Request for Proposal

Selection of Service Provider for Development / Customization and Implementation of Student Academic Management System

RFP No.: OCAC-SEGP-SPD-0032-2020-ENQ-20050

Volume-II
Terms of Reference

OCAC

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Abbreviation

BSE	*Board of Secondary Education*
CAF	*Common Application Form*
CHSE	*Council of Higher Secondary Education*
CIP	*College Infrastructure Project*
CLC	*College Leaving Certificate*
CR	*Change Request*
DeiTY	*Department of Electronics & Information Technology*
DHSE	*Director Higher Secondary Education*
DNS	*Domain Name System*
DOB	*Date of Birth*
DSYS	*Department of Sports & Youth Services*
DTET	*Director Technical Education & Training*
DVE	*Director of Vocational Education*
FRS	*Functional Requirement Specification*
HED	*Higher Education Department*
HLD	*High Level Design*
HPC	*High Power Committee*
HSS	*Higher Secondary School (Erstwhile Junior College)*
ITI	*Industrial Training Institute*
LLD	*Low Level Design*
MIS	*Management Information System*
MR	*Money Receipt*
MRIN	*Money Receipt-cum-Index Number*
NCC	*Nodal College Centre*
OH	*Orthopedically Handicapped*
PDIS	*Post Diploma in Industrial Safety*
PH	*Physically Handicapped*
PMU	*Project Management Unit*
QMT	*Quality Monitoring Tool*

RDBMS	*Relational Database Management System*
RDE	*Regional Directorate of Education*
ROI	*Return of Intermediate*
ROM	*Return of Matriculate*
S&ME	*School & Mass Education Department*
SAMS	*Student Academic Management System*
SC	*Scheduled Caste*
SCTEVT	*State Council for Technical Education & Vocational Training*
SD&TE	*Skill Development & Technical Education Department*
SDC	*State Data Centre*
SIP	*Staff in Position*
SLC	*School Leaving Certificate*
SP	*Service Provider*
SRC	*SAMS Resource Centre*
SRS	*System Requirement Specification*
SSL	*Secure Sockets Layer*
ST	*Scheduled Tribe*
TE&SCERT	*Teacher Education & State Council of Educational Research & Training*
UAT	*User Acceptance Testing*

Table of Contents

1   Background

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. The sequence of implementation of SAMS for last 12 years is given below:

Year Session	Activities
2009-10	Pilot implementation in 60 Junior Colleges covering all 30 Districts in offline (Common Application Form) mode to test its utility & efficiency
2010-11	– Extended to 169 Junior colleges covering all sub-divisions in online mode – Piloted in 53 Degree Colleges
2011-12	– State wide rolled out in all (1,295) Junior Colleges – Extended to 162 Degree Colleges covering all sub-divisions – *Project Management Unit was set-up at both State & District level which continued till 2020-21*
2012-13	– Continued in all (1,334) Junior Colleges – Rolled out in all (671) Degree Colleges
2013-14	Continued in all – Junior (1,431) Colleges – Degree (702) Colleges
2014-15	Continued in all – Junior (1,519) Colleges – Degree (705) Colleges
2015-16	Continued in all – Junior (1,589) Colleges – Degree (714) Colleges

2016-17	– Continued in all
	  ▪ Junior (1,970) Colleges
	  ▪ Degree (840) Colleges
	– New implementation in all
	  ▪ Vocational (231) Colleges
	  ▪ Sanskrit (185) Colleges

Year Session	Activities

2017-18	– Continued in all
	
	  ▪ Junior (1,993) Colleges
	  ▪ Degree (840) Colleges
	  ▪ Vocational (231) Colleges
	  ▪ Sanskrit (185) Colleges
	
	– Piloted in all Government ITI (49) covering all 30 districts

2018-19	– Continued in all
	
	  ▪ Junior (2,002) Colleges
	  ▪ Degree (985) Colleges
	  ▪ Vocational (231) Colleges
	  ▪ Sanskrit (185) Colleges
	
	– Rolled out in all Government & Private ITIs (575) Following institutions/colleges also came into SAMS fold
	
	  ▪ All Polytechnic Institutions (165) of DTET
	  ▪ All Teacher Education (84) Colleges of TE&SCERT
	  ▪ Two Physical Education Colleges of Sports Department
	  ▪ All Correspondence Colleges of CHSE

2019-20	Continued in all – 904 Degree Colleges – 142 Shastri (Sanskrit) Colleges – 2016 Junior Colleges – 224 Vocational Colleges – 164 Upa Shastri (Sanskrit) Colleges – 84 Teacher Education Colleges – 507 Industrial Training Institution (ITIs) – 166 Polytechnic Schools – 2 Physical Education Colleges

2020-21	– Continued in all
	
	  ▪ 889 Degree Colleges
	  ▪ 140 Shastri (Sanskrit) Colleges
	  ▪ 2032 Junior Colleges
	  ▪ 224 Vocational Colleges
	  ▪ 170 Upa Shastri (Sanskrit) Colleges
	  ▪ 81 Teacher Education Colleges
	  ▪ 504 Industrial Training Institution (ITIs)
	  ▪ 158 Polytechnic Schools
	  ▪ 2 Physical Education Colleges

Year Session	Activities

	– New additions
	  ▪ 70 Post Graduate Colleges
	  ▪ 11 Post Diploma in Industrial Safety (PDIS) Institutions

1.1 Institutions coming under SAMS
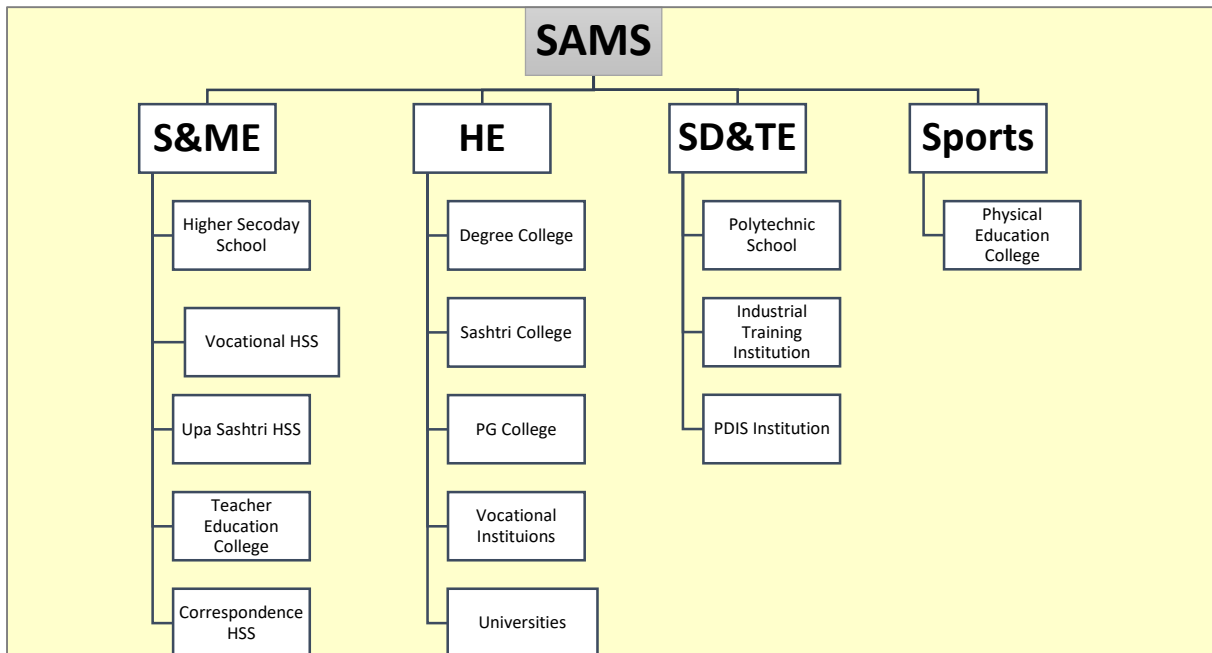
1.2 Courses covered under SAMS
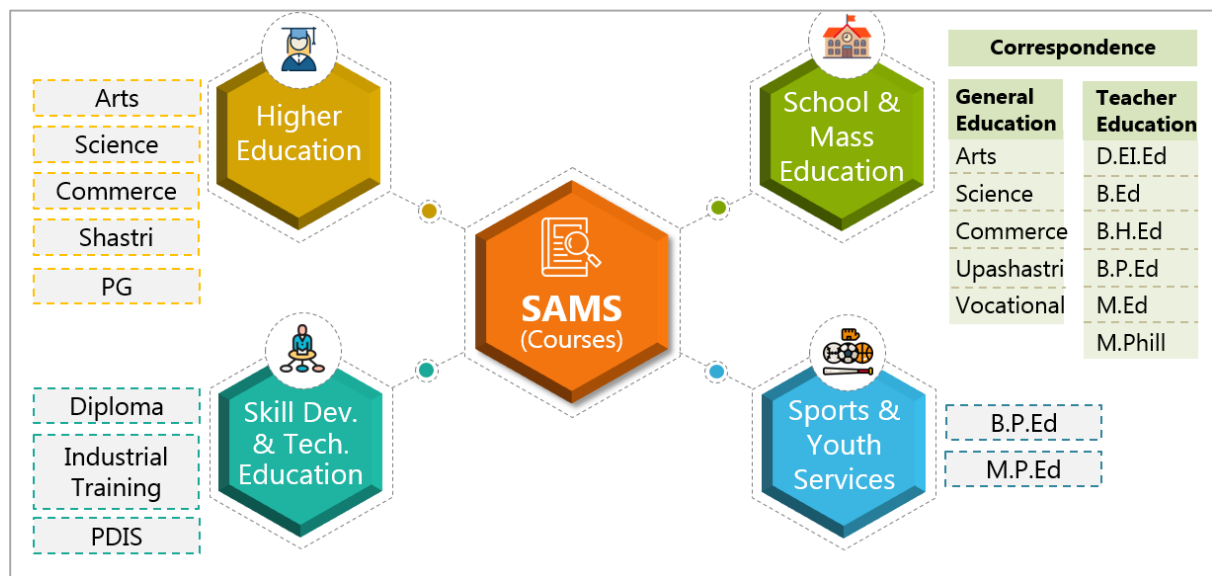
1.3 Stakeholders

1.3.1 Departments / Directorate / Council / Institutes

Following are the departments / directorates in the Government of Odisha which will use the proposed application

– All Educational Institutions covered under SAMS

– Electronics & Information Technology Department

o *Odisha Computer Application Center*

– School and Mass Education Department

o *Directorate of Higher Secondary Education*
o *Teacher Education & State Council of Educational Research & Training*
o *Council of Higher Secondary Education*

– Higher Education Department

o *Directorate of Higher Education*
o *Regional Directorate(s) of Education*
o *All Universities of the State*

– Skill Development and Technical Education Department

o *Directorate of Technical Education & Training*
o *State Council for Technical Education & Vocational Training*

– Sports & Youth Services Department

– ST & SC Development, Minorities & Backward Classes Welfare Department

1.3.2 Stakeholder Involvement

Key stakeholders involved in operationalization of SAMS are as follows.

Stakeholders	Roles	Last Year Numbers
Department	Define polices, process, reservation rules, sanctioned strengths, etc	4
Directorate / Regional Directorate	Maintain master database, prepare guidelines, common prospectus, affiliations, address implementation challenges, etc.	7
Council / University	Online Return of Matriculate / Intermediate, Form fill-up for Examination, Correspondence course admission, curriculum, etc.	10
District Nodal Colleges / Center	Monitor the activities of the colleges in their District with regard to receipt of application,	120

Stakeholders	Roles	Last Year Numbers
	verification, validation, admission, data updation, etc.	
SAMS Resource Center	Receive application, fees collection, application validation & data digitization	1,344
School / College / Institution	Admission data updation, conduct spot admission, college profile updation, staff details updation, attendance updation, Infrastructure details updation, etc.	5,019
Validation Team Member	Update the validated application, compare with different MIS reports, etc	7,500
Student	Registration Card Download, Online Examination Form Fill-up, Admit Card Download, Query / Grievance, Hostel Fees, Scholarship Application, etc	6,00,000
Applicant	Profile registration, online application, fees payment, intimation download, query / grievance, etc	9,00,000

1.4   Objective

− Single window portal for the students passing 10th Board / 12th Board / Degree / ITI / Diploma examination of Odisha to take admission for their higher studies in any educational institute of Odisha.

− Application shall be mobile compatible i.e. responsive.

− Applicant can apply for admission from the remotest areas of the State

− Continuance of current e-Services as well as additional e-Services as per the requirement of Departments to the Students, Colleges and other Stake Holders along-with Common Citizens in a transparent, hassle free, economic and timely manner.

− Facilitate the setting up of secure & reliable I.T. infrastructure at the State and Field level

− Complete alignment of I.T. with all activities of Higher Secondary Schools, Colleges, Councils, Universities, Directorates and Departments.

− Customer-centric service delivery for all stakeholders

− Provide various reports/inputs for decision making

− Streamline processes through data sharing and integration

2 Existing SAMS Portal

Following modules/functions are already developed, implemented & continuing successfully since its pilot in the year 2009.

2.1 e-Admission Modules

Master Creation & Configuration	− School / College / Institutions Codification with basic information mapped with demography − School / College / Institutions Registration using mobile & email which are authenticated through OTP − Mapping of SAMS Resource Center & District Nodal College − Add, edit, update stream/courses, trade / branch, sanctioned strength / intake capacity of seat, subject & honors − Add, edit, update of Hostel information such as intake, category (boys/girls & reservation). − Add, edit, update of School, college application, admission and hostel fees
Applicant	− Applicant registration using mobile & email authenticated through OTP − Online application for admission − Edit / modify online application − Uploading of supporting documents / photographs − Online payment of application fees/ admission fee. − Print application form − Download intimation − Merit list comparison
SAMS Resource Center	− Generate Money Receipt-cum-Index Number − Data digitization − Access different role based MIS − Error reporting − Online fees contribution to central account − Report of application fees collection & contribution
Validation Team Member	− Registration through OTP − Track the application assigned

	− Update the application with correction (if any)
	− Access different role-based MIS for validation comparison
Selection Process	− Preparation of provisional/final merit list as per rules
	− Intimation to applicants
	− Publish merit list in the website
	− Generate vacancy list
	− Process for subsequent selection
School / College / Institution	− Admission data updation
	− Data updation error reporting
Contactless Admission Process	− Check the previous year colleges and course-wise cut-offs
	− Select choice of college and the course
	− Pay online Application fees & submit application
	− Get notified on being shortlisted
	− Fill the required details and submit the required documents
	− Online verification of documents by college
	− Admission approval by College
	− Payment of Admission Fees by Student
	− Generation of Enrollment Number of Student
	− Provision for HSS students to register for spot admission in the system
	− Real time validating and updating admission data

2.2 e-Administration

This module shall help to streamline various administration processes of the school / college / institution. It facilitates various services provided to the students post admission like Issuance of ID / Library Card / Allotment of Sections / Subjects / Hostels, Attendance, College Leaving Certificates, etc.

Staff-in-Position [SIP]	− Creating the Employee master list available at the school / college / institution
	− Provision to update relevant staff information like staff strength, basic details, and vacant position of colleges

High Power Committee [HPC] Automation	− Application for opening of new School/ Colleges/ Streams/ Subjects and alteration of subjects / seats / streams
	− Online payment through Bank / Government treasury
	− Submission of compliance document
	− Online inspection report for grant of recognition to an Institution
	− Approval / rejection for the application with comments
	− Login credential to the new educational institution to check the application status
	− Integration with Council/ Directorate for verification of HPC Status during Registration approval.
	− Integration with Council/ Universities for approval of affiliation of the School/ College/ Institution
College Infrastructure Project [CIP]	− Manage Civil infrastructure details such as: o Number of Class rooms with sitting capacity o Details of laboratories o Details of library o Examination Hall o Auditorium o Canteen
	− Monitoring Building details i.e. Kuchha/Pakka, No. of toilets for staff, Playground (indoor and outdoor), details of Unsafe structure (if any), Details of risk reduction measures (firefighting equipment, first aid kit, etc.)
Quality Monitoring Tool [QMT]	− Tracking and monitoring attendance of the students & teachers
	− Generate month wise attendance sheet of the class
	− Creating the class timing and period master
	− Tagging of subject & section to a particular period
	− Tagging of teacher to a period
	− Generate stream wise/ subject wise time-table
	− Track and monitor the classes attended by the students and classes taken by teachers of a particular institution
	− Viewing of detailed information pertaining to name, date of joining & present status about teachers

2.3 Pre-Examination

Return of Matriculate (RoM)	− Maintain long roll sheet for every student after admission. − Generate Return of Matriculate sheet covering details like Student Name, DOB, Fathers Name, Address, Date of Admission, Last school passed, Combination of subject, Date of SLC, Signature of Student & Principal, and Students' Photo − Submit Return of matriculate to the Council of Higher Secondary Education (CHSE). − Online fees contribution to central account − Financial report on fees collection & contribution − Online verification of data by CHSE − Approve / reject / hold the data − Generate registration number of the approved candidates − Download Registration Card with the facsimile signature
Examination Form Fill-up	− Online form fill-up for all the courses and all types of examinations − Receive form filled up detail for School/ college / stream / applicant wise − Online verification of data by CHSE − Approve / reject / hold the application − Selection of Examination Center − Tagging of examination centers to a school/ college / student − Generate admit card of the approved candidates − Download admit card − Online fees contribution to central account − Report on fees collection & contribution

2.4 Mobile App

− Display of school / college / institution profile & information on stream, strength, subject, hostel, infrastructure, etc.

− Information on admission rules, reservation and policies

− Notify about admission schedules, selection and intimation

- Displaying post admission activities such as college time-table, study syllabus, activity, etc.
- Intimate the examination Center and schedule
- Download Admit Card
- Download Registration Card
- Get result & provisional mark sheet

2.5 Website

Following sections are available in the website developed exclusive for four departments.
- Student Registration
- Admission schedule
- Public Dashboard
- Important letters & guidelines
- MIS Reports
- Admission / Vacancy Status

2.6 Integration

SAMS application is integrated with following modules for data sharing and real time validation of the data entered by applicants (students) before submission of the final application.

a)	MSDG SMS Gateway
b)	Third Party SMS Gateway
c)	Third Party Email Gateway
d)	SBI Payment Gateway
e)	Axis Bank Payment Gateway
f)	UCO Bank Payment Gateway
g)	Bill Desk Payment Gateway
h)	Odisha e-District
i)	BSE, Odisha Result Database
j)	CHSE, Odisha Result Database

2.7 MIS Report

There are many MIS reports developed for internal monitoring purpose & general view of public for transparency. Few of those are given below

Validation Error Reports	Provision to generate the following validation error reports − Validation comparison with changes − Application pending for validation − Mark secured & maximum mark − Abnormal Max Mark − Applicants Passed Compartmentally − Students Unsuccessful in Qualifying Exam − Students Applied, Securing More Than 90% Marks − Examination Board Wise Applicants − Reservation Wise Application Validated − Weightage Wise Application Validated − Applicants Claiming International Sports Weightage − Application Validation Summary
Monitoring Reports	− Application Validation Monitoring Report − SRC wise Application Receipt Register − School / College wise Preference Status − School / College wise Admission Monitoring Report − Applicants agreed with Marks as per BSE Data Base − Statistics Report [Applied vs. Admission vs. CLC]. − Report on Total Mark and Mark Secured − Application Fees Contribution
Admission Reports	− Admission Schedule − Merit List (1st / 2nd / Spot): Notice Board − Applicants Selected for OTHER College − Applicants Selected for LOWER Option − Applicants Selected for YOUR College − Slide-Up TO Your College in 2nd

	− Slide-Up FROM Your College in 2nd
	− Slide-up Request Checklist
	− Merit List (Hostel/Subject)
	− Admission Register (Session Wise)
	− EDIT Name, Address, etc.
	− PH/OH Wise Admitted Student.
	− No of Students Admitted (Subject Wise).
	− Selected Applicants Opted for Hostel
	− Subject Wise Admitted Student
	− Cancel Admission List

2.8 Technology

2.8.1 Web App

Technology	Details
Operating System	MS Windows Server 2008 or higher
Web Server	IIS 7 OR Higher
Operating Platform	Dot Net Framework 4.0
Web Environment	ASP.Net ,C#
Database Server	SQL Server 2008/12

2.8.2 Mobile App

Environment	Description
Operating System Software	Microsoft Windows 2008 Server/ Linux
Web server	Apache 2.2
Application server	PHP 5
Database server	MySQL 5.0
Technology	PHP 5
Mobile OS	Android
IDE	Eclipse and XCode
Middleware	Web services
Dependency modules	Java Library & JAR Files

2.9 Solution Architecture

3-Tier architecture is proposed comprising of a framework defined as presentation layer, business layer and data access layers. Indicative 3-Tier architecture is proposed for the Application Solution. The entire processing would take place in the following layers:
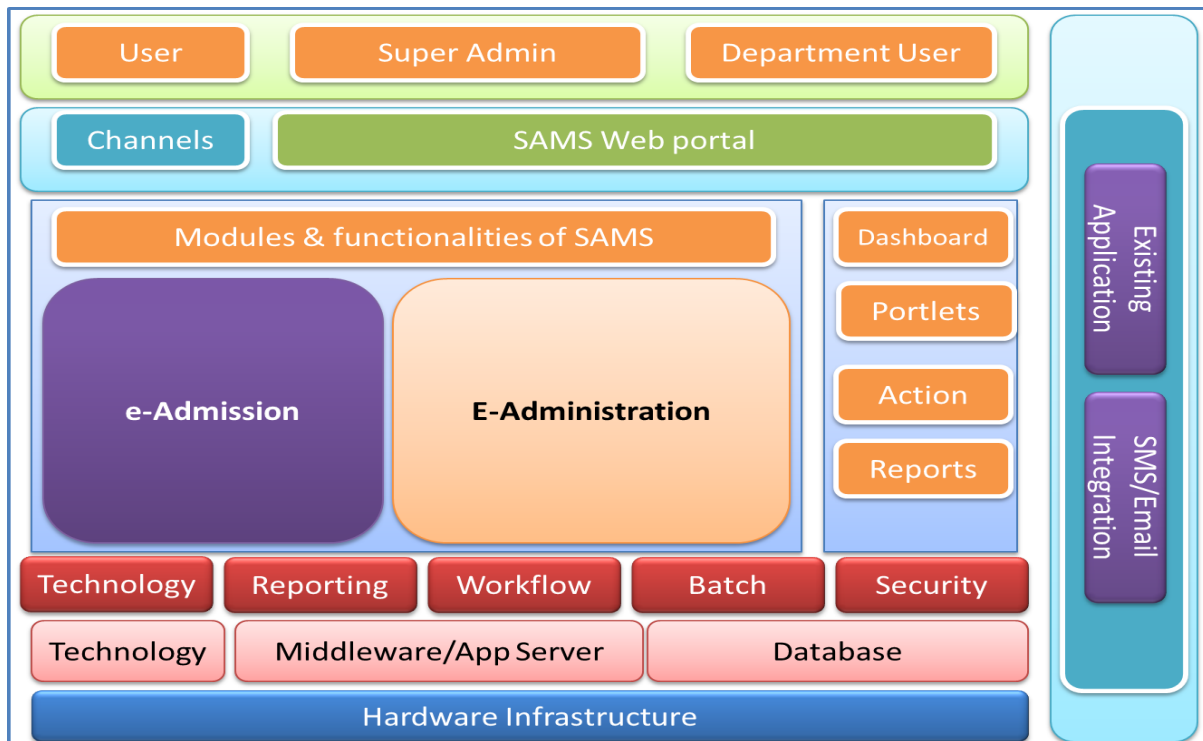
2.10 Student Registration Process Flow

Step 1	Step 2	Step 3	Step 4	Step 5
• Open your browser • Type www.samsodisha.gov.in • Select the course name available under various Departments	• Click on "New Student Registration" to register • Provide your Name, Mobile No & e-Mail id • An OTP will be sent on your given mobile no and e-Mail id for verification purpose	• Enter OTP, then type New Password & Confirm Password • On submission of above details login credentials will be created and sent to the registered mobile & e-Mail id	• Now, Click on 'Existing Student Login' & provide your registered Mobile No and Password given during registration. • On successful login, links i.e. Apply CAF, Payment etc. will be available.	• These login credentials will be used for various purposes during the transfer admission, download admit card, registration card and for other facilities

2.11 e-Admission Process Flow
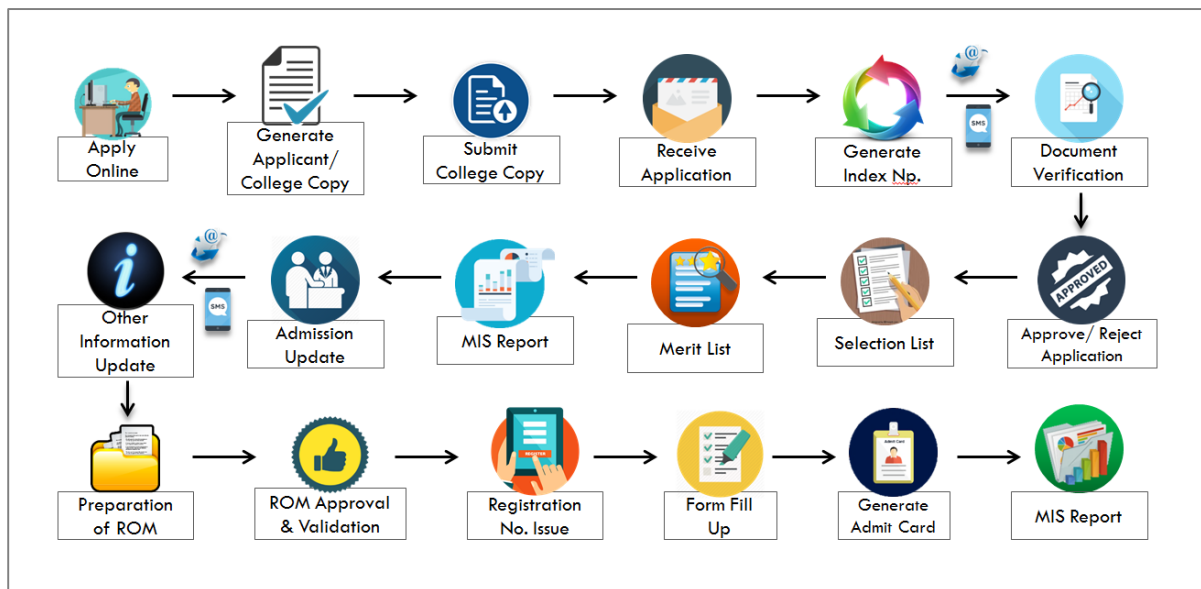
Important Notes

− **Application process is same for all courses except Teacher Education (TE&SCERT) & Post Graduation.**

− **Selection & Admission process may change year to year for each courses as per the policies / procedures decided by participating Departments**

− **Although, three phases (rounds) admission is proposed, but the process may extend for more phases (rounds) depending upon the vacancy and policies / procedures decided by participating Departments**

3   Scope of Work

3.1   Overview

Since the conceptualization and inception of e-Admission 12 years ago, the project has effectively become pivotal in facilitating admission procedure to *Higher Secondary Schools (erstwhile Junior College), Degree / Autonomous* Colleges*, Post Graduate, Sanskrit, Vocational, Correspondence, ITI, Polytechnic, Teacher Education & Physical Education* institutions of the State. However, with the ever-evolving vision associated with the project and the re-consolidation of the needs of the student community as well as other key stakeholders to the project, it is empirical to envisage a system overhaul in the current scenario.

The scope of work for the SP includes Requirement Study, Design, Development / Customization, Testing, Implementation, Operation and Maintenance of the solution along with Call Centre Management.

The SP will be given the source code rights of the existing SAMS Portal [mentioned under clause / sub-clause under 2] to customize it and also develop the new modules as per supplementary functional requirement in the same framework / architecture.

OR SP may develop a new solution which satisfies all the functionalities, services, features and performance of the existing SAMS Portal and supplementary / additional functional requirements/services described in the document as well.

If SP proposes the technology or database platform other than that is currently available, then required license cost would borne by SP.

The e-Admission process starts from the 1st week of May every academic session. Hence, the SP is expected to be ready for implementation of the system by that time

In this backdrop, OCAC invites proposal from reputed IT Agencies for management of this award winning project for a period of five years, which may be extended for another two years based on the requirement & performance of the Service Provider at the same cost/rate & terms.

3.2 Implementation Requirements

3.2.1 Pre Admission Requirement

Sl#	Activities	Department
a)	Online Application & Admission for Hostel, Stream & Subject in all Higher Secondary Schools (erstwhile Junior College) – Arts, Science, Commerce, Vocational & Sanskrit courses	S&ME
b)	Online Application & Admission Hostel, Stream/Honors & Subject in all Degree Colleges – Arts, Science, Commerce & Sanskrit courses	HE
c)	Online Application & Admission in all Public Universities of the Odisha State, Government and Government Aided Colleges for Post Graduate – General Courses (Arts, Science, Commerce) and Professional Courses (LLM, MCA, MBA, MJMC, etc)	HE
d)	Online Application & Admission for Correspondence Courses of Arts & Commerce stream in selected Higher Secondary Schools (erstwhile Junior College).	S&ME
e)	Online Application & Admission for Teacher Education Courses	S&ME/HE

Sl#	Activities	Department
f)	Online Application & Admission for ITI Courses	SD&TE
g)	Online Application & Admission for Diploma Courses	SD&TE
h)	Online Application & Admission for Post Diploma in Industrial Safety (PDIS) Courses	SD&TE
i)	Online Application & Admission for Physical Education Courses	S&YS

3.2.2 Post Admission Requirement

Sl#	Activities	Department
a)	Online Registration i.e. Return of Matriculate (RoM) for CHSE including Correspondence courses	S&ME
b)	Online form fill-up & generation of admit card for Annual Examination for both Regular / Ex-Regular candidates including Correspondence courses	S&ME
c)	Online Registration (RoI) for the students taken admission in the Degree & PG courses of the concerned Colleges/Universities in Odisha	HE
d)	Online Form Fill-up (Semester Wise of both regular & ex-regular) for the students taken admission in the Degree & PG courses of the concerned Colleges/Universities in Odisha	HE
e)	Online form fill-up & generation of admit card for Annual Examination for compartmental candidates of both Regular and Ex-Regular students	S&ME
f)	Online form fill-up & generation of admit card for Instant Examination of both Regular / Ex-Regular candidates	S&ME
g)	Online form fill-up & generation of admit card for vocational students (Regular / Ex-Regular & compartmental / Instant)	S&ME
h)	Online form fill-up & generation of admit card for Sanskrit students (Regular / Ex-Regular & Annual / Instant)	S&ME/HE

3.2.3 Service Requirement

Scope/Service	HE	S&ME	SD&TE	Sports
IT Helpdesk	√	√	√	√
Project Management Support (Central PMU)	√	√	√	√
Call Center Operation	√	√	√	√

3.2.4 Other Requirement

Scope/Service	HE	S&ME	SD&TE	Sports
High Power Committee [HPC] Automation	√	√	X	X
Staff-in-Position [SIP]	X	√	X	X
College Infrastructure Project [CIP]	X	√	X	X
Quality Monitoring Tool [QMT]	X	√	X	X

3.2.5 MIS Reports

The SP is required to design, develop and generate the MIS Reports as will be required by the Stakeholder Departments/OCAC including the reports in compliance to RTI, AG Audit, Assembly questions etc.

3.3 Application End User Matrix

Course / College Name	No. of Institutions	Admission Strength	Expected Application
Junior	1,638	4,27,368	5,50,000
Teachers Education	81	9,000	2,50,000
Correspondence	1,638	8,000	6,000
Vocational	224	11,089	15,000
Upa Shastri [Sanskrit]	170	12,006	15,000
Degree	889	2,23,378	3,25,000
Shastri [Sanskrit]	140	9,148	7,000
Post Graduate	70	10,000	70,000
Polytechnic Diploma	159	45,000	1,00,000
Post Diploma in Industrial Safety (PDIS)	11	660	1,200
Industrial Training Institution [ITI]	525	80,000	1,00,000
Physical Education	2	190	800

3.4 Requirement Study

The SP shall perform a detailed assessment of the service and solution requirements of each participating department as mentioned in this section. Based on the assessment, SP shall develop & finalize the Functional Requirements Specifications

(FRS) and the System Requirement Specifications (SRS). While doing so, it is suggested that the SP should :

- – Consult with OCAC and stakeholder departments/directorates.
- – Engage some domain experts during the study
- – Follow standardized template for requirements capturing
- – Maintain traceability matrix from SRS stage for the entire implementation

Any additional functionalities/modules relevant to the online admission and e-Services, identified during the business process requirement study shall also be considered as part of SP scope of work.

3.5   Design

The SP shall design the solution architecture and specifications for meeting the requirements mentioned as part of this document. The SP shall be entirely responsible for the design and architecture of the system implemented to satisfy all requirements as described in this document including sizing of the required hardware.

3.6   Development

The SP shall identify, design and develop components / functionalities that are required to address the SAMS requirements mentioned in this RFP. The SP shall supply the following documents 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

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

3.7   Integration

The SP shall enable integration with different applications (specified in this RFP). The system should support both push and pull of data to and from systems proposed to be integrated. The SP will have to co-ordinate with the designated nodal agencies for integration and OCAC 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.

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

3.8 Testing

a) The SP shall provide the testing strategy including Traceability Matrix, Test Cases and Conduct Testing of various components of the software developed / customized (e.g. including Conference Room Pilots, Unit Tests, System Integration Tests, Security Testing and final User Acceptance Test).

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

c) The SP is responsible to identify and inform OCAC regarding testing requirements and impacts. The SP shall work in a manner to satisfy all the testing requirements and adhere to the testing strategy outlined.

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

e) It is the ultimate responsibility of SP to ensure that the end product delivered by the SP meets all the requirements specified in the document.

f) The SP shall take remedial action based on outcome of the tests.

g) The SP shall provide complete support to OCAC team or their representatives at the time of user acceptance testing.

h) It would be SP's responsibility to ensure that all issues raised during UAT are closed and signed-off from respective authority.

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

3.9 Third Party Audit

a) The SP needs to ensure that the solution is in compliance with the CERT-In Security Policy and Guidelines.

b) The SP shall appoint CERT-In empaneled 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 SP.

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

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

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

    – Functional Testing
    – 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	SP
Next Round Audit Report	Auditor
If required, rectified solution & submission of next round of audit	SP
Compliance Confirmation	Auditor

3.10 SSL Certification

The SP shall carry out 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

3.11 Training

a) The SP is required to undertake annual training to the colleges / institutions i.e. before online admission process starts for each academic session.

b) Batch size would be 30 people (approx.) each on technical and process aspects of the application.

c) Training would be done at State Headquarter in Bhubaneswar

d) OCAC will facilitate the training space & related logistics

e) SP shall set up the IT infra such as computer, network, LCD, etc as required for providing the training in a successful manner.

f) The schedule / training calendar and the training material for imparting training shall be developed by the SP in consultation with SAMS participating Department / Directorate. The SP shall submit a hardcopy of the training material to OCAC before every training session.

g) In case of modifications, either in the training plans or substitutions of the regular trainers, proper communication with OCAC and Participating Department / Directorate need to be made.

h) **If required, the SP may conduct the training on virtual mode and related expenditure for licensing (fixed & recurring) shall be borne by SP.**

3.12 Online Help / Reference with Search Option

a) It is also 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) It is required that 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.

3.13 Deployment & Configuration

a) SP shall deploy the new application/portal over the hardware infrastructure provided by the OSDC/cloud.

b) The SP shall be responsible for the end-to-end management of hosting and deployment of the application.

c) The SP will be responsible for configuration, installation and hosting of the application in High Availability mode at OSDC/ cloud.

d) The SP shall ensure deployment of the application as per the DR policy of OSDC

3.14 UAT & Go-Live

After completion of the development work for application, OCAC will conduct the technical reviews of development work performed by the SP as UAT. The SP shall be responsible for:

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

b) Demonstration of module-wise functionalities/ features before the OCAC in staging environment

c) Support OCAC and its 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.

3.15 Data Migration

If the SP proposes to develop a new system or modify the existing system which necessitates data migration, then the Data Migration to be performed by the SP shall be preceded by an appropriate Data Migration Strategy & Methodology which is to be prepared by the SP and approved by OCAC.

Data Migration should be carried out as per industry practice and all care must be taken to log in each error. The SP should clearly define the data migration strategy in the proposal. The following activities will be carried out as part of the Data Migration:

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

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

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

l) OCAC will provide the database of the existing system to SP and SP is to manage the data extraction, normalization & migration for the new system developed by the SP.

3.16 Infrastructure Support

a) The solution is presently hosted in OSDC.

b) Post award of contract, the SP will be expected to detail hardware sizing. Based on sizing of the hardware by the SP, the additional hardware (if required) will be arranged/procured separately by OCAC.

c) The SP shall carry out the installation, maintenance & support of all the supplied software(s) on the newly procured / existing hardware for development, quality and production environment.

This track is related to the assessment of the gap infrastructure requirement which will include server, storage, security devices and related system software. Activities for this track are as follows:

3.16.1 Study, Feasibility Assessment & Finalization of BoM

a) The SP shall perform the detailed assessment of envisaged solution requirements and assess the infrastructure requirements including Servers, Storage and Security, etc for operationalization of the solution.

b) The SAMS already has the following infrastructure present in the OSDC.

Items	Make/Model	Qty
Blade Chassis	HPC7000	1
Blade Server	HPBL460C	7
Rack Server	HP ProLiant DL180 G5	6
Rack Server	IBM System x3650	3
Rack Server	IBM x3850	1
Rack Server	HP ProLiant DL580 G5	2
Application Load Balancer	ARRAY-APV-1600V5	2
L2 Switch	HP5700 32GT8X	2
IP KVM	AVOCENT VERTIV	1
Firewall	Check Point	2
Network LB	HP	2
Network Switch	CISCO Catalyst 3560G	1
SAN	HP3PAR8400	1
SAN Switch	HPSN3000B	2
Virtual Servers	Microsoft	32
Operating System	MS Windows Server 2016 DC	15
Operating System	MS Windows Server 2016 Standard	6
Operating System	MS Windows Server 2003 Enterprise	4
Operating System	MS Windows Server 2008 Enterprise	8
CAL	Microsoft	10

Items	Make/Model	Qty
RDBMS	MS SQL 2017	22
Operating System	MS SQL 2005	1
Operating System	MS SQL 2008	1
Data Protector	Microsoft Data Protection Manager	1
Security	Microsoft Forefront client security	1
Application Dev. Tool	IBM RAD	1
RDBMS	IBM DB2	1
Web Server	IBM Web Sphere	1
Backup Solution	IBM Tivoli	1
App Security Firewall	Microsoft ISA	1
Anti-virus	Sophos	30
Backup solution	HP3540	1
Backup Appliance	-	1
Internet Service Provider	BSNL (250 mbps)	1
Internet Service Provider	STPI (20 mbps)	1

c) The SP will reassess and prepare a Gap analysis report for hardware / software which needs to be procured as well provide detailed specification of hardware to be procured.

3.16.2 Infrastructure Installation

a) The SP will reassess infrastructure present at Odisha State Data Centre and provide detailed requirement of infrastructure (hardware/software) to be hosted at the hosting location.

b) The SP will assist OCAC/OSDC Team in overseeing the working of the infrastructure vendor.

c) The SP shall be responsible for operationalizing the end-to-end solution of SAMS.

d) The SP shall deploy the solution at the Data Centre of SAMS as per the procurement cycle and shall ensure that the application software services are made accessible to the all the stakeholders employees at all the project locations specified in the RFP.

e) Once the DR centre is ready, the SP shall deploy the solution in DR and ensure that the production operations of the application stack is tested from DR on a periodic basis.

3.16.3 Implementing System Software & Tools

a) The SP shall design, implement/customize the solution and shall develop any additional tools required to monitor the performance indicators.

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

3.16.4 Business Continuity Planning

Currently, there is no DR or BCP to address any disruption in implementation of the system. However, in future, if it is decided to go for DR/BCP, then the SP will suggest and support for an appropriate methodology in a cost effective manner for this purpose.

3.16.5 Documentation

a) The SP shall 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) The SP shall 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.

3.17 Call Centre Operations

Call centre should be operational as per the timeline mentioned in this tender document. Scope of work under this intervention is listed as below.

a) Inbound Calls: The types of inbound calls received will include following but not be limited to:
   – Information & Advisory Services
   – Registration, Payments, & Form Fill-up, related requests from Applicants
   – Complaints/ feedback/ suggestions from Institutions
   – Complaints/ grievances from Applicants
   – Queries on usage of the various features on the portal

b) Outbound Calls: it would be only in India with regard to resolution, status, & updates of complaints, feedback, & resolution calls

3.17.1 Training

a) Considering the nature of the services, training is an important aspect of SAMS Call

Center. The SP will make arrangements for imparting proper training in soft skills; call handling, exposure to related application so as to prepare the customer service executives to answer different types of queries, and on other aspects of Call Center Services.

b) The SP will ensure that all the Customer Service Executives are put on actual duty only after providing them proper training.

c) The SP shall include the cost of training the resources for any new process/ script/ FAQ in the per seat cost quoted in the price bid.

d) OCAC will assist SP in preparing training material (which can be further customized) for business related trainings.

3.17.2 Monitoring

a) A facility will be available for OCAC's monitoring team, external & internal auditors to periodically inspect the functioning of Call Center.

b) The monitoring team will be able to access all sub systems and records.

c) To ensure Customer Service Quality, SAMS participatory Departments / Directorates shall conduct Regular audits, random audits and call barging.

d) SAMS participating Departments / Directorates will do a random sample survey of calls on Call Quality as well as be involved into calls without prior notification.

e) If it is observed that a Customer Service Executive / team leader has misbehaved with a caller on telephone, or if complaint is received against any of the Customer Service Executive / Team Leader or if his/ her performance is found to be lacking in the opinion of OCAC. OCAC may instruct the SP to remove such person from SAMS Call Center.

3.17.3 Deployment of Manpower

a) The SP shall select & deploy skilled and qualified manpower required <u>along with required desktop / laptop</u> for running the Call Centre.

b) Call center will function in 16X7 basis [8 Hours – 2 Shifts] start from 6:00 am to 10:00 pm.

c) <u>Office Space, Workstation, Internet, EPABX System, Telephone equipment, Toll Free Number & its recurring expenses would be borne by OCAC.</u>

d) Manpower profiles may be audited by OCAC.

e) <u>Minimum Manpower Profile</u> – Manpower deployed by SP must comply with minimum qualification as mentioned in following table.

Position	Minimum Requirement
Customer Service Executive	− Must be Graduate in any discipline or equivalent

Position	Minimum Requirement
	− Able to speak, read and write in Odia, Hindi and English.
	− Able to communicate confidently and politely, with good speaking / communication skills
	− Experience of at least one year in e-Governance application support service
Team Leader	− Must be a BE / B.Tech / MCA / MBA or equivalent
	− Able to speak, read and write in Odia, Hindi and English
	− Able to communicate confidently and politely, with good speaking skills
	− Effective problem-solving and decision-making skills
	− Post qualification experience of at least 3 years in managing Call Centre team for e-Governance application support service.

3.18 Operation & Maintenance

3.18.1 Application Support

Application support includes, but not limited to, production monitoring, troubleshooting and addressing the functionality, availability and performance issues, implementing the system change requests etc. The SP shall keep the application software in good working order; perform changes and upgrades to applications as requested by the SAMS participating Departments / Directorates and OCAC. Key activities to be performed by SP in the application support phase are as follows:

a) Enhancement of Analytical MIS report as per the requirement

b) Database query report management on emergency

c) Optimization of the already developed reports

d) Tuning of transactions

e) User & access management

f) The SP shall ensure compliance to SLAs as indicated in this RFP and any upgrades / major changes to the software shall be accordingly planned by SP ensuring the SLA requirements are met at no additional cost to OCAC.

3.18.2 Software Maintenance

a) The SP shall provide unlimited support through Telephone / Email / Video Conferencing / Installation Visit as required as per the service window defined in

the RFP

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

c) All patches and upgrades from OEMs (if any) shall be implemented by the SP ensuring customization done in the solution as per the OCAC's requirements are applied. Technical upgrade of the installation to the new version, as and when required, shall be done by the SP.

d) Any changes/upgrades to the software performed during the support phase shall subject to the comprehensive and integrated testing by the SP to ensure that the changes implemented in the system meets the specified requirements and doesn't impact any other function of the system.

e) 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 SP.

f) Issue log for the errors and bugs identified in the solution and any change done in the solution shall be maintained by the SP and periodically submitted to OCAC.

3.18.3 Change & Version Control

a) All planned changes to application systems and hardware shall be coordinated within established Change control processes to ensure that:

– Appropriate communication on change required has taken place
– Proper approvals have been received
– Schedules have been adjusted to minimize impact on the production environment

b) The SP shall define the Software Change Management and Version control process. For any changes to the solution, SP has to prepare detailed documentation including proposed changes, impact to the system in terms of functional outcomes/additional features added to the system etc.

c) Maintain configuration information: SP shall maintain version control and configuration information for application software and any system documentation.

d) Maintain System documentation: SP shall maintain and update documentation of the software system ensuring that:

– Source code is documented
– Functional specifications are documented
– Application documentation is updated to reflect on-going maintenance and enhancements including FRS and SRS, in accordance with the defined standards
– User manuals and training manuals are updated to reflect on-going changes /

enhancements

– Standard practices are adopted and followed in respect of version control and management.

3.18.4 System/Infra Support

3.18.4.1 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

e) Application Load balancing and Database Clustering

f) Perform Database, event & system log analysis

g) Indicative database size is given in the below table.

Items	*Unit*	*Values*
Total Number of Students as on today	Nos.	13,23,321
Applications (Yearly)	Nos.	16,98,287
Database Size	KB	10,75,41,056
DB Log (Quarterly)	KB	12,18,37,500
Photos (Image File)	Nos.	11,26,075
Size of Photos	KB	1,56,00,000
Application Size	KB	37,60,000
Application Log Size (Quarterly)	KB	22,61,25,000
Data Backup (Monthly)	KB	3,26,68,44,180
Data Transmission (Monthly)	KB	13,78,42,38,700

3.18.4.2 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 cloud/OSDC

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.

3.18.4.3 Security Administration

a) Regular analysis of events and logs generated

b) User ID and group management services

3.18.4.4 Backup & Restore Management

a) Preparation of backup plan

b) Backup of operating system, database and application as per SDC policy

c) Monitoring and enhancement of the performance of scheduled backups

3.18.4.5 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 Network Administration Team

3.18.5 IT Helpdesk

a) The SP should set up a helpdesk for resolution of queries internal to the SAMS participating Departments / Directorates / Colleges officials only

b) IT Helpdesk shall be the first point of contact for SAMS participating Departments / Directorates and OCAC users for resolving all IT related incidents or service requests.

c) It aims to restore normal service operation as quickly as possible and minimize the adverse effect on business operations, thus ensuring that the best possible levels of service-quality and availability are maintained.

d) Address the application related functional queries raised by officials of SAMS participating Departments / Directorates

e) Co-ordinate with software team for all types of issue management / redressal in relation to the application software, selection list, MIS reports, etc

f) The team shall furnish periodic report on number of issues received vis-a-vis resolved related to software.

f) Manpower to be deployed by SP for IT helpdesk will comply with minimum qualification as mentioned in following table.

Position	Minimum Requirement
MIS Consultant	– B.E./ B. Tech. / MCA

	− Minimum 5 years in e-Governance project implementation in Odisha
Technical Consultant	− B.E./ B. Tech. / MCA
	− Minimum 5 years in e-Governance project implementation in Odisha

g) SP shall will provide infrastructure requirement for IT helpdesk personnel is complete which include but not limited to:

  – Desktop / Laptop computer
  – Telephone equipment & its recurring expenses
  – Office space in the Bhubaneswar Municipal Corporation area
  – Workstation as per industry standard
  – OCAC official may visit to the IT Helpdesk team office periodically

3.18.6 Project Management

Project management support is too crucial to conduct admission process through online which is expected from SP by engaging management & technical experts. **In fact the Project Management Team was one of the key pillar of success in past years of SAMS.** The indicative support expected from Service Provider is given below.

a) Coordination with user Departments for preparation of Common Prospectus for online admission of different courses in a particular academic session

b) Organize / attend different monitoring / implementation committee meetings with regard to SAMS during e-Admission

c) Assist SAMS Nodal colleges to conduct refresher training to the colleges under their districts

d) Educate/explain to the colleges / institutions on the new or update / change in rule, policies, processes, notifications, etc on SAMS under the districts

e) Identify wrong validations through different reports and communicate with colleges for its correction before each stage of selection process

f) Coordinate/follow up with Colleges for timely validation of application

g) Validation error compliance after merit list

h) Coordinate/follow up with Colleges for admission data updation before next round of merit list

i) Monitoring the entire e-Admission process as per the dateline

j) Facilitate the colleges / institutions to maintain the computer infrastructure for its smooth functioning during the e-Admission period

k) Facilitate the back-up arrangement of power supply, internet, computer, etc to meet the timeline by colleges / institutions

l) Support to the colleges / institutions for any exigency for timely implementation of SAMS.

m) Key resources to be engaged / deployed by SP for project management at both Sate & District level will comply with the skill, qualification, experience / expertise mentioned in following table.

Skill	Minimum Educational Qualification & Experience
Sr. IT Consultant	− B.Tech / MCA or Equivalent − Minimum 15 years' experience in the field of software development and implementation. − Out of these, 7 years' experience in implementing projects in education domain for any government department in India.
Delivery Manager	− Any Master's Degree preferably in CS − Minimum 10 years' experience in IT Sector. − Out of these, at least 3 years in the field of education domain related project for any government department in India.
IT Consultant	− BE/B.TECH/MCA or Equivalent − Minimum 6 years' experience in the field of software development and implementation. − Out of these 6 years, 3 years' experience in education domain for any government department in India.
Project Associate	− Graduate in any discipline − Minimum 11 years of experience in managing support teams, including experiences of Help Desks in structured environments. − Out of these 11 years, 5 years' experience in education domain for any government sector project.
Jr. Project Associate	− Graduate in any discipline − Minimum 11 years' experience in project coordination, managing teams, client interaction with good communication skill − Out of these 11 years, 5 years' experience in education domain for any government department in India.

Skill	Minimum Educational Qualification & Experience
Project Support Executive	− Graduate in any discipline
	− Minimum 3 years' experience in call centre operation/ call handling in education domain for any government department in India with good communication skill
	− Having Computer knowledge
	− S/he must be having proficiency in local language

3.19 Guiding Principles

The proposed solution should adhere to the following principles.

3.19.1 Standards

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

b) The system will 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)

3.19.2 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.

3.19.3 Integration

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

3.19.4 Data

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

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.

c) The SP shall provide the details of data synchronization strategy both in batch mode and in real time.

3.19.5 Data Security

a) The SP shall provide strategy to maintain data security at the application level

b) The SP shall provide strategy to maintain data security at the database level

c) The SP shall provide strategy to maintain data security at the messaging and middleware level

d) The SP shall provide security strategies when the applications are accessed from outside the network or accessing resources outside the network.

e) The SP shall provide strategies of encryption and security for external transaction with partner network and systems

3.20 Adherence to Standards

The system shall comply with relevant defined industry standards (their latest versions as on date) wherever applicable. This will apply to all the aspects of solution including but not limited to 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, 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.

3.21 Security, Integrity & Confidentiality

a) **_Web Services Security:_** System shall comply to 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 The 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.

3.22 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 mentioned in this RFP. 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:

- Analysis: SP will analyses the changes suggested and submit an effort estimation including timeline to OCAC
- Approval: OCAC shall do the due diligence and provide approval on the effort and timeline suggested
- Incorporation: After receiving the approval from OCAC, team will incorporate the changes in the application.
- On approval, SP shall deliver the services and raise the claim as per actual according to the Commercial Bid.
- The SP can raise claims under this head as per actual consumption of service duly approved by OCAC.

3.23 Exit Plan

The selected firm will provide systematic exit plan and conduct proper knowledge transfer process to handover operations to OCAC technical team at least one year before project closure. IT resource persons of OCAC will work closely with resource persons of SP at test, staging and production environment during knowledge transfer phase. All knowledge transfer should be documented and possibly recorded. The SP will ensure capacity building of the IT resource persons of OCAC on maintenance of software and infrastructure.

3.24 Project Documentation

The SP will share below list of documents to OCAC during the project contract period.

> - **If the SP is proposing new technology, then the following documents would be submitted before first milestone payment.**
> - **If the SP is managing the existing source code to implement the SAMS, then the documents are required before last milestone payment of each year.**

a) Latest version of Source Code

b) System Requirement Study Documents

c) High Level Design (HLD) / Low Level Design (LLD) documents including

   i) Application architecture documents
   ii) ER diagrams and other data modelling documents
   iii) Database design
   iv) Application component design including component deployment views, control flows, etc.
   v) Application flows and logic

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

3.25 Expected Deployment of Personnel

a) The bidders shall furnish resumes of key personnel to be engaged during software development / customization, 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 minimum criteria for key resources are as follows.

Competency Area	Minimum Educational Qualification and Experience
Program Manager	- B.E/B.Tech/MCA & MBA - Minimum 12 years' experience of handling similar large projects in IT Sector. - Out of these, 7 years' experience in implementing projects in education domain for any government department in India. - Certification: Prince2 or PMP
Project Manager	- BE/B.Tech/MBA - Minimum 10 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.
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.

Competency Area	Minimum Educational Qualification and Experience
Project Leader	− MBA (IT) − Minimum 15 years' project implementation experience in IT. Out of these 15 years, 6 years should be in the education domain.
Team Leader	− BE/ B.TECH/MCA − Minimum 7 years' experience in the field of software development and implementation. − Out of these 3 years' experience in education domain for any government department in India.
Software Test Lead	− BE/ B.TECH/ MCA − Minimum 8 years' experience in software testing. − Certification: ISTQE
Database Administrator	− B.TECH / MCA − Minimum 6 years' experience as DBA. − Experience in Microsoft Azure SQL

3.26 Expected Project Timeline

Sl#	Items	Timeline	Duration
a)	Study, Design, Development / Customization, Testing, Deployment / Implementation	*Application shall be ready in all respect and shall be made live following standard SDLC procedure **before the online application starts** as per the notification of the respective Departments i.e. tentatively **first week of May** of each Academic Session.*	5 Years
b)	Operation & Maintenance of the SAMS Application	*Team shall be ready to take over the complete responsibility **within seven days** from the date of work order*	5 Years
c)	Infrastructure Support	*Team shall be ready to take over the complete responsibility **within seven days** from the date of work order*	5 Years
d)	Call Center Operation	*Resource deployment along with required number of Desktop / Laptop & start of operation **from the date of***	5 Years

Sl#	Items	Timeline	Duration
		online application *starts as per the notification of the respective Departments i.e. tentatively first week of May of each Academic Session.*	
e)	IT Helpdesk	*Resource deployment & start of operation* ***within seven days*** *from the date of work order*	5 Years
f)	Project Management (Central PMU)	*Team shall be ready to take over the complete responsibility* ***within seven days*** *from the date of work order*	5 Years

3.27 SAMS Implementation Schedule

The tentative schedule of major activities which is being followed currently is given below. However, the schedule in respect of different activities may change and/or may be extended depending upon requirement.

Major Activities	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
Database Preparation	■	■	■									
Preparatory Training & Workshop		■	■	■								
Student Registration, Online Application & Validation			■	■	■	■						
Merit List Preparation, Intimation & Admission					■	■	■	■				
Admission Data Updation & Consolidation						■	■	■	■			
Online Form Fill-up									■	■	■	
Online Registration [Council/University]											■	■
Development / Customization & Implementation	■	■	■	■	■	■	■	■	■	■	■	■
Operation & Maintenance Support	■	■	■	■	■	■	■	■	■	■	■	■
Project Management Support	■	■	■	■	■	■	■	■	■	■	■	■

3.28 Service Level & Penalty

Sl#	Major Area	Parameter	Requirements	Penalty
a)	Customization & Implementation	Major milestone during development and implementation as per project timeline.	As per project timeline	Rs. 5,000/- 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)	Infrastructure Support	Start of service	As per project timeline	Rs. 1,000/- per day delay
e)	IT Helpdesk	Start of service	As per project timeline	Rs. 2,000/- per day delay
f)	Call Center Operation	Start of service	As per project timeline	Rs. 2,000/- per day delay
g)	Project Management	Start of service	As per project timeline	Rs. 5,000/- per day delay

3.29 Bill of Material & Quantify

Sl#	Category	Items	Qty
a)	Study, Design, Development / Customization, Testing, Deployment / Implementation	*Customization of existing application, new development of the supplementary requirement* **OR** *new development of entire application as per the time line to meet the implementation requirement mentioned under* **clause 3.2.1 to 3.2.5.** *of this document.*	5 Years
b)	Operation & Maintenance of the SAMS Application	*Application Support, Software Maintenance, System Support, etc mentioned under* **clause 3.18** *of this document.*	5 Years

Sl#	Category	Items	Qty
c)	Infrastructure Support	*Existing infra used for SAMS in OSDC & new infra purchase in future mentioned under **clause 3.16** of this document.*	5 Years
d)	Call Center Operation	*Deployment of Call Center Executives (50 Nos.) & Team Leader (2 Nos.) along with required number of Desktop / Laptop as per the skills & responsibility mentioned under **clause 3.17** of this document. Call Center will operate in two shifts [10X7] from 6:00 AM to 10:00 PM for a period of six months.*	5 Years
e)	IT Helpdesk	*Deployment of MIS Consultant (3 Nos.) & Technical Consultant (2 Nos.) along with required infra, office space & all related logistics throughout the year as per the skills & responsibility mentioned under **clause no. 3.18.5** of this document.*	5 Years
f)	Project Management (Central PMU)	*As per resources plan proposed by SI with required infra, office space & all related logistics and as per the skills & responsibility mentioned under **clause no. 3.18.6** of this document.*	5 Years
g)	*Chatbot*	*License and recurring expenses required as mentioned under **clause no. 4.3.1** of this document & as per the technical proposal of the SP.*	5 Years
h)	*WhatsApp*	*License and recurring expenses required as mentioned under **clause no. 4.3.2** of this document & as per the technical proposal of the SP.*	5 Years
i)	SMS	*License and recurring expenses required as per the technical proposal of the SP. Tentatively 75 lakhs SMS to be sent to the applicants / students in different stages of application and admission per Academic Session*	5 Years
j)	Email	*License and recurring expenses required as per the technical proposal of the SP. Tentatively 50 lakhs Email to be sent to the applicants / students in different stages of*	5 Years

Sl#	Category	Items	Qty
		application and admission per Academic Session	

Contract duration would be five years and <u>may be extended for another two years based on the requirement & performance of the Service Provider at the same cost/rate & terms.</u>

3.30 Payment Terms

3.30.1 Higher Education

Sl#	Services/Modules	Payment Terms
a)	**Online Application & Admission** (Hostel, Stream / Honours & Subject) in all **<u>Degree Colleges</u>**	− 20% payment after start of online application − 50% payment after completion of admission of first phase applicants − 30% payment after closing of admission process for a particular academic session
b)	**Online Application & Admission** in all Public Universities of the Odisha State, Govt. and Govt. Aided Colleges for **<u>Post Graduate</u>** Courses	− 20% payment after start of online application − 50% payment after completion of admission of first phase applicants − 30% payment after closing of admission process for a particular academic session
c)	**Online Application & Admission** for in all **Teacher Education** Courses	− 20% payment after start of online application − 50% payment after completion of admission of first phase applicants − 30% payment after closing of admission process for a particular academic session
d)	**Online Registration (RoI)** for the students taken admission in the **Degree & PG Courses** of the concerned Universities in Odisha.	− 75% payment after 30-days of start of online process − 25% payment after completion of online process
e)	**Online Form Fill-up** (Semester Wise of both regular & ex-regular) for the students taken	− 75% payment after 30-days of start of online process

Sl#	Services/Modules	Payment Terms
	admission in the **Degree & PG Courses** of the concern **Universities** in Odisha.	− 25% payment after completion of online process
f)	Development/customization, maintenance and management of **HPC Automation** module	Quarterly payment on approval of activity reports by Department
g)	**Cyber Security Audit** of all modules (once in a year)	100% payment after submission certificate issued by CERT-In empaneled agency / auditor

3.30.2 School & Mass Education

Sl#	Services/Modules	Payment Terms
a)	**Online Application, Selection, Admission** (Stream & Subject) in all Higher Secondary Schools	− 20% payment after start of online application − 50% payment after completion of admission of first phase applicants − 30% payment after closing of admission process for a particular academic session
b)	**Online Application & Admission** for in all **Teacher Education** Courses	− 20% payment after start of online application − 50% payment after completion of admission of first phase applicants − 30% payment after closing of admission process for a particular academic session
c)	**Online Application & Admission, Return of Matriculate (ROM) and Form Fill up** for **Correspondence Courses**	− 20% payment after start of online application − 50% payment after completion of admission of first phase applicants − 30% payment after closing of admission process for a particular academic session
d)	**Online Registration** (Return of Matriculate) for all Higher Secondary Schools	− 75% payment after 30-days of start of online process − 25% payment after completion of online process
e)	**Online Form Fill-up** (Different Examinations) for all Higher Secondary Schools	− 75% payment after 30-days of start of online process − 25% payment after completion of online process

Sl#	Services/Modules	Payment Terms
f)	Development / customization, maintenance and management of **HPC Automation** module	Quarterly payment on approval of activity reports by Department
g)	Development / customization, maintenance and management of **Staff-in-Position (SIP)** module	Quarterly payment on approval of activity reports by Department
h)	Development / customization, maintenance and management of **College Infrastructure Project** module	Quarterly payment on approval of activity reports by Department
i)	Development / customization, maintenance and management of **Quality Monitoring Tool** module	Quarterly payment on approval of activity reports by Department
j)	**Cyber Security Audit** of all modules (once in a year)	100% payment after submission certificate issued by CERT-In empaneled agency / auditor

3.30.3 Skill Development & Technical Education

Sl#	Activities/Services/Modules	Payment Terms
a)	**Online Application, Selection & Admission** for **ITI** Courses	− 20% payment after start of online application − 50% payment after completion of admission of first phase applicants − 30% payment after closing of admission process for a particular academic session
b)	**Online Application, Selection & Admission** for **Diploma** Courses	− 20% payment after start of online application − 50% payment after completion of admission of first phase applicants − 30% payment after closing of admission process for a particular academic session
c)	**Online Application, Selection & Admission** for **Post Diploma in Industrial Safety (PDIS)** Courses	− 20% payment after start of online application − 50% payment after completion of admission of first phase applicants

Sl#	Activities/Services/Modules	Payment Terms
		− 30% payment after closing of admission process for a particular academic session
d)	**Cyber Security Audit** of all modules (once in a year)	100% payment after submission certificate issued by CERT-In empaneled agency / auditor

3.30.4 Sports & Youth Services Department

Sl#	Activities/Services/Modules	Cost per Year in Rs (Without Taxes)
a)	**Online Application, Selection & Admission** for <u>**Physical Education**</u> Courses	− 20% payment after start of online application − 50% payment after completion of admission of first phase applicants − 30% payment after closing of admission process for a particular academic session
b)	**Cyber Security Audit** of all modules (once in a year)	100% payment after submission certificate issued by CERT-In empaneled agency / auditor

3.30.5 Software/Service Enhancement (Change Request)

Sl#	Activities	Payment Terms
a)	Development & Implementation of new software modules / Enhancement of existing software under Change Request	As per the mutually agreed terms before placement of Change Request order
b)	Onsite Handholding Support by deploying experts	Monthly absentee statement duly approved by Department
c)	Onsite Project Management / Technical Support during e-Admission	Monthly absentee statement duly approved by Department

3.30.6 Recurring Expenses

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

4 Supplementary Functional Requirement

4.1 Dashboard - Additional Features

a) Provision should be there for creation of Dashboard & Reporting

b) Dashboard providing an overview of system at a glance

c) Filtration option and query-based report generation facility

d) Provision to export generated reports to excel, PDF, Word, CSV etc.

e) Configure display of report by the Departments' respective authorities

f) The proposed tool should help creating reports on various parameters such as:

   i) Academic Performance

     – previous years result
     – Subject preference and performance
     – Year wise cut off

   ii) Variations (Target v/s Actual) Analysis

     – Strength v/s admission
     – Staff in position v/s vacancy

   iii) The tool should help concerned officials in taking appropriate decision like:

     – Recommend list of college to be chosen as examination center by performing analysis on the available infrastructure and facilities
     – Recommend opening or closing of colleges
     – Increase or decrease of seats in specific colleges
     – Inclusion or exclusion of streams

4.2 Mobile App – Additional Features

a) User Registration

b) Online application, payment & submission

c) Tracking the status of application

d) Tracking of admission progress

e) Information on Admission rules, reservation and policies.

4.3 Introduction of Emerging Technologies

4.3.1 Chatbot

a) The proposed Chatbot solution should provide following to the applicants.

   – Tutorial on admission process
   – Application / admission schedule
   – Download Common Prospectus
   – College & Course wise last year cut-off marks
   – District wise college list
   – Application fees
   – Streams offered

- How to apply
- Documents required for admission
- Number of options
- Mode of payment
- Date of selection
- Exam schedule
- Examination fee
- Know your Examination center

b) Chatbot should be operational for 24 x 7 for 365 days a year.

c) Chatbot should be able to maintain a conversation with the user in user-friendly manner.

d) The Chatbot should allow the user(s) to resume their conversation within a predefined time duration.

4.3.2 WhatsApp Integration

This will ease the communication with students and colleges for sharing of the following information.

Items	Recipients	Tentative Number
Copy of Final Application Submitted with Payment	Applicants	10,00,000
Intimation Letter at each stage of online selection	Students	15,00,000
Government Orders with regard to SAMS Rules / Policies	Colleges (One WA Number)	1,00,000