servers before deployment.

c) Fraud Transaction Detection and taking necessary actions accordingly.

d) Management of complete fraud management system by using different fraud loggings

e) Execution of periodic Security Audit of application by OSDC.

f) Optimization of the already developed reports

g) Tuning of transaction

h) User and access management

4.18.2 Software Maintenance

a) All patches and upgrades from OEMs (if any) shall be implemented by the SI.SI shall ensure that the customization done in the solution should be as per the project requirement

b) The SI shall provide unlimited support through Telephone / Email / Installation Visit as required as per the service window defined in this project

c) The SI shall address all the errors / bugs / gaps in the functionality in the solution implemented (vis-à-vis the FRS and SRS signed off) at no additional cost during the support phase.

d) Tuning of products / applications, databases, third party software's and any other components provided as part of the solution software including reconfiguration of the system in the event of any hardware/ network failures/ if any hardware/ network components have to be replaced, shall be the responsibility of the SI.

e) Issue log for the errors and bugs identified in the solution and any change done in the solution shall be maintained by the SI and periodically submitted to OCAC / HED.

4.19 System/Infra Support

4.19.1 Database Administration

a) Regular monitoring & management of all the applications installed / re-installed and databases hosted as and when it required for the project

b) Installation & configurations the RDBMS software

c) Database administration, optimization and trouble Shooting

d) Database & file back-up as per the policy of OSDC/Cloud

e) Application Load balancing and Database Clustering

f) Perform Database, event & system log analysis

g) Key Infrastructure Management for Encryption/Decryption and Signing.

h) Coordination with OSDC team for network, connection, database and performance related issue and troubleshooting.

4.19.2 Server Administration

a) Installation, integration and commissioning new servers applicable for this project

b) Management & monitoring of severs such as Web, Application, Portal, Database & Middleware etc. in OSDC/Cloud

c) Manage the DNS and Active directory activities

d) Configuration of server parameters, operating systems administration and tuning

e) Integration and user support on all supported servers, data storage systems, etc.

4.19.3 Security Administration

a) Regular analysis of events and logs generated

b) User ID and group management services

4.19.4 Backup & Restore Management

a) Preparation of backup plan

b) Backup of operating system, database and application as per OSDC/Cloud policy

c) Monitoring and enhancement of the performance of scheduled backups

4.19.5 System/Network Administration

a) Network configuration

b) Patch update

c) System Administration and Trouble Shooting

d) Application & System Software Administration (including performance tuning)

e) Application and database level performance tuning

f) Co-ordination with OSDC/Cloud Network Administration Team

4.20 Project Management

The envisioned project is a multi-disciplinary initiative. An effective project management plan and commitment to adhere to it, is a mandatory requirement. The

project plan should also include the resource, task and time plan for the entire duration of the project. The SI shall employ best practices in project management methodology to ensure that the envisioned project components are developed and implemented within the defined time period. A detailed project management plan shall be handed over to the department to keep track of the progress of the project.

Dedicated resources to be placed onsite at the H.E. Department as per the following skill and requirement.

Skill	System Expert/MIS Expert
Qualification and Experience	Any graduate with minimum 5+ years' experience in similar e-Governance project
Job description	

- Attending user queries on application
- Co-ordinate with SI technical issue management
- Creating and maintaining user profiles, granting user access and authorization, providing ongoing user password support
- Furnish periodic report on number of issues received vis-a-vis resolved related to software.
- Analyze feedbacks received from users and share with SI for application improvements
- Troubleshooting through remote support for smooth functionality of the application
- Provide training / retraining to the users to use the application through virtual mode

4.21 Guiding Principles

The solution should adhere to the following principles.

4.21.1 Standards

a) The system architecture should be based on industry standards and protocols

b) The system shall be centrally deployed and globally accessed

c) The system shall be designed to be scalable and easily extensible

d) The system should be flexible to cater to changing business, industry and compliance requirements (including reporting requirements in proper formats)

4.21.2 Application

a) All applications must take into account appropriate security, performance, efficiency and maintainability issues.

b) The ownership of the product licenses would be with OCAC

c) Upgrade to new releases should not become mandatory for the next five years from the date of installation.

4.21.3 Integration

The integrated solution design should include framework for integration of both internal and external applications and services using suitable architecture.

4.21.4 Data

a) Data will be owned, shared, controlled and protected as a corporate asset of the OCAC / HED.

b) Data should only be accessed through application / interfaces to create, update and delete. There should not be any direct access to the data layer for users.

4.22 Data Security

a) Provide strategy to maintain data security at the application level, database level, messaging and middleware level

b) Provide security strategies when the applications are accessed by the resources from outside the network

c) Provide strategies of encryption and security for external transaction with partner network and systems

4.23 Adherence to Standards

The system shall comply with relevant defined industry standards (their latest versions as on date) wherever applicable. This shall apply to all the aspects of solution including its design, development, security, installation, and testing. The suggested 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 may be linked and connected to other sources (websites, contents, portals, mobile app systems of other user departments etc.) as well as there may be loose/tight integration with backend system of other departments depending on

individual service processes. The solution architecture should thus have provision to cater to the evolving requirements of the Department.

A reference list of the minimum industry standards which the system components should adhere to is mentioned below:

Component	Standards
Information Access / Transfer Protocols	SOAP, HTTP/HTTPS
Interoperability	Web Services, Open Standards
Portal Development	W3C Specifications
Document encryption	PKCS specification
Information Security	ISO 27001 certified System
Operation	ISO 9001 Certified
Service Management	ISO 20000 specifications or latest
Project Documentation	IEEE/ISO Specifications for documentation
Data Standards	All-important data entities should be in Line with standards published by DeiTY.

4.24 Security, Integrity & Confidentiality

a) **Web Services Security:** System shall comply with all the Web services including routing, management, publication, and discovery should be carried out in a secure manner. Those who are using the Web services should be able to utilize security services such as authentication, authorization, encryption and auditing. Encryption of data shall take place at client level itself. Application server shall provide SSL security.

b) **Data Integrity and Confidentiality:** Data integrity techniques need to be deployed to ensure that information has not been altered, or modified during transmission without detection. Similarly, Data confidentiality features are also to be applied to ensure that the data is only accessible by the intended parties.

c) **Transactions and Communications:** With respect to the Data Transactions and Communications, system needs to ensure that the business process are done properly and the flow of operations are executed in correct manner.

d) **Non Repudiation Security:** The application shall have the Non-repudiation security services to protect a party to a transaction against false denial of the occurrence of that transaction by another party. End-to-End Integrity and

Confidentiality of Messages, integrity and confidentiality of messages must be ensured even in the presence of intermediaries.

e) **_Database Controls_:** The database controls for online transaction processing systems like access to database directly, access to database through application, access to log files, access by the remote terminals, DBA controls, backup policy and backup procedures.

4.25 Change Request Management

Looking into the length of the project implementation period it is very usual to find changes in business logic frameworks. In such scenarios, there may be a need of modification of the software modules beyond FRS/SRS/Scope document. It may also be required to develop new software modules beyond the coverage of FRS/ SRS/ Scope document.

a) The activities that will be treated as enhancement services is mentioned below:

 – Functional changes in the application
 – Development of new module/sub-module/Form/Report in the developed system
 – Changes in the workflow or core application framework
 – Integration with any new system
 – Additional onsite resources in the project

b) The procedure for executing the change request is as follows:

 – <u>Analysis:</u> Analyses the changes suggested and submit an effort estimation including timeline to OCAC
 – <u>Approval</u>**:** OCAC shall do the due diligence and provide approval on the effort and timeline suggested.
 – <u>Incorporation</u>**:** After receiving the approval from OCAC, team will incorporate the changes in the application.
 – On approval, deliver the services and raise the claim as per actual according to the Commercial Bid.

4.26 Exit Plan

a) Provide systematic exit plan and conduct proper knowledge transfer process to handover operations to OCAC technical team at least three months before project closure.

b) OCAC will work closely with the SI during knowledge transfer of testing, staging and production environment.

c) All knowledge transfer should be documented and possibly recorded.

d) Ensure capacity building of the IT resource persons of OCAC on maintenance of software and infrastructure.

4.27 Project Documentation

Below list of documents needs to be submitted to OCAC during the project contract period, as per the requirement of OCAC.

a) Latest version of Source Code

b) System Requirement Study Documents

c) System Design Document

d) Test Plans and Reports

e) Issue Logs

f) User Manual

g) Application Installation & Configuration Manual

h) Report of Security Audit & Safe-to-Host Certificate

i) Any other documents defined under Timeline & Tentative Deliverables

j) All the above documentation should be done as per IEEE/ISO/CMM Standard

4.28 Expected Deployment of Personnel

a) The bidders shall furnish resumes of key personnel to be engaged during software study, design, development, testing, UAT, implementation, operation & maintenance phase.

b) The bidder shall submit a detailed work plan showcasing involvement of key resources in their technical proposal.

c) The bidder shall engage the same personnel for the period of at least six months from date or commencement of project.

d) The resources will work from the bidder's premises. However, the resources should be available at client office for any meeting or discussions required by the client as per its convenient.

e) The minimum criteria for key resources are as follows.

Competency Area	Minimum Educational Qualification and Experience
Program Manager	– B.E/B.Tech/MCA & MBA – Minimum 20 years' experience of handling similar large projects in IT Sector. – Out of these, 10 years' experience in handling state wide rollout project Certification: Prince2 or PMP
Project Manager	– BE/B.Tech/MCA – Minimum 12 years' experience of handling similar large projects in IT Sector. – Out of these, 7 years in the field of software development and implementation. Out of these 7 years, 5 years' experience in education domain for any government department in India. – Certification: Prince2 or PMP
Tech Lead	– BE/B.TECH/MCA – Minimum 9 years' experience in the field of software development and implementation. – Out of these 9 years, 4 years' experience in education domain for any government department in India.
Solution Architect	– B.E/B. Tech/MCA – Minimum 10 years of experience in the field of software design & development – Out of these 10 years, At least 5 years' experience in large-scale software projects as a solution architect – Certification: TOGAF or relevant IT certification
Software Test Lead	– BE/ B.TECH/ MCA – Minimum 8 years' experience in software testing. – Certification: ISTQB
Database Administrator	– B.TECH / MCA – Minimum 6 years' experience in large scale software projects as DBA. – Certification: relevant OEM certification

4.29 Expected Project Timeline

Sl#	Milestone	Timeline
a)	Submission of System Requirement Study document	Within 2-months from the effective date of contract
b)	Completion of design and development of the project	Within 6-months from the effective date of contract
c)	Completion of User Acceptance Test (UAT) of the project	Within 8-months from the effective date of contract
d)	Deployment of onsite resources for project management support	From the start date of UAT
e)	Cyber security audit certification, configuration & go-live the project	Within 9-months from the effective date of contract
f)	Supply and installation of RDBMS	Within 9 -months from the effective date of contract or direction from OCAC whichever is earlier
g)	Supply and installation of Analytical Tool	Within 9-months from the effective date of contract or direction from OCAC whichever is earlier
h)	Application Maintenance Support of the project	5-years from the date of go-live of the ERP application

4.30 OCAC Responsibilities

a) Assign a nodal officer who will be single point of contact from the beginning of the project till successful implementation.

b) Provide necessary support to the development team of the SI for smooth execution of project.

c) Provide all the relevant documents and information during the system study and analysis.

d) Facilitate the SI for the third party software integration.

e) Facilitate/Provide approval of SRS Document, User Acceptance Test certificate, Go-Live Certificate, approval of activity report during Operation & Maintenance Support phase, AMC etc.

f) Provide hosting infrastructure in the OSDC along with SMS and Email Gateway etc.

4.31 Bill of Material & Quantity

Sl#	Category	Items	Qty
a)	Study, Design, Development of the project	As per requirement mentioned under the relevant clause(s) of this document.	Lump Sum
b)	Application Maintenance Support of the project	Application Support, Software Maintenance, System Support, etc mentioned under the relevant clause(s) of this document.	3-years
c)	Cyber Security Audit of the complete application by CERT-IN empaneled agency/auditor	As per the scope mentioned under the relevant clause(s) of this document.	6 times
d)	Onsite resources for Project Management support	As per scope mentioned under the relevant clause(s) of this document with flowing quantity System/MIS Expert — 3	3-Years
e)	SSL certificate	As per the scope mentioned under the relevant clause(s) of this document.	3-Years
f)	RDBMS Licenses (Open Source) – subscription base	As per the scope mentioned under the relevant clause(s) of this document.	1 year
g)	Analytical Tool – subscription base	Supply of tools as per the scope mentioned under the relevant clause(s) of this document and quantity proposed by the SI	3-Years

Contract duration would be 3 years and 9 months from the effective date of contract. The contract period may be extended for another 2 years based on the requirement and performance of the SI. Further extensions (if required) may be done on mutual agreement between OCAC/HE and SI.

5 Functional Requirement

The broad scope of the project includes the development, and implementation of the below major modules:

5.1 Single Window Portal

5.1.1 User Management

a) Admin would have the privilege to manage user access, privileges to the roles, and user management.

b) Adding new user by capturing basic details such as name, email id and contact number.

c) Assign role to the user with application access rights.

d) Admin would be responsible for the configurations of the application and maintain master data.

e) Admin can view data and statistics of the application for monitoring purposes.

f) Options for the Admin to manage dynamic menu configuration.

g) Admin can initiate the mapping of user roles and their corresponding menu rights.

h) The added users would be able to manage their profile details, update passwords using OTP authentication.

i) Configure master data like, Type, Department, Subjects, and Streams and so on.

j) Admin can Edit/update the master data entered into the system.

k) Admin can activate/deactivate the master details

5.1.2 Personnel Management System

5.1.2.1 Basic Details

a) There would be provision to capture the basic details of both the Government & Non-Government college staffs along with the Department official.

b) System will define type of personnel to differentiate between Government College & Non-Government college/university personnel.

c) The personnel will also be able to categorize into Teaching Staff & Non-Teaching Staff.

d) There would be provision to capture the basic details of the personnel such as:

- Name

- Address

- Government IDs Proof

- Educational Certificate Proof

- DOB and So On.

e) Automatically tagging of personnel to a particular college or institution while adding his/her basic details.

f) Option to capture the first date of joining and automatically fetch the superannuation date according to the date of birth which shall have provision for edit.

g) The system would have the provision to add the following address:

- Present Address

- Permanent Address

- Correspondence Address

h) The system should have the functionality to capture the employment history at various colleges or universities for both teaching and non-teaching staff.

i) There shall be provision to capture the GIA details of the Personnel in case he/she is appointed at Non-Government Institution.

j) In case of Government Personnel appointment, the OPSC order should be captured and in case of Non-Government Personnel Appointment, SSB order shall be taken into consideration.

k) Capturing the details of the Ad-Hoc lecturers.

l) Capturing information pertaining to the guest faculties of the colleges.

5.1.2.2   Career Progression

a) There would be provision to capture the promotion details of the personnel.

b) Automated calculation of eligibility for the MACP & RACP promotion if the due date has been passed.

c) For the Government College Teaching Staff, the promotion details shall be calculated after the completion of following metrics:

d) There shall be provision to capture the GIA order number in case of promotion of the Non-Government Teaching Staff.

5.1.2.3   Transfer

a) Provision for the personnel to apply for transfer with valid reasons.

b) Provision for the department employees dealing with the transfer related matter to initiate the process of transfer.

c) The transfer of an employee can only be approved by the branch head-cum-Director of the NGCET (1) who handles the transfer, posting and service conditions in respect of teaching and administrative staff for the aided college.

d) There shall be provision to showcase the number of lecturers who have completed 5 years of service in a particular college for transfer.

5.1.2.4   Suspension

a) Provision for the department employees to initiate suspension against a personnel for both teaching & non-teaching staff recruited under Government College and Non-Government College.

b) Respective college authority i.e. Principal/Governing Body will initiate suspension of a personnel.

c) Provision for the affected personnel to reply against the suspension order.

d) Provision to overturn a suspension order by the authority of the Principal Secretary or the Director of the concerned department. And the suspension period can be treated as leave.

e) For the Non-Government Colleges, the suspension order against a personnel should be approved by the department within 30 days of recommendation by the Governing Body.

5.1.2.5   Disciplinary Proceedings

a) Capturing the disciplinary proceedings against the personnel at the college level.

b) Provision for the right to initiate DP against a personnel both at the college level and the department level.

c) The DP at the college level should be initiated by the principal.

d) The secretary shall have the right for ordering of DP against a personnel for the government college.

e) For the Non-Government College, the DP shall be initiated by the Principal or the governing body of the respective college.

f) For the Non-Government colleges, department cannot directly initiate DP against the personnel rather the department shall direct the Governing Body to initiate DP against a personnel.

5.1.2.6 Principal appointment

a) College wise list of teachers according to their seniority level should be published for the Non-Government College.

b) The list shall have the following parameters:

- Name & Designation
- Type of Scale (UGC/State)
- SSB/Management (GIA Year)
- DOB
- Date of Initial Joining
- Deemed date of Joining
- Date from which the post is admissible
- Date of First Receipt of 1st GIA & GIA Order Number
- Placement (Whether Lecturer – GR.(A) or Reader
- Incumbency Period in this college
- Signature of Principal & GB
- Remarks

c) The principal appointment shall be done on the basis of seniority of the lecturer in that college.

d) For determining the seniority, Post Approval Order or Date of Joining as mentioned in the GIA order whichever is later should be taken into consideration.

5.1.2.7 Pension

a) There shall be provision for publication of 6 months advance pension eligibility report based on the DOB.

b) Once the personnel crosses the date, the application for Pension option should be eligible for the personnel.

c) There shall be provision to showcase the personnel who are retired but they are yet to get the pension.

d) The pension process shall be then initiated by the department officials for the approval and sanction.

e) In case of an unfortunate incident, system would be robust enough to calculate the pension even if the date of superannuation has not been reached.

5.1.2.8 Service History

a) There will be provision for the department officials to automatically generate the service history of a personnel both for the department officials and college officials (Govt. & Non-Govt. College).

b) There shall be following sections of a service history book of a personnel:

- Personnel Details
- Assigned Post & Pay Scale Details
- Termination Details
- Transfer Details
- Leave Details
- Promotion Details
- Suspension Details

5.1.2.9 Vacancy Management

a) System would generate college wise sanctioned post and man-in-position list based on the data entered into system by the staffs.

b) There shall be provision to see college & department wise sanctioned post and Man-In-Position.

c) There shall be provision to drill down to the subject wise sanctioned post and Man-In-Position of a college.

d) There shall be provision to showcase the guest faculties engaged in the vacancy management list.

5.1.2.10 Digital Attendance

a) There shall be provision to integrate with the bio-metric system software to capture the attendance of the faculties.

b) The data fetched from the bio-metric system across the colleges shall then be integrated with the service history to showcase the leave taken during a certain period of time.

c) There shall be feature to generate leave report of personnel college wise/department wise/subject wise.

d) Provision would be there to auto-generate leave report of a particular personnel

5.1.3 Facility Management System

5.1.3.1 Property Details

a) There would be provision for College Authorities to add the College infrastructure related specific details.

b) Provision would be there to capture the availability and non-availability of the following facility:

- – Library
- – Building
- – Reading Room
- – Multipurpose hall
- – Auditorium
- – Hostel
- – Playground
- – Boundary Wall
- – Sports complex
- – Parking Area
- – Internet connectivity
- – Staff quarter

c) Provision would be there capture multiple type of facilities corresponding to the College or universities.

d) There would be provision to capture major components of infrastructure available in the college/university premises.

e) Provision would be there to upload photographs of the facilities in College/University Premises.

f) The system will have the provision for workflow system.

g) System would have the capability to receive infrastructure requirement request from the college.

h) System would have the provision to integrate with works department if the need arises.

i) Provision to capture the physical & financial progress submitted by the works department against the property.

j) Provision to enter the date of initiation and date of completion in case of new projects undertaken by the higher education department.

k) Provision to upload the DPR against the property details.

l) Provision to generate reports to gauge any kind of deviation occurred as mentioned in the DPR by analyzing the data entered by the department officials against the project.

5.1.4 Quality Education Monitoring & Tracking

5.1.4.1 *Defining KPIs*

a) System would have the option to define various KPIs to ensure quality education across the state.

b) Option to add as directed under the "Common Minimum Standard" as KPIs for evaluating the colleges and universities.

c) Provision to configure the following type of KPIs while setting the standard for evaluation:

- Administration
    - Management
    - Strategic Decision
    - Time Schedule for Work of Ministerial Staff
    - Financial & Service Matters
- Academic
    - Classroom Teaching
    - Library and Laboratory Usage
    - Smart Classroom
    - Student Pass out
    - Examination Management
    - Lesson Plan & progress Register
    - Accreditation
    - Study Tour/Exposure Visit
- Facilities
    - Classroom & Lecture Halls
    - Research Facilities
    - IT Infrastructure
    - Student Accommodation

d) System should have the option to add relevant SDG quality education parameters to monitor the progress against the mentioned guidelines.

e) System would have the option to capture the weightage option to determine the ranking of the colleges.

5.1.4.2   Performance Measurement & Monitoring

a) System would automatically generate reports against each college based on the provided by the college.

b) System would have the provision for the officials to give advisory notes on the improvement of the college performance based on the data.

c) The system shall notify the colleges if the performance of the colleges found to be below average.

d) There shall be option for the college authority to enter the details against the parameter configured.

e) After the data is being entered, there shall be provision for the inspection option which shall be enabled.

f) There shall be provision to auto-generate report on the colleges who have entered the data into the system for inspection and who have not.

g) Provision to capture geo-tagged information to ensure that the data is authentic.

5.1.4.3   College Inspection

a) Provision to register inspector personnel.

b) Provision to tag inspector to a particular college randomly for verification and inspection.

c) Provision for the inspector to randomly inspect colleges assigned to them by entering the inspection date.

d) Option for inspection authority to verify, approve and reject the data entered by the college authorities according to the inspection..

e) System would have the provision to capture the inspection data for analyzing the quality education across the colleges or universities of Odisha.

f) System would have the provision for capturing the details of the colleges against the defined KPIs by the college and the same will be approved by the inspection personnel..

g) Provision for the personnel to capture geo-tagged pictures.

h) System would have the robustness to automatically calculate the rating based on the data input.

i) Provision would be there for rating system against the facilities and an explanation box to justify the rating given by the inspecting personnel against the colleges.

j) Provision for the inspection personnel to generate "Inspect Report" after the inspection and against those report the college authority may give remarks.

k) Provision for the higher authority to approve the inspection report.

5.1.4.4 Institution Ranking

a) System should have robustness to automate the process of performance monitoring and rating finalization against the configured parameters.

b) Once the rating is being finalized by taking in account of the configuration and parameters the system should auto-generate ranking of colleges/universities across the state of Odisha.

c) System should have the provision to automate the report generation on various colleges about the area of improvement as per the performance of various colleges and university.

5.1.5 Grant-in-Aid Portal

a) User should have the privilege to create and manage different grant-related scheme masters.

b) User will have privilege to access the grant database to access grant related information.

c) There should be provision for multi-level authorization for grant payments.

d) There should be provision for applicants to apply for grants through web portal.

e) There should be provision for applicants to upload documents related to grant application.

f) There should be provision for the user to reject the application for grants.

g) There should be provision for the applicants to track their application process online.

h) There should be provision for the user to see grant payments history of a particular applicant.

i) The system should be able to differentiate applications based on the different grant-in-aid acts and orders.

j) The system should be able to differentiate applications based on categorization of institutions.

5.1.6 Funds Disbursement Management System

5.1.6.1 Budget Management

a) There should be provision for the User to input the Financial Year

b) There should be provision for the User to input the State Annual Budget for the Financial Year.

c) There should be provision to manage budget share details.

d) Budget format for the State to be created for Components under different Headers & Sub Headers like Infrastructure, Salary, Schemes and scholarships.

e) Version History to be generated for tracking and monitoring

5.1.6.2 Component & Sub-Component Management

a) The user should be able to add Components and Sub components into the system.

b) Components and Sub components to be created under each scheme

c) Provision should be there to import the Existing ones into the system through Bulk Upload facility or create new ones here.

d) Component & Sub component Creation, Deletion, Updating and Activation/De-activation should be done here

e) Provision to validate the schemes added

f) Provision to filter the Components & Subcomponents as per Financial Year & District wise

g) Provision for recording assessment and inspections details and reports for each component and sub component

5.1.6.3 Fund Management

a) System should be able to capture the Funds as per State-run Schemes

b) Provision for the User to input the fund disbursement details in a Financial Year at the State Level.

c) Provision should be there to manage the disbursement details sanction order no wise.

d) There should be scope to manage the Received fund as the summation of opening balance and received fund.

e) Opening Balance (the funds remain unused in the A/c) should be showcased to the user at the start of every financial year and month.

f) Receipts should be captured under respective Budget Heads and Sub Heads at each Component and Sub component

5.1.6.4 Expenditure Management

a) Provision with user to configure Expenditure formats

- Monthly
- Yearly

b) Expense formats to be configured for all Components and Sub components

c) Types of Expenditures to be configured by the user.

d) There should be scope for Recurring Expenses and Non-Recurring Expenses.

e) Sub types of Expenses are to be created under each type of expense as per the requirements.

f) All types of Expense to be input by the respective Users as per the prescribed formats

g) System should have the scope to auto calculate unspent balance and carry forward it to next year.

h) All figures should be automatically managed through an automated system.

5.1.6.5 Utilization Certificate (UC)

a) All type of expenditure should be maintained and UC should be generated automatically by fetching the expenditure data.

b) System should be compatible to generate UC in the defined format automatically.

c) Expenses gets verified by the State to generate the Utilization certificate in a defined timeline.

d) There should be provision to upload signature as well as supported documents to verify the UC.

e) The UC should be exported through pdf format.

5.1.7 Feedback Management System

a) The system should have feature for the parents/students to provide feedback on teachers, curriculum and overall college/university experience.

b) The system should be able to configure different types of feedback and categorize them.

c) There shall be functionality to analyze feedback data and generate reports on strengths, weakness and areas for improvement during the college/university evaluation.

d) Automated notifications can be sent to teachers, parents, and students when feedback is received or when actions are taken based on feedback.

e) The users can track the status of feedback submissions and their resolutions.

f) The system should have robust mechanism to assign the feedbacks to the concerned authority for taking necessary action against them.

g) There shall be an option to maintain feedback history data for reference and accountability.

5.1.8 Grievance Management System

a) Option for the users can submit grievances through the system, providing necessary details such as category, description, and any supporting documents.

b) The department authority to receive notifications for new grievances and can assign them to other section officials of the department.

c) The system should be able to track the progress of grievance resolution, including assignment, status updates, and closure.

d) The system should allow for the escalation of grievances to higher-level authorities if not resolved within a specified time frame.

e) System should have the capability to set the priority level of the grievance based on its urgency and impact.

f) System should have the capability to integrate with other application for fetching the data related to grievances.

5.1.9 Assembly Question Management

a) Options for users to capture questions raised in the assembly.

b) The user shall be able to mark the questions with respective section users.

c) There should be multi-level authorization of marking of questions.

d) System should have the provision for marking a single question against multiple section users.

e) Options to enter the answers against the tagged question by the user.

f) The system should have the provision for multi-level authorization of answers.

g) The system should have the provision for consolidating answers in case the multiple sections were involved in the answers.

h) The system should have the provision to export the questions and answers in pre-defined formats.

i) There should be provision to mark the unanswered questions.

5.1.10 NAAC Accreditation Monitoring

a) The system should have provision to monitor the applications of different colleges and universities.

b) The system should have provision for the user to see application status.

c) The system should be able to show detailed report of each application.

d) The system should have the provision to generate list of colleges/universities according to ranking.

e) The system should be able capture the data of the SSR Mock Test.

f) The system should have the provision to upload images and documents as required.

5.1.11 Governing Body Management

a) The system should have the provision for capturing the existing details of the governing body across the government & non-government colleges.

b) Provision to add form governing body in the colleges where it is not functional.

c) Provision for the collector user to recommend three names for the president of the governing body.

d) Provision to capture all information pertaining to the members of the governing body.

e) Provision to generate reports based on functional GB and non-functional GB.

f) Provision to generate reports on Governing Body both for government and non-government colleges.

g) Provision to keep a workflow during the process of choosing of Governing Body.

5.1.12 Executive Dashboard

a) Provision to showcase college wise data in the dashboard.

b) Provision to showcase University wise data in the dashboard.

c) Provision to showcase the personnel data in a graphical format.

d) Provision to showcase regular and non-regular teachers and its trends on the dashboard.

e) Provision to showcase data pertaining to GIA in the dashboard for the non-government colleges.

f) Provision to showcase grievance related data, total grievance received, solved and pending.

g) Provision to showcase funds disbursed vs UC submission data.

h) Provision to represent in bar graph the personnel who are about to take retirement in a certain period of time.

i) Provision to showcase performance of college against the quality education parameter.

5.1.13 MIS Reports

a) Provision to represent regular teaching staff vs Non-regular teaching staff.

b) Provision to showcase retirement report.

c) Provision to include following report:

   – Personnel Report
   – Quality Education Report
   – Facility Management Report
   – Personnel Transfer & Suspension Report
   – Funds Disbursement Report
   – Funds Utilization Report
   – Governing Body Report
   – Government College and Non-Government College Report
   – Principal Appointment Report
   – Grant-in Aid Report
   – College Performance Report
   – NAAC Report
   – Assemble Question Report

d) Provision for the system to export the report in pdf & excel format.

5.2 College Automation System

5.2.1 Student Information Management System

a) The system should have the provision to capture details like –

- Basic Details
  - Name
  - Gender
  - Date of Birth
  - Father's Name
  - Mother's Name
  - ID Proof
  - Address
  - Phone Number
  - Email
- Demographic Details
  - Ethnicity
  - Languages
  - Nationality
  - Marital Status
- Academic Information
  - Student ID or Admission Number
  - Enrollment Status (Full time, Distance)
  - Academic Program
  - Graduation Year
- Financial Information
  - Tuition and fees payment
  - Financial aid details (Scholarships/Grants/Loans)

b) Digital attendance for the students

c) There should be provision for the students to see their attendance

d) There should be provision to apply for leaves

e) Option to capture the medical reports of the students.

f) There should be provision to see the class schedule

g) There should be provision to see course syllabus

h) There should be provision to make fees payments via UPI, bank integration.

i) There should be provision to downloading fees receipts.

j) There should be provision to capture documents and images.

k) For each student, there shall be an auto-generated unique ID.

5.2.2 College Information Management System

a) There should be provision for the college/universities to enter its respective information.

b) Allocation of College/Universities Registration No, to each college/universities, and a unique ID shall be generated against each college/universities.

c) The system shall have the provision for capturing geo-location of the establishment of college/universities in different location.

d) There shall be provision to add multiple departments against the college / universities.

e) There shall be provision to capture the hostel details of the college.

f) Option to capture the staff quarters and their allotment details.

5.2.3 Student Class & Attendance Management System

a) There should be provision to create classes based on course schedules, faculty and classrooms.

b) There should be provision to capture attendance of the class through bio-metrics for each class session

c) There should be provision to generate attendance reports for students and faculties.

d) Options to capture the attendance of non-teaching staff members as well.

e) There should be provision to send alerts for absences.

f) There should be provision to integrate class schedules with digital calendar for students and faculties

g) There should be provision to record guest faculty details and their attendance.

h) There should be provision for manual attendance entry and modification.

i) There should be provision to manage extra classes.

5.2.4 Faculty Management System

a) There should be provision for faculty registration and capturing details like –

- – Personal Information
    - Full Name
    - Date of Birth
    - Gender
    - Phone Number
    - Email
    - Address
- – Educational Qualification
    - Degree's Earned
    - Institutions attended
- – Professional Experience
    - Previous employer
    - Positions held
    - Experience

b) There should be provision to apply for leave by the faculties.

c) There should be provision to manage and modify the class schedules.

d) Option to capture the details of the guest faculties.

e) There should be provision to put requests for extra classes.

f) There should be provision to see attendance of the students in the assigned classes along with their own attendance.

g) There should be provision to view and update course tracker.

h) There should be provision to generate their respective salary slips by logging into the application using their user ids.

5.2.5 Hostel Management System

a) There should be provision to capture hostel details like –

- – Hostel wing name
- – Total No of Rooms available
- – Total Occupancy

- Total Occupied
- Warden Name
- Warden Contact Number
- Warden Email Address
- Warden Address

b) There should be provision for student room allotment.

c) There should be provision room occupancy tracking and management.

d) There should be provision to see real time availability of rooms.

e) There should be provision to capture room details like –

- Room No
- No of Beds
- Furniture Provided

f) There should be provision for check-in and check-out of hostel residents through bio-metrics.

g) There should be provision to share residents' alerts with guardians/parents.

h) Option to capture the hostel fees paid by the students.

i) Options to create reports on the basis of hostel fee payment. Automated notification shall be sent to student and parents in case of pending hostel dues.

5.2.6 Library Management System

a) There should be provision for cataloging and classification of books, journals and other resources.

b) There should be provision for automated generation of unique identifiers like ISBN or Barcode.

c) There should be provision for student membership creation.

d) There should be provision to record borrowing and returning of books and materials.

e) There should be provision for online catalog search of books and materials and check their availability

f) There should be provision to integrate with RFID/Barcode scanner for resource tracking

g) There should be provision for tracking of resource movement within the library.

h) There should be provision for tracking students borrowing history

i) There should be provision to generate reports on books and materials

j) There should be provision to send notifications about due date and overdue items

k) There should be provision for management and registration of library related events.

5.2.7 Exam Management System

a) There should be provision for creation and management of exam schedules.

b) There should be provision for assignment of exam venues and seating arrangements.

c) There should be provision for creation and management of question bank.

d) There should be provision for categorization of questions by topic or subject. Option to categorize exam papers department wise.

e) Options to configure different types of exams.

f) There should be provision to assign exam invigilators to for a particular examination.

g) There should be provision to monitor exam sessions.

h) There should be provision to record attendance during exams through bio-metrics for both students and faculties.

i) There should be provision to manage special accommodations for students with disabilities.

j) There should be provision to record checking of answers sheets.

k) There should be provision to publish results.

l) There should be provision for managing the backlogs of the students.

m) There should be option to accommodate the students with active backlogs in the subsequent examination within their respective term.

n) There shall be provision for creating certificates for each students based on the marks received.

o) There shall be provision for auto-publication of results on the public website.

5.2.8 Event Management System

a) There should be provision for event creation and setup with event details.

b) There should be provision for planning and recording event logistics such as date, time, location etc.

c) There should be provision for online event registration and RSVP management for attendees

d) There should be provision for ticket creation and pricing management

e) There should be provision for online payment integration for ticket purchases

f) There should be provision to send event invitations and announcements

g) There should be provision recording guest speaker/ performer/ artist information.

h) There should be provision for capturing volunteer details

i) There should be provision for capturing catering and food services details.

j) There should be provision for capturing Audio visual setup details

k) There should be provision for generating event reports such as expenses, attendees etc.

l) There should be provision for sending real time updates and notification to attendees.

m) There shall be provision for managing the seminars of the colleges/universities.

5.2.9 Procurement Management System

a) Option for vendor registration and onboarding.

b) Provision for maintenance of vendor profiles and contact details.

c) System will have capability for evaluation of vendor performance and history.

d) There should be provision for creation and submission of purchase requisitions.

e) Option for approval workflows for requisitions.

f) There should be provision for generation and management of purchase orders.

g) There should be provision for requesting and receiving quotations from vendors.

h) Option for comparison of quotations for cost-effective decisions.

i) System will have functionality for budget allocation and tracking for procurement.

j) There should be provision for monitoring spend against allocated budgets.

k) There should be provision for management of supplier contracts and agreements.

l) There should be provision for tracking contract terms, renewal dates, and obligations.

m) There should be provision for hierarchical approval workflows for purchase orders.

n) There should be provision for recording the receipt of ordered items.

o) There should be provision for inspection of items for quality and quantity.

p) There should be provision for updating inventory records upon receipt of items.

q) There should be provision for generation of real-time reports on procurement activities.

r) There should be provision for notifications to vendors about order processing and status.

s) There should be provision for notifications to stakeholders about procurement milestones.

5.2.10 Asset & inventory Management System

5.2.10.1 Asset Management System

a) Option for recording and registration of newly acquired assets.

b) Functionality for capturing asset details such as name, category, location, etc.

c) Facility for generation of unique asset identification codes or barcodes.

d) Functionality for real-time tracking of asset movements and location changes.

e) There should be provision for classification of assets into categories (furniture, equipment, technology, etc.).

f) There should be provision for organization of assets by departments or units.

g) There should be provision for different levels of access for staff managing assets, administrators, and users.

h) There should be provision for tracking asset status (in use, in repair, disposed, etc.).

i) There should be provision for alerts for maintenance or repair based on asset status.

j) There should be provision for scheduling and tracking of routine maintenance tasks for assets.

k) There should be provision for notifications for upcoming maintenance schedules.

l) There should be provision for check-out of assets to users or departments.

m) There should be provision for recording asset return with condition assessments.

n) There should be provision for tracking asset depreciation and value over time.

o) There should be provision for generation of depreciation reports for financial purposes.

p) There should be provision for managing asset transfers between departments or locations.

q) There should be provision for reassignment of assets to different users or departments.

r) There should be provision for process for asset disposal or sale when no longer needed.

s) There should be provision for compliance with disposal regulations and documentation.

t) There should be Functionality for maintenance and repair history tracking for each asset.

u) There should be Functionality for access to historical data for decision-making.

v) There should be Functionality for recording warranty information and service agreements for assets.

w) There should be functionality for setting reminders for warranty expirations.

x) There should be functionality for preventing double booking of reserved assets.

y) There should be functionality for conducting regular asset audits for verification and reconciliation.

z) There should be provision for identification of missing or misplaced assets.

5.2.10.2 Inventory Management System

a) Functionality to maintain a centralized database for tracking university-wide inventory items.

b) Functionality to monitor real-time stock levels, locations, and statuses of all items.

c) Functionality to categorize items based on types (e.g., IT equipment, lab supplies, office furniture).

d) System would have functionality to assign tags or labels for easy sorting and identification.

e) System would have facility to record purchase orders, suppliers, and procurement details for each item.

f) System would automate reorder notifications based on predefined stock levels.

g) System would record item returns and condition updates after checkout.

h) System would track maintenance schedules and repair history.

i) Provision to generate reports on inventory levels, usage trends, and financial values.

j) Provision to Send automated alerts for low stock levels, pending maintenance, or overdue returns.

5.2.11 Fee Management System

a) There should be facility for capturing student information during enrollment.

b) There should be facility for assigning unique identifiers or registration numbers.

c) There should be facility for creation and management of fee structures for different courses or programs.

d) There should be facility for setting tuition fees, additional charges, and discounts.

e) There should be functionality for acceptance of different payment methods (cash, credit/debit cards, online transfers, etc.).

f) There should be functionality for integration with payment gateways for online payments.

g) There should be functionality for automated generation of fee invoices for each student.

h) There should be functionality for itemization of fees based on the fee structure.

i) There should be functionality for recording fee collection and marking as paid.

j) There should be option for manual fee collection entry for non-standard payments.

k) There should be option for calculation and addition of late fees for overdue payments.

l) There should be option for automatic generation of late fee invoices.

m) There should be option for management of fee waivers and scholarship applications.

n) There should be option for printing or sending electronic receipts to students upon payment.

o) There should be option for keeping records of issued receipts.

p) There should be option for process for fee refunds in case of withdrawals or cancellations.

q) There should be provision for generation of financial reports (fee collection, pending payments, etc.).

5.2.12 Payroll Management System

a) There should be provision to capture and maintain employee details, including personal information, contact details, and employment history.

b) There should be provision for automated calculation of employee salaries based on attendance, working hours, and fixed components.

c) There should be provision for handling different salary components such as basic pay, allowances, bonuses, and overtime.

d) There should be provision for calculation and management of deductions such as taxes, retirement contributions, loan repayments, and health insurance.

e) There should be provision for handling employee benefits like leave encashment, medical reimbursement, and retirement plans.

f) There should be provision for automatic calculation of taxes based on tax brackets and employee details.

g) There should be provision for generation of tax reports and form 16 for tax filing.

h) There should be provision for integration with attendance systems to calculate accurate working hours and leave deductions.

i) There should be provision for calculation of salary adjustments due to leaves taken.

j) There should be provision for tracking employee promotions and role changes.

k) There should be provision for automatic calculation of salary increments based on predefined rules.

l) There should be provision for batch processing of payroll calculations for all employees.

m) There should be provision for generation of pay slips for each employee with detailed salary breakdown.

n) There should be provision for online access for employees to view and download pay slips.

o) There should be provision for emailing or distributing pay slips through secure channels.

p) There should be provision for integration with banking systems for direct deposit.

q) There should be provision for online portal for employees to access pay slips, tax documents, and update personal information.

r) There should be provision for calculating salary arrears for salary revisions or retroactive payments.

s) There should be provision for generation of payroll reports, salary summaries, and deductions.

5.2.13 Document Management System

a) There should be provision for centralized storage of digital documents and files.

b) There should be provision for organizing documents by categories, departments, or subjects.

c) There should be provision for version tracking for documents to manage revisions.

d) There should be provision for access to previous versions and history of changes.

e) There should be provision for quick search and retrieval of documents based on keywords, metadata, or content.

f) There should be provision for advanced search filters for accurate document retrieval.

g) There should be provision for uploading and importing documents in various formats.

h) There should be provision for adding and managing metadata to facilitate document categorization and search.

i) There should be provision for customizable metadata fields based on document types.

j) There should be provision for ensuring appropriate document access based on roles.

k) There should be provision for collaboration features allowing multiple users to work on the same document.

l) There should be provision for real-time co-authoring and editing of documents.

m) There should be provision for secure sharing of documents with internal and external stakeholders.

n) There should be provision for links or sharing options with controlled access.

o) There should be provision for notifications and alerts for pending approvals.

p) There should be provision for adding annotations, comments, and notes to documents.

q) There should be provision for archiving of older or less frequently accessed documents.

r) There should be provision for retrieval of archived documents when needed.

s) There should be provision for mobile app or responsive interface for accessing documents on mobile devices.

t) There should be options for users to download and print documents as needed.

u) There should be provision for generating document previews for common file formats.

v) There should be provision for viewing documents without downloading them.

5.2.14 Accreditation Data Management System

a) Provision to generate required reports in desired formats for NAAC & national ranking agencies such as NIRF

b) Provision for defining various parameter for accreditation of college/universities.

c) There shall be provision to upload data against the set parameters with geo-tagged pictures and other relevant data.

d) Provision to store policies related to accreditation.

e) Provision to pull the data from other modules and generate report out of it.

5.2.15 Placement Management System

a) There shall be provision to create student's profile for the placement.

b) Employers should be able to post job/internship opportunities, specifying details such as job description, qualifications, location, and application deadline.

c) Provision for the students to browse and apply for job/internship listings, attaching their resumes and cover letters as needed.

d) The system have provision to incorporate a matching algorithm that suggests relevant job opportunities to students based on their profile and preferences.

e) Employers and students should be able to schedule interviews through the system, with notification reminders and calendar integration.

f) Students should be able to track the status of their job applications, including whether they are under review, accepted, or rejected.

5.2.16 Syllabus Management System

a) Provision to create syllabus for each academic year for different department.

b) Functionality to update syllabus for the courses against the curriculum.

c) Provision to track the completeness of the syllabus during the academic year.

d) There shall be option for storing the data of the syllabus using a central repository system.

5.2.17 Learning Management System

a) There shall be functionality for online assignments, conduct & track various exams – interactive online quizzes, MCQs, and descriptive exam management.

b) There shall be option for the faculties to upload lectures, notes, e-books and a wide range of study materials online to improve learning horizons.

c) Functionality for Discussion forums & internal communication channels such as chat, emails, etc for engaging students virtually & helping them discuss their study-related doubts.

d) To finish the syllabus on time & meet academic goals, higher education LMS enables faculty to create lecture-wise teaching plans & share the syllabus with students.

e) Provision to integrate with Microsoft Teams or Zoom to create online learning sessions.

f) Provision to store online contents against the course syllabus for accessing it by the students 24*7.

5.2.18 Student Transfer and Exit

a) Provision to capture student transfer and exit.

b) In case of student transfer, provision for the academic manager to view the clearance of the students from each department.

c) Provision to transfer necessary information of the students from one college to another.

d) The system shall have provision for managing and generation report for Mid-session transfer, Transfer Certificate for Dropout.

e) In case of student exit, provision should be there to relieve all necessary documents and certificates to the students and make the data archive for that particular student.

5.2.19 Leave Management System

a) Provision for both academic and non-academic to apply for leaves.

b) Provision to configure holiday list for an academic year.

c) Provision to configure leave approval workflow right from the application to the approval/rejection of leave.

d) Provision to view department wise absentees.

e) Integration of leave management system with the attendance management system and payroll.

f) There shall be provision to auto-update leave balance for both faculties and other personnel.

g) Leave management system, allows defining & configuring the rules for various types of leaves like casual leave, earned leave, compensatory leave, medical leave, service base leaves like study leave, maternity leaves & paternity leave, etc.

5.2.20 Mobile Application

a) The system shall have the provision for multiple operations in mobile application for teachers as well as students / parents.

b) It should enable a better workflow for users to manage the system in a better way.

c) Features such as attendance, leave application, result entry, college/universities inspection etc., that enable users to access information to assist in decision making and make the system more efficient

d) Provision for accessing mobile app in both Android and iOS Platform.

e) The mobile application shall have geo-tagging feature.

5.2.21 Analytical Dashboard

a) Provision for role-based access control, ensuring that users only see and have access to information and features relevant to their roles.

b) The dashboard should provide a concise, at-a-glance overview of key university metrics and KPIs, such as enrollment statistics, financial summaries, and academic performance indicators.

c) Users should receive important announcements and notifications through the dashboard, including academic deadlines, event updates, and system alerts.

d) The dashboard should provide access to financial information, such as tuition statements, payment due dates, and links to financial aid resources.

5.2.22 MIS Reports

a) System would be robust enough to analyze data and present report as per the user defined formats.

b) Following pre-bundled reports shall be there in the MIS:

- Student Reports
  - Student Enrolment Reports
  - Student Attendance Reports
  - Student Progress Reports
  - Grade Reports
  - Exam Report
- Financial Reports:
  - Budget Reports
  - Expense Reports
  - Revenue Reports
  - Financial Statements (Balance Sheet, Income Statement)
- Course and Curriculum Reports:
  - Course Catalogue
  - Class Schedules
  - Course Evaluation Reports
  - Curriculum Planning Reports
- Staff and Faculty Reports:
  - Staffs Attendance Report
  - Employee Payroll Reports
  - Faculty Workload Reports
  - Staff Performance Reports
- Library Reports:
  - Library Catalogue Reports
  - Circulation Reports
  - Resource Utilization Reports
- Facility and Asset Reports:
  - Maintenance Reports

- Asset Inventory Reports
- Compliance and Regulatory Reports:
- Accreditation Reports
- Compliance with Educational Standards Reports

5.3 Integration

5.3.1 SAMS

a) Option to integrate with the existing SAMS application to fetch the data of the students who have got admission at various colleges.

b) Option to fetch all the basic details of the students along with their education details which shall help in creating a student profile while tagging them to a particular college.

c) Option to fetch the college permission granted date along with all other relevant information pertaining to a college which shall be included in the college profile information.

5.3.2 Scholarship Portal

d) Options to integrate with the scholarship portal to fetch the details of the students who have taken various scholarship.

e) Option to fetch the scholarship application of the students and tag them to a particular student profile.

5.3.3 University Website

a) The system would be robust enough to integrate with all the available universities website.

b) The system would be able to send and receive data through API.

c) Provision to showcase the data received through integration in the executive dashboard for the department.

5.3.4 Bio-Metric Devices for Attendance

a) Provision to integrate with the bio-metric systems across the colleges/universities across the state of Odisha.

b) Provision to capture the attendance of the faculties and non-teaching staff across the state of Odisha.

c) Provision to view list of absentees across the colleges of Odisha.

d) Provision to view total number of staffs present across the state of Odisha in the real-time.

5.4 Supply and Installation of Database License and Support

a) Supply and Installation of RDBMS licenses at Odisha State Data Center.

b) Providing updates, patches and support from the date of delivery of license.

c) Configure the database instance in the facilities provided by OCAC/ HED

d) Testing the environment

e) The functional requirement of the RDBMS would be as follows :

Sl#	Item Description
1)	Proposed database should be Enterprise based RDBMS.
2)	The RDBMS should have OEM Support
3)	It should be based on open standards and should offer latest version which is commercially available with 24*7*365 support by certified OEM expert
4)	The Database should be compatible to run on important/ popular versions of 32/64 bit (x86-64) OS viz RedHat, Suse, Ubuntu, CentOS, Oracle Linux, Windows, UNIX, OS/2 etc. support on multi hardware platform
5)	The License should be on the name of OCAC / HE Department.
6)	The database should have the features of configuring in clustering / high availability mode.
7)	Database should have tools for Optimization.
8)	The SSP in consultation with OEM should conduct data migration study and submission of Database Assessment report if its migration case
9)	Data migration should include extracting the required data from Legacy system with enterprise migration tool
10)	Loading the cleansed data into proposed system

Sl#	Item Description
11)	All enterprise grade tools, High Availability tools, Monitoring tools shall be part of the offered solution and shall be arranged by the OEM without any additional cost.
12)	All support services including updates, upgrades and patches for Database shall be provided by the OEM till the end of the AMC period.
13)	The DB platform should provide support for Schema, Tables, PL/SQL, functions, triggers, stored procedures support, Indexes, Views, Sequences, Scheduler
14)	The Proposed database should be Compatible with other Enterprise based RDBMS
15)	Data validation should be performed after the successful migration using live-Compare utility of OEM
16)	Databases should have built-in capabilities necessary to integrate and manage other data sources for structured, unstructured and NOSQL databases and deploy rapidly across multiple environments
17)	Database shall provide native functionality to store and retrieve XML Images and Text data types.
18)	Database Support: Database should have 24x7x365 Technical Support
19)	All the required subscription support to be factored and needs to supply from Day 1 for the compliance and completion of the project.
20)	Database should be fully SQL compliant.
21)	Database should provide Encryption of data files similar to Transparent Data Encryption feature and it should also provide Data Redaction feature for row encryption
22)	OEM should also have INDIA Local office with support team
23)	Product Training to END Customer (Free Recorded) must be available on training portal
24)	Documentation of the products and tools should be available on Portal and it is properly documented online

6 Payment Terms

6.1 Schedule

Sl#	Milestone	Deliverables	Payment Terms
a)	Completion of system requirement study (SRS)	SRS document approve by OCAC/HED	20% cost of Study, Design, development & Implementation of the particular module
b)	Completion of User Acceptance Test (UAT)	UAT Certificate by OCAC/HED	40% cost of Study, Design, Development & Implementation of the particular module
c)	Supply of RDBMS license	Issue of license in the name of OCAC/HED	90% of RDBMS license cost
d)	Supply of Analytical Tool license	Issue of license in the name of OCAC/HED	90% of Analytical Tool cost
e)	Go-live of the project	Go-live certificate by OCAC/HED	– 20% cost of study, design, development and implementation of the particular module – Balance 10% of RDBMS License cost – Balance 10% of Analytical Tool cost
f)	Application Maintenance Support of the project	Activity report	– 100% of Application Maintenance Support cost of the project (all modules) equally divided by duration (quarter) – Balance 20% cost of study, design, development and implementation of the project (all modules) equally divided in 4-quaters (first year)
g)	Onsite resources for Project Management support	Absentee statement	100% cost equally divided by the total duration (quarter)

Sl#	Milestone	Deliverables	Payment Terms
h)	Cyber Security Audit of the complete application	Submission of the certificate by the CERT-IN empaneled agency/auditor	100% of the Cyber Security Audit cost
i)	Configuration of SSL certificate and it's renewal year on year	Submission of relevant documents	100% of the SSL cost
j)	Annual Technical Support of the supplied RDBMS, tools and license from 2nd year onwards	Documentary evidence on support of renewal	100% of the yearly quoted cost will be paid at the beginning of respective year

6.1.1 Recurring Expenses

Expenses incurred for SMS, Email would be reimbursed as per actual basis. So the SI shall take prior approval from OCAC on the tentative requirement along with the estimate before purchase of these services.

6.1.2 General Conditions

a) The request for payment shall be made to the purchaser in writing, accompanied by invoices describing, as appropriate, the goods delivered and related services performed, and by the required documents submitted pursuant to general conditions of the contract and upon fulfilment of all the obligations stipulated in the Contract.

b) Due payments shall be made promptly by the purchaser, generally within thirty (30) days after submission of an invoice or request for payment by the supplier/ selected SI/authorized partner, and the purchaser has accepted it.

c) The currency or currencies in which payments shall be made to the supplier/ selected SI under this contract shall be Indian Rupees (INR) only.

d) All remittance charges will be borne by the supplier.

e) In case of disputed items, the disputed amount shall be withheld and will be paid only after settlement of the dispute.

f) Payment in case of those goods which need testing shall be made only when such tests have been carried out, test results received conforming to the prescribed specification.

g) Any penalties/ liquidated damages, as applicable, for delay and non-performance, as mentioned in this bidding document, will be deducted from the payments for the respective milestones.

h) Taxes, as applicable, will be deducted/ paid, as per the prevalent rules and regulations at the time of billing. Legitimate payment shall be made within 30 working days of the receipt of invoice along with supporting documents subject to penalties, if any.

7 Performance Requirement (SLAs)

If the selected bidder fails to achieve the below milestones/targets of scope of work within the corresponding Delivery Period and any extension thereof, unless such failure is due to force majeure situation or due to OCAC's default, penalty shall be imposed by OCAC on the selected bidder.

If at any time during the Contract, the selected bidder should encounter conditions impending timely performance of service, the selected bidder shall promptly notify to OCAC in writing of the fact of the delay and its likely duration along its cause(s). As soon as practicable after receipt of the selected bidder's notice, OCAC shall evaluate the situation and may at its discretion waive the penalty on the request of the selected bidder.

Sl#	Major Area	Parameter	Requirements	Penalty
a)	Development & Implementation	Major milestone during development and implementation as per project timeline.	As per project timeline	Rs. 500/- per day delay
b)	Response time for bug fixing	Time taken (after the request has been informed) to acknowledge problem	Within 24 hours from the time the bug is reported.	Rs. 100/- per hour delay
c)	Resolution Time (Only for Bug fixing)	Time taken by the service provider to fix the problem	Problems with severity within 48 hours from the time of reporting.	Rs. 500/- per hour delay
d)	Resource Deployment	Start of service	As per project timeline	Rs. 200/- per day delay
In case, the delay is more than 24 weeks and the cause of delay is attributable to Service Provider, authority reserves right to increase the penalty value and/ or take appropriate action against the bidder such as cancellation of contract etc.				

e) Application Availability: The Application covering all the features shall remain operational during the scheduled operation time. Application availability and performance will be measured on daily basis and reporting period will be monthly.

Target	Penalty
>= 98%	--Nil--
> 95% but <98%	0.5% of Quarterly billed value of Application Maintenance Support
> 90% but =<95%	1.0% of Quarterly billed value of Application Maintenance Support
=<90%	2.0 % of Quarterly billed value of Application Maintenance Support

f) Performance of system refers to the proper and timely functioning of the system's functionalities. The application should be available and performing as per functionalities

g) The non-availability for application service is measured on monthly basis and excluding the scheduled maintenance shutdown and incidents.

h) Application availability and performance will be monitored and reports will be generated as per the monitoring system deployed at OSDC.