PR No. 1000038625   **Rfx No. 6100001662**

Technical Specification for Ed-Tech Platform Software Developments and Annual Maintenance

1. Overview and Introduction of Ed-Tech Platforms implemented at IIT Bombay

 IIT Bombay (IITB), set up by an Act of Parliament, was established in 1958, at Powai, a northern suburb of Mumbai. Today, the Institute is recognized as one of the centers of academic excellence in the country. The Department of Computer Science and Engineering (CSE) within IITB is a top ranking CSE department in the country. Many faculty members within the CSE department as well as some from outside wish to do a large-scale education outreach effort in the domain of Computer Science. Towards this, a few ed-tech (educational technology) platforms that have been developed in-house at IITB need to be enhanced and maintained. The objective is to use these platforms to conduct courses at scale, including using Artificial Intelligence technology. The ed-tech platforms implemented at IITB include:
   ● BodhiTree: A Learning Management System
   ● cLab: A Platform for conducting Labs
   ● SqrePage: A platform for saving questions and exporting them as question papers
More details (including architecture and technology stack used) can be found in subsequent sections.

2. Ed-Tech Platform Software Development and Annual Maintenance Services (AMS)

The CSE Dept Ed-Tech R&D group is seeking a partner for taking over the software development and maintenance of ed-tech products so that our prototypes become industry professional level. The partner is expected to introduce systematic software development and testing processes and maintain the platforms so that the final products have a pleasant user experience, give good performance, remain largely bug-free so that they can be used reliably at scale.

2.1.   Pre-qualification/ Eligibility Criteria for Bidder

Table-1: Pre-qualification/ Eligibility Criteria for Bidder

Pre-Qual Criteria No.	Particulars	Supporting document to be enclosed in Technical bid
1	The bidder should be a company registered in India under the Companies Act or a Limited Liability Partnership (LLP) with a registered office and operations in India for the last 4 years and should be registered under GST.	Certificate of Incorporation and GST certificate
2	The bidder should have an office and a development center in India. The operational presence of an office in	Address proof for the registered office

	Mumbai or within the radius of 50 kms is mandatory.	
3	The bidder should have Security Standards such as ISO 9001 which should ensure that the company can provide Quality Management System.	Duly signed copy of ISO 9001 certificate.
4	The bidder should have a team of at least 10 employees.	Self-declaration from the company & contact details of Employees
5	The bidder should hold at least 2 client's Purchase Orders (PO) exceeding 10+ lakhs for existing or upcoming projects.	Copy of purchase orders or satisfactory completion certificate issued by the clients.
6	The bidder must have prior experience of at least 2 years of development or application maintenance in related technologies (Django and React)	1. At least 2 copies of the past purchase orders issued by the client 2. List of the technologies/modules developed in Django and React provided in the POs.
7	The bidder must provide existing / past (up to 2 years old) client references, including the name, email and telephone number of a client's contact person whom the IIT Bombay may call/ correspond with.	Contact details of at least three clients
8	The bidder should not have been blacklisted by any department or undertaking of the Government of India or the Government of Maharashtra, Or, should not be a vendor/ service provider whose contract was terminated during the past 3 years by IIT Bombay	Appropriate Self-Declaration from Bidder to this effect on company letterhead

Ed-Tech Platform Details:

(Please write to chebrolu@cse.iitb.ac.in if you require any further information on the platforms.)
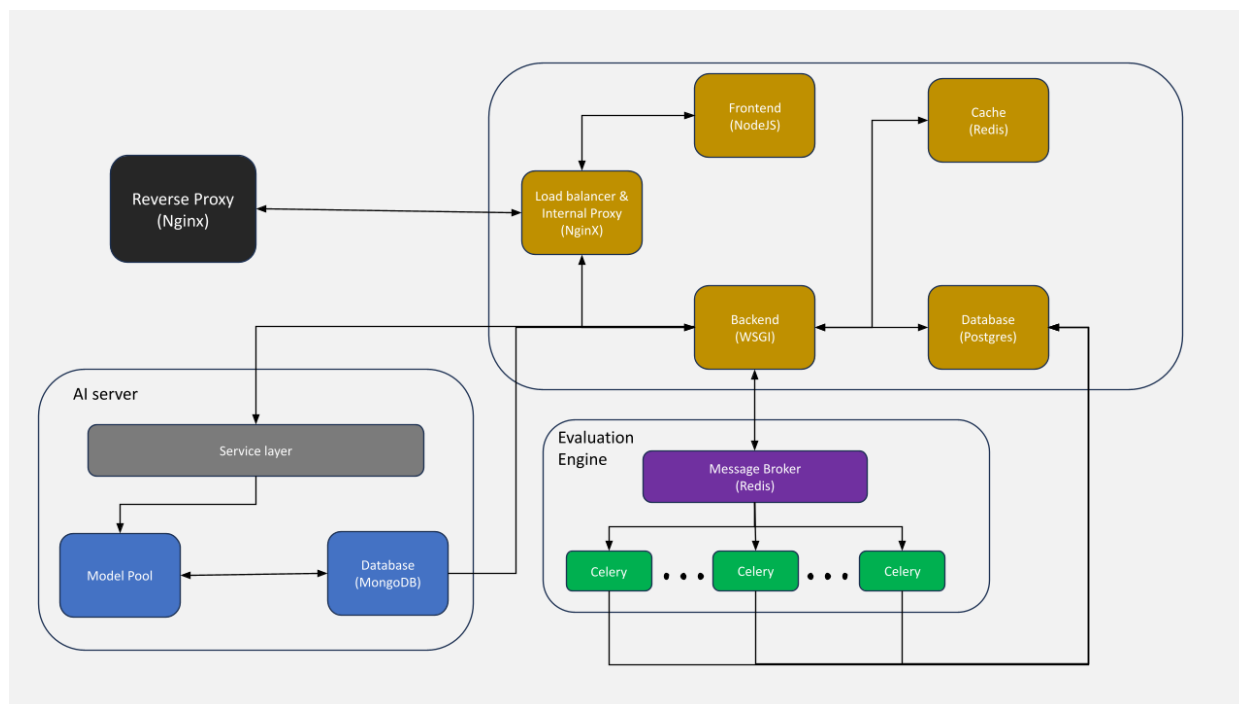
1. BodhiTree:

BodhiTree is a learning management system (LMS) built in-house, which has been used over the last many years to run courses within IITB as well as outside. It hosts interactive video lectures, auto-graded objective and manual graded subjective quizzes/assignments. It also has a rich interface to support auto-grading of programming and other Computer Science (CS) labs. In addition, it allows teachers to interact with students via a discussion forum, send emails via email-notices and make announcements. Students can track their progress and know their position in class via leaderboard. Teachers can enroll students, add TAs, share marks and track student activity via a statistics dashboard. The current architecture is as under, each block as shown runs in a separate docker container. The front-end/back-end along with Postgres database handle the LMS side of the platform. Lab evaluations are handled by the Evaluation engine and the AI server is used to analyze/train on collected student data and can also provide rubric based auto-evaluation and student feedback for more complex lab assignments. Note that AI/ML modeling, training, algorithms are not part of the

tender (they will be handled as part of research at IITB), however implementation and integration of provided models (i.e. software development) is part of the tender.

The stable version of BodhiTree (henceforth referred to as v1) is based on React front end and Django backend.

The versions of React/Django/Python in v1 were quite old, hence we undertook the task of migrating to the latest versions (React to v16.14.0, Django to 4.2), at the same time improve the UI and add a few extra features. This new version (henceforth referred to as v2) is in a usable form and has already been used within IITB to run a few courses, and a few programming contests. However it requires polishing in terms of UI, ensuring everything is working correctly without any known bugs, ensuring acceptable performance and scalability to a few thousand users, and completing a few pending features and adding new features.

The BodhiTree server also supports server side evaluation of programming and CS labs. Ensuring correct and user-friendly operation of this component is also part of the tender.

The development work as part of the tender is in v2 only, not v1, details given further below.

Check out v1 and v2 through below credentials.

| Version 1 URL: https://flamingo.bodhi.cse.iitb.ac.in		
Student	Login:stender@exmple.com	Passwd: tender
Instructor	Login: itender@example.com	Passwd: tender
Version 2 URL: https://robin.bodhi.cse.iitb.ac.in/		
Student	Login: stender@example.com	Passwd: tender
Instructor	Login: itender@example.com	Passwd: tender

2. cLab: Containerized Labs

cLab is a client side application currently integrated with above Bodhitree server, which helps conduct a variety of Computer Science (CS) labs. It is based on docker containers, where the entire environment needed to run the lab is setup locally. It further supports automatic evaluation of student submissions. Note assignments submitted by students via the app, can evaluate locally via the app as well as on the server. The server in this case is the BodhiTree server and server-side lab evaluations are part of Bodhitree.

The stable version of vLab (referred to as v1) has been in use within IITB over the last 1.5 years across 4 courses. It uses 1) Docker for container management. 2) Celery For asynchronous task management. 3) Electron for the client app development and 4) Django Rest Framework for REST API. The architecture is as under. The student system is what is part of cLab.
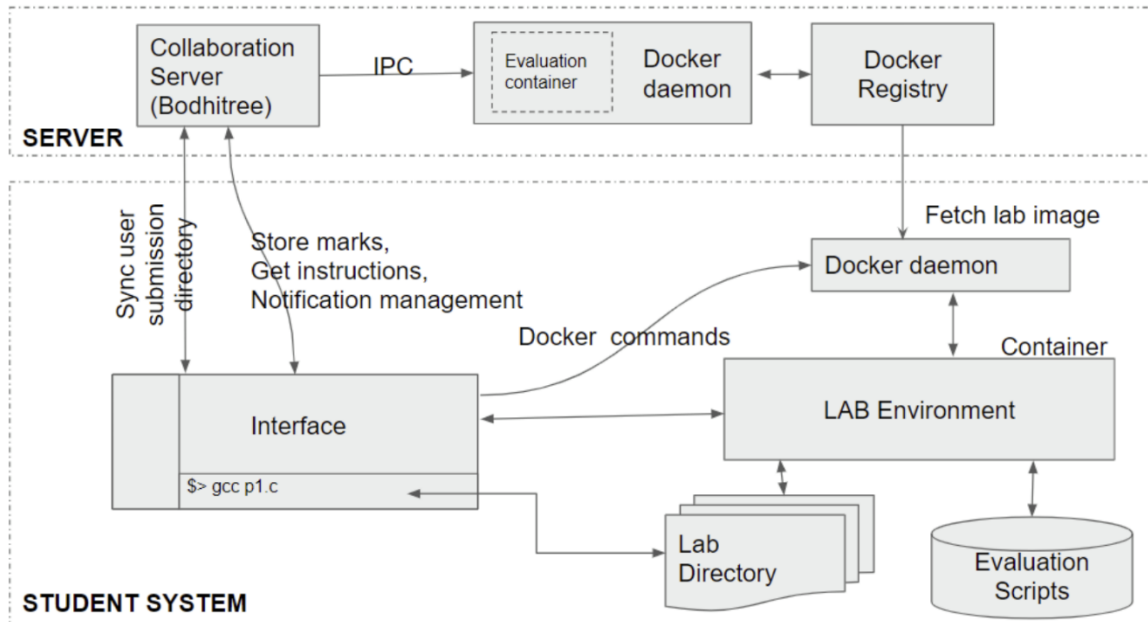
Based on field trials, we have embarked on a new modular design (referred to as v2), which for most parts is very similar to v1. The client app which was tightly coupled in v1, has been made modular as shown below. The core UI logic is not part of Electron anymore and has been implemented in React. The electron app bootstraps both the daemon service and react service and loads the react app and hands over the UI logic to react and hands over the rest of the logic to the daemon. The electron app is now only responsible to create the browser window and manages the window controls of the app.
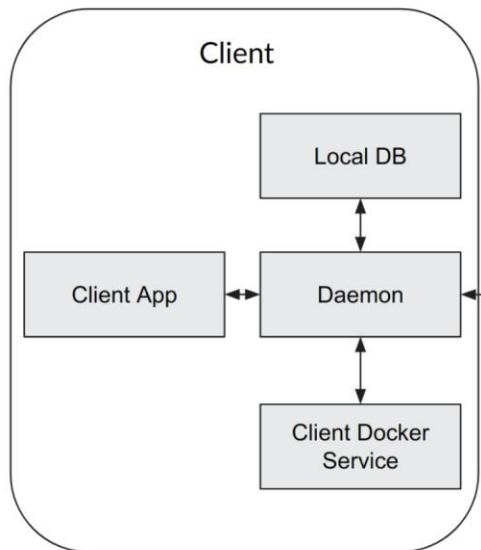
The development work required is in both v1 (but mostly minor bug fixes) and predominantly in v2.

You can install the linux version of the app by downloading the deb package from
https://drive.google.com/file/d/1_nLZcvzgiVWvJ0qyBoy3_L73Uy1TdV0P/view?usp=sharing
And login as a student with credentials username: clab@example.com and password: tender

3. SqrePage:

Smart Question Repository and Paper Generator (SqrePage) is a platform for storing questions in Question Banks, which can later be used to generate Question Papers for tests. SqrePage supports features for adding questions into the Question Banks(QB) manually using the web interface, or by uploading question files in particular templates. It supports different types of questions as well as tagging questions with difficulty level and topic-based. Questions can be filtered according to different parameters as well. In SqrePage, the users can generate question papers either manually or automatically in multiple formats such as PDF, Docx, ODT, SAFE HTML and SAFE ODT formats. It also supports peer-collaboration, where users can share question banks and papers with others in various access modes (view, comment and edit). The architecture and technology used to build this platform is given below. There is only one version of Sqrepage (v1).

All the features listed in the work plan below have an existing code base. Work in SqrePage is mostly clean up and bug-fixes.
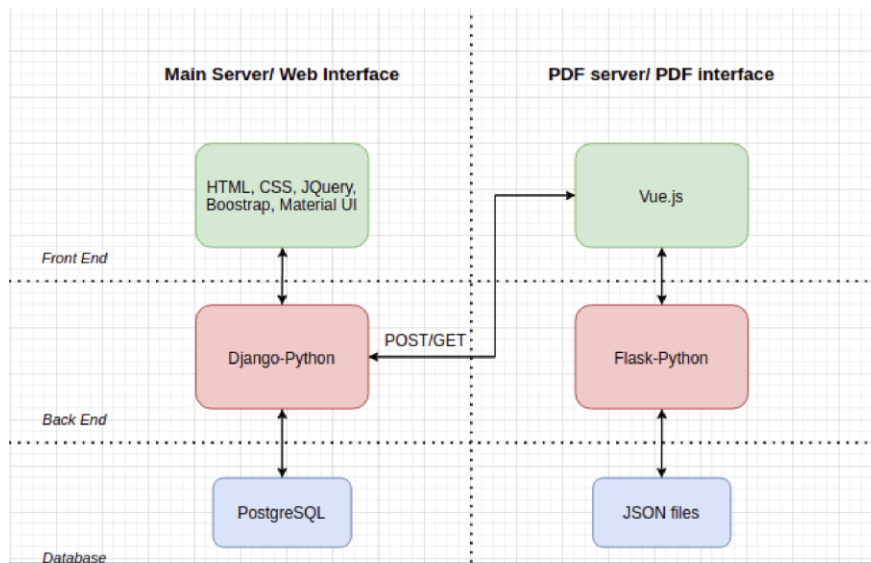
You can explore the interface via the following credentials. https://koel.bodhi.cse.iitb.ac.in/auth/pwd/.
Username: sqreuser Password: tender

Scope of Work

The nature of work to be carried out by the resources provided by the vendor is broadly along the lines given below.

1. Development Work:

This is an **approximate** plan of work for two years. Note, this is not set in stone, some later work may be prioritized and brought forward, some work moved for later. Some new work may be added and some current work dropped. All this will be dictated by what transpires during our use of the platforms in the next 2 years. We expect the below work to take up resources as mentioned in Resource Allocation Plan for 2 years. We will meet at the beginning of a quarter, make plan for that quarter and allocate work as per resource allocation plan. We will respect and conform to the resource allocation plan and not go overboard.

Year1: First half

Bodhitree-v2: Entire platform (instructor interface, student interface, administrator interface, Lab interface, Data Collection and Data Analytics module etc) should be complete and work correctly. This involves UI cleanup, every button/function should work correctly, all bugs should be fixed. Data Collection and Analytics module, Administrator interface and Lab interface are not fully complete and will require some additional work to take to completion. This also includes thorough testing of the entire platform.

Cloud/Local installation pipelines need to be streamlined to ensure smooth deployment and monitoring of the health of production systems.

cLab (V1+V2): Knowledge transfer of Vlab-v1 and v2 platform. Minor bug fixes in current v1

Year1: Second half

Bodhitree: Fine tuning of Data Collection and Data Analytics module for incorporation into Artificial Intelligence models. Progressive web app design for ease of use on mobiles (should support offline access as well). A few additional features as obtained from field use. Server-side labs compatible with cLab-v2.

cLab-v2: Take to completion v2, should support all features as available on v1 currently; smooth one-click installation of client app in v2

SquarePage: Thorough testing, UI cleanup, every button/function should work correctly, all bugs fixed

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Year2: First half

BodhiTree: Performance and Cost Optimization. Incorporation of AL models (will be supplied) to provide customized student feedback (UI/backend needs to be implemented). A few additional features as obtained from field use. Server-side labs compatible with cLab-v2.

Vlab-v2: Multi-container support, implement a few new features as obtained from field trials.

Square Page: Bug Fixes and new features as obtained from field trials.

Year 2: Second Half

Across all Platforms: tie up all pending work, implement some new features as obtained from field trials

2. Application Support Maintenance:

The vendor should provide exhaustive functional and technical support, troubleshooting, problem resolution, maintenance, and upgrade services for the following application systems.

   a) BodhiTree (Server) Platform (V2)
   b) cLab Client application (V1+V2; runs on Windows, iOS and Linux machines)
   c) SqrePage (Server) Platform (V1)

The vendor will be responsible for configuring, managing and maintaining all systems (Development, Testing, Quality, Production). Each platform can have multiple "production" server instances catering to different user needs (Max instances BodhiTree: 6, Sqrepage: 2). Instances can run on physical servers within IITB premises or on the cloud. Maintenance has to be done accordingly.

Platform	Activity	Details
BodhiTree/SqrePage	Installation	a) Instances have to be setup on physical servers or on cloud b) Installation should be cost effective and scale with user load c) Customization of the landing page per instance may also be needed

BodhiTree/SqrePage	System backup	a) Monitor and validate backup of files/database/code on a daily basis. b) Maintain an audit trail of configuration, backup and restore tasks c) Run quarterly drills to restore, recover and test data from the backup system d) Raise alerts for failures.

BodhiTree/SqrePage	System health-check	a) All instances should run properly with very little downtime.
		 b) Track health and performance metrics of each instance of the platform. Alert relevant personnel for immediate action if systems/components are down.
		 c) Example metrics to track
		    i. Individual Container running status
		    ii. CPU usage
		    iii. Memory consumption
		    iv. Storage
		    v. Storage I/O rates
		    vi. Physical temperatures of servers
		    vii. Network capacity
		    viii. User activity levels

All Platforms	Error logging	a) Errors should be clearly and elaborately recorded in the Error Log file of the system
		 b) The following details are to be shared in the error log report
		    i. Timestamp: The exact date and time the event occurred
		    ii. Source: Where the error occurred.
		    iii. Level: Severity
		    iv. Message: Descriptive text that provides details about the event.
		    v. Context: Additional data that can help in diagnosing the issue.
		    vi. Action: Troubleshooting and resolution plan
		    vii. Status: Resolved or Pending

All Platforms	Security	a) Ensure server certificates are all up to date b) Monitor and apply latest security patches in all components/libraries being used c) Do bi-yearly security audit to ensure best security practices of frameworks are being followed in the code
All Platforms	Customer Support	a) As customers use these platforms, any technical issues (e.g. forgot password, unable to upload file, incorrect marks, unable to install app, unable to login etc) have to be addressed via appropriate channels such as email, whatsapp, phone, teams/meet etc. Setup of such channels is also part of the vendor's job.
All Platforms	Bug fixes	Issues/ errors/ bugs in a solution (implemented or developed as part of this contract) should be taken up for troubleshooting and resolution.
All Platforms	Documentation	a) User manuals for customers b) Architecture/Workflow documentations c) Standard Operating Procedures d) Proper code/api documentation, best practices employed e) Quarterly reports on work done, root-cause analysis of issues faced, corrective actions taken, pitfalls to avoid, suggestions for improvement etc.

As part of the above, the following apply on top of what was covered as part of SLA

1. IIT Bombay & Vendor will meet weekly to monitor the work and plan time-lines for proposed tasks which will be maintained in an issue tracking platform (e.g. Jira or github). Vendor will do adequate testing and due-diligence before marking a task as done. IITB will verify and reopen tasks as needed.
2. The vendor should provide contact numbers, email addresses, and an escalation matrix of a dedicated support team to ensure urgent problems are resolved according to Service Level Agreements. IIT Bombay shall be kept informed well in advance in case of any changes in the contact details.
3. The vendor should maintain source code versions and track carefully configurations being used across various instances.
4. The vendor should provide and maintain coding standards and quality control to ensure coding readability, performance and sustainability.
5. The vendor should ensure that all software modifications and upgrades are deployed carefully after proper testing. And post this monitored carefully for smooth running without any loss in performance or usability.
6. The vendor should begin and end each upgrade effort within the timeframes established as part of discussions and issue priority resolution.
7. The vendor should make proper resource arrangements to ensure support continuity during holiday seasons.

<u>Service Level Agreement (SLA)</u>

1. SLA Definitions and Compliance clauses

A. IIT Bombay Working Hours
The normal working hours of service are Monday to Friday, 8.30 AM to 6 PM. Institute holiday calendar is published on the website of IIT Bombay, which may be revised from time to time as per Government notices.

B. Resources on Payroll
All the team members assigned on this contract must be named and on the payroll of the vendor during the contract period.

C. Incident/Issue Reporting
IIT Bombay will make all efforts to report all incidents/issues as early as possible, and/or through other means of written communication. The issue priority (P1, P2, P3, P4) is defined in the Issue Priority-Resolution table Issue Priority and Resolution Matrix.

D. Availability of Resources

a. **Project Manager**
i. Must be available on-site (IIT Bombay, Powai, Mumbai) for one day a week
ii. Must submit monthly status review report
iii. Must be available for meetings in Design phase, Monthly Review and Quarterly Resource Planning meetings

b. **Design phase**
i. Resource team is required to be present on-site during the requirement gathering and solution designing phase.

c. **Review meetings**
i. Daily online standups (of less than 30 mins) between Resources and IIT Bombay team
ii. Monthly online sprint reviews of the progress and future timeline planning

d. **Quarterly Resource Planning**
i. Every quarter, IIT Bombay team and the Vendor will jointly plan the deliverables for that quarter.

ii. The Program Manager and entire team should be present on-site for these meetings

E. Response Time from the Resources
Response time refers to the maximum time the support team takes to a. acknowledge an issue reported to the DevOps Manager b. provide a probable immediate/root cause, c. an estimate of the issue resolution time. Response time should be adhered to as per details provided in Issue Priority and Resolution Matrix

F. Availability for the task
This refers to the duration the resources must be available to resolve an issue. See table in Issue Priority and Resolution Matrix for issue specific details.

G. Performance Metric

A quarterly performance evaluation will be carried out for all the Resources in the project. Performance of a team member will be quantified using rubrics on the following criteria
a. Response time
b. Availability for task
c. Attending review meetings
d. On-site availability as per plan
e. Quality of solution and documentation
f. Adherence to project timelines and scheduled resolution time
g. Workplace ethics

I. Absence (short i.e. less than 10 days) of Resources

Intimation about short planned absences, must be through the Project Manager(PM). In case the PM is on short absence, an alternate PM must be provided.

J. Replacement of Resources

The vendor must reasonably ensure that the resources assigned to this project must be maintained for the entire duration of the contract. IIT Bombay reserves the right to request replacement of resources any time on the basis of performance or any other justifiable reason. In an event any proposed team member is not available to work on this project (due to long leave absence, attrition or planned exit), the vendor shall provide a list of alternate resources (within one week of notification) of the same or higher qualification, experience, and capability, from which IIT Bombay can choose a suitable replacement. There should be at least one-week of overlap between the outgoing and the incoming resource for knowledge transfer.

K. High priority issues in case of Resource Absence

For incidents/issues of Emergency (P1) or High (P2) priority, the vendor must ensure that the issue is attended by appropriate alternate resources in the event of absence of the named resources.

L. Sub-letting of the O&M AMS contract

The clauses related to the Termination of contract/ Black-listing shall be invoked in case the vendor sublets/ subcontracts the AMS services to any third party without explicit permission from IIT Bombay. IIT Bombay reserves the right in deciding whether any kind of subletting would be permitted for any of the aspects of the AMS Contract.

M. Deficit of service availability

Members of the Vendors team are expected to be available for planned meetings and to act on the issues as per agreed time table, that may be jointly revised by IIT Bombay and the Vendor from time to time. Any deficit in the availability, due to a planned absence, unplanned absence, incompetence or non-cooperation to carry out the tasks as per the Issue Priority-Resolution Matrix given below, will be quantified and recorded as a deficit in availability. This deficit will be adjusted against services rendered as per the planned resource availability or any excess at other times of the year.

N. Project Escalation Matrix

Role	Triggers when
Project Manager	1. Delay in responding to urgent issues 2. Unavailability of resources assigned on the project 3. Delay in issue resolution 4. Poor service or solution quality
Chief Executive Officer	1. Issues impacting the business and prestige of IIT Bombay 2. Inability of the Project Manager to efficiently handle the entire project team

O. Knowledge Transfer (KT) obligations

1. **Initial KT**: Prior to the start of this engagement, the vendor will be required to take-over from IIT Bombay's team within a duration not exceeding one calendar month. The vendor should provide specific requirements at least two weeks prior to the takeover phase.
2. **Termination KT**: After termination of this AMS contract with the vendor, the vendor will be required to handover to IIT Bombay's new support vendor within a duration not exceeding two calendar months.
3. The handover process should be conducted onsite.
4. IIT Bombay will not make any separate payment for the Knowledge Transfer transition phase.

2. Issue Priority and Resolution Matrix

Table: Issue Priority and Resolution Matrix

Severity	Generic definition	Definition (in terms of this project)	Team member	Response Time	Availability for task
P1: Emergency	Production Incident within the Service that severely impacts the Customers; any issue that results in a loss of production data	● Entire customer base is affected. (login not working, server is down, videos not showing etc) ● Security violations ● Incident has a serious impact on critical tasks	Project Manager	30 minutes	24x7
P2: High	P2 is a major Incident within the Service where the Customer's system is functioning but	● Several users are directly affected (access to site is sluggish, requires multiple attempts to upload files etc)	All relevant	3 hours	9 am to 7 pm all days of the week

	in a reduced capacity, or there is a chance of potential loss or interruption of service.				
P3: Medium	P3 is a medium-to-low impact Incident that affects certain partial and/or non-critical functions. Incidents for which there is limited loss or functionality or impact to Customer's operation and for which there is an easy workaround	● Small number or small group of users are directly affected. ● Isolated incident. ● Slow/Degraded performance	All relevant	2 working days	IIT Bombay Working hours
P4: Low	P4 is a general usage question or issue that may be minor or cosmetic in nature or documentation related, and may include improvement requests, but the Service works without interruption.	● User requests general information, service or consultation. ● Cosmetic enhancements ● Report enhancements	All relevant	4 working days	IIT Bombay Working hours

Penalties associated with missed deadlines are provided in section "SLA Violations and Associated Penalties" of this document. The Institute reserves the right to invoke the penalty clause in an event of violation of any of the afore-mentioned SLA clauses.

3. SLA Violations

1. A resource is expected to obtain at least 50% on the consolidated Performance metric defined above. IIT Bombay reserves the right to request replacement of a resource on a failure to achieve this benchmark metric.

2. For each replacement of a resource, a Deficit of availability of 50% of the quarterly person days for that resource will be recorded.

3. In the event of a resource service failing to meet the performance metric for more than three consecutive quarters, or several emergency/high-priority issues not adequately handled over three quarters, IIT Bombay reserves the right to invoke the Termination Clause.

4. Deficits of availability will be adjusted against any excess services rendered as per the planned resource availability.

Vendor selection criteria (Weightage scheme)

The bidding will be a two-stage process called the "Techno-Commercial" bidding process. The weightage of each of the components is given below.

Technical Evaluation Criteria : 70%

Commercial Evaluation Criteria : 30%

1. Technical Evaluation Criteria

Table-1: Technical Evaluation Criteria

Sr. No	Parameters	Maximum Marks
1	Company/Organization Status:	
	A. Technologies used by the the company for accomplishing projects	27
	B. Development and AMS services given to clients	16
	C. Development and AMS services given to Academic Institutes	2
2	Proposed Methodology and Work Plan	
	The Bidder shall prepare and submit a presentation/document regarding the project	40
3	Key Personnel Proposed for the assignment	
	A. Experience and BE/BTech certifications in respective domains	15
	Total Marks	**100**

The break-up of individual parameters along with the weightage is available as a spreadsheet template, in the Tender publication page of IIT Bombay. The bidder is expected to fill in their inputs in the spreadsheet, save it as a PDF file, and upload it along with the other documents on the IIT Bombay's e-tendering portal**.**

2. Commercial Evaluation Criteria

The following format is for the Commercial bid, which is also a named list of proposed team members who will be working on this project. There are 4 distinct primary resources expected to be engaged with IIT Bombay on this project. Apart from these, the vendor may keep secondary resources on stand-by. The below table shows the summary of the resources for 2 years.

Table-2: Commercial bid format

	Combined Resource Allocation for Development and AMS	Total Person Days	Per Day Rate
1	Project Manager with Full Stack Development Experience	211.2	
2	Development Operations (DevOps)	316.6	
3	Developer Backend	528	
4	Developer Frontend	528	

3. Resource Allocation Plan for 2 years

The following is an indicative Resource Allocation Plan to help the vendor allocate and propose specific named resources for the project. This provides a time table of how the named resources mentioned above will be deployed over the next two years across two major work profiles:
1. Annual Maintenance Service
2. One-time development
It also shows how the total person days have been arrived at in the Commercial Bid format

Table-3: Resource allocation for One-time development for two years

	Team Members	Working Days	Person Months for every month [P]	Total Person Months [T = 24 * P]	Total Person Days [D = 22 * T]
1	Project Manager with Full Stack Development Experience	1 day/week	0.2	4.8	105.6
2	Development Operations (DevOps)	half day every 3 days/week	0.3	7.2	154.8
3	Developer Backend	3 days/week	0.6	14.4	316.8
4	Developer Frontend	3 days/week	0.6	14.4	316.8

Table-4: Resource allocation plan for AMS

	Team Members	Working Days	Person Months for every month [P]	Total Person Months [T = 24 * P]	Total Person Days [D = 22 * T]
1	Project Manager with Full Stack Development Experience	1 day/week	0.2	4.8	105.6
2	Development Operations (DevOps)	half day every 3 days/week	0.3	7.2	158.4
3	Developer Backend	2 days/week	0.4	9.6	211.2
4	Developer Frontend	2 days/week	0.4	9.6	211.2

1. The Commercial Bid Value will be a sum of the costs (over a period of two years) effective from the date of the Purchase Order.
2. If any additional services are needed over and above the requested person day estimate, it will be charged at the same rate applicable to the service availed.
3. In case of additional services rendered in excess of the above person days per year, the corresponding payment will be first adjusted annually (end of each contract year) against any deficit in service availability (defined in SLA section below). Excess services will be paid at the same daily rate, and the remaining shortfall will be carried over to the next year.

A. Evaluation of Price Bids and Finalization

1. Commercial bids of only those bidders who clear a technical threshold score of 60% will be opened.

2. In an event if IIT Bombay considers the lowest among the quoted bids is beyond our estimates for the contract, IIT Bombay reserves the right to continue the bidding through a Reverse Auction (RA) method starting at an initial bid value at the lowest quoted bid. The individual Technical scores will be revealed to the respective bidders.

B. Award of contract

In deciding the final selection, the technical quality of the Bid will be given a weightage of 70%. The commercial bids of the bidders will be given a weightage of 30%. The winning bidder having the highest cumulative points will be selected by using following formula:

Total cumulative points would be: (70 x TS/HTS) + (30 x LCB/CB)

HTS - Highest evaluated score received in Technical evaluation among all the bidders TS -

stands for Individual Technical Score

CB - stands for Individual quoted price in Commercial Bid

LCB - stand for Lowest quoted price in Commercial Bid among all the technically qualified bidders

The Bids will be ranked in terms of total points scored. Example: If in response to this RFP, three Bids from Bidders A, B & C are received and the technical scores of them are 60, 80 and 90 marks respectively, all the three Bids would be technically suitable. Further, if the quoted price of Bidders A, B & C are Rs. 100, 120 & 200 respectively.

In the combined evaluation, the process would be as follows:

Bidder A: 70 x (60/90) + 30 x (100/100) = 77

Bidder B: 70 x (80/90) + 30 x (100/120) = 87

Bidder C: 70 x (90/90) + 30 x (100/200) = 85

Example Result: Bidder B would be considered as having highest cumulative points and would be awarded the contract.

C. Documents to be furnished by the bidder along with the Technical bid

1. All documents specified in the table for pre-qualification criteria

2. All documents specified in the table for technical evaluation, including the proposed named team members along with their qualification and relevant experience.

Bidders are requested not to provide unnecessary information other than what is required to establish the requirements mentioned as part of the above two assessments.

4. Termination of Contract

1. IIT Bombay reserves the right to withdraw/ terminate the contract with the vendor in any of the breaches of contract terms or Service Level Agreement

2. IIT Bombay can terminate the contract by giving a 3-month notice to the vendor.

Payment Terms

The following payment terms will be considered:

Item Number	Item Description
1	Payment against work done for the first quarter of Year -1
2	Payment against work done for the second quarter of Year -1
3	Payment against work done for the third quarter of Year -1
4	Payment against work done for the fourth quarter of Year -1
5	Payment against work done for the first quarter of Year -2
6	Payment against work done for the second quarter of Year -2
7	Payment against work done for the third quarter of Year -2
8	Payment against work done for the fourth quarter of Year -2

Pre-Qual	Particulars	Suggested supporting document	Response from the	Reference Document Provided by the bidder
1	The bidder should be a company registered in India under the Companies Act or a Limited Liability Partnership (LLP) with a registered office and	Certificate of Incorporation and GST Certificate		
2	The bidder should have an office and a development center in India. The operational presence of an office in Mumbai or within the radius of 50 kms is mandatory.	Address proof for the registered company		
3	The bidder should have Security Standards such as ISO 9001 which should ensure that the company can provide Quality Management System.	Duly signed copy of ISO 9001 certificate		
4	The bidder should have a team of at least 10 employees.	Self declaration from the company & contact details of Employees		
5	The bidder should hold at least 2 client's Purchase Orders (PO) exceeding 10+ lakhs for existing or upcoming projects.	Copy of purchase orders or satisfactory completion certificate issued by the clients.		
6	The bidder must have prior experience of at least 2 years of development or application maintenance in related technologies (Django and React)	the client 2. List of the technologies/modules developed in Django and React provided in the POs.		
7	old) client references, including the name, email and telephone number of a client's contact person whom the IIT Bombay may call/ correspond with.	Contact details of at least three clients		
8	The bidder should not have been blacklisted by any department or undertaking of the Government of India or the Government of Maharashtra, Or, should not be a vendor/ service provider whose contract was terminated during the past 3 years by IIT Bombay.	Appropriate Self-Declaration from Bidder to this effect on company letterhead		

Ref. No.	Parameter	Marks	Bidder's response	Documentary proof submitted
1. Company/ Organization Status (45 marks)				
1.A Technologies used by the the company for accomplishing projects *(please specify the <u>Number of projects</u> the company has developed or given development and AMS services in the specified technology)* **Max. Marks 27**				**Project Name, Client name and other supplementary documents**
#1A	Linux Hosting	0	NA	
		1	1 project	
		3	Upto 3 projects	
		5	More than 3 projects	
	PWA (Progressive Web Apps)	0	NA	
		1	1 project	
		2	Upto 3 projects	
		4	More than 3 projects	
	Docker Containarization	0	NA	
		1	1 project	
		3	Upto 3 projects	
		5	More than 3 projects	
	Nginx	0	NA	
		1	1 project	
		2	Upto 3 projects	
		3	More than 3 projects	
	SQLite, MySQL Server, MariaDB, Postgres, MongoDB	0	NA	
		1	1 project	
		2	Upto 3 projects	
		4	More than 3 projects	
	Celery and Redis	0	NA	
		1	1 project	
		2	Upto 3 projects	
		3	More than 3 projects	
	Performance Optimization	0	NA	
		1	1 project	
		2	Upto 3 projects	
		3	More than 3 projects	

1.B Development and AMS services given to the clients *(please specify the <u>Number of projects</u> in th*				Project Name, Client name and other supplementary documents
#1B	User Authentication and Authorization	0	NA	
		1	1 project	
		2	Upto 3 projects	
		3	More than 3 projects	
	Data Management and Reporting	0	NA	
		0.5	1 project	
		1	Upto 3 projects	
		2	More than 3 projects	
	Content Management System (CMS)	0	NA	
		0.5	1 project	
		1	Upto 3 projects	
		2	More than 3 projects	
	AMS service provided	0	NA	
		1	1 project	
		2	Upto 3 projects	
		4	More than 3 projects	
	Data Analytics	0	NA	
		0.5	1 project	
		1	Upto 3 projects	
		2	More than 3 projects	
	DevOps Integration	0	NA	
		1	1 project	
		2	Upto 3 projects	
		3	More than 3 projects	

1.C Development or AMS services given to any Academic/ Research university *(please specify the __Yes/No__ in the Bidders response column)*				Project Name, Client name and other supplementary documents
#1C	Services given to any Academic/ Research university	2	YES	
		0	NO	
2. Methodology, Work plan (40 Marks)				
The Bid Evaluation committee shall evaluate the presentation based on the following criteria: Demonstration of understanding regarding the project scope, approach & methodology to meet the project requirements and				**Write up and/or Presentation slides**
	Understanding regarding the project scope	10		
	Methodology and staffing for development and maintenance support	10		
	UI/Code Testing & Quality management plan	10		
	Approach to Software Releases and Upgrades	5		
	User documentation, System documentation	5		
3. Suitability of the Key Personnel for the assignment ((15 Marks))				
3.A Experience in domains				**Resume and profiles of specific persons to be assigned to this project: Name,**
#3 a	**Team Members**		**Number of Years of**	
1	Project Manager with Full Stack Development Experience	0.5	Less than 1 year	
		2	1 to 3 years	
		5	Above 3 years	
2	Development Operations (DevOps)	0.5	Less than 1 year	
		2	1 to 3 years	
		4	Above 3 years	
3	Developer Backend	0.5	Less than 1 year	
		2	1 to 3 years	
		3	Above 3 years	
4	Developer Frontend	0.5	Less than 1 year	
		2	1 to 3 years	
		3	Above 6 years	

Ref. No.	Parameter	Max. Marks	Bidder's response	Documentary proof submitted
1. Company/ Organization Status				
1.A Technologies used by the the company for accomplishing projects *(please specify the <u>Number of projects</u> the company has developed or given development and AMS services in the specified technology) Max. Marks 27*				**Project Name, Client name and other supplementary documents**
#1A	Linux Hosting	5	Upto 3 projects	
	PWA (Progressive Web Apps)	4	NA	
	Docker Containarization	5	NA	
	Nginx	3	NA	
	SQLite, MySQL Server, MariaDB, Postgres, MongoDB	4	NA	
	Celery and Redis	3	NA	
	Performance Optimization	3	NA	
1.B Development and AMS services given to the clients *(please specify the <u>Number of projects</u> in the*				**Project Name, Client name and other supplementary documents**
#1B	User Authentication and Authorization	3	NA	
	Data Management and Reporting	2	NA	
	Content Management System (CMS)	2	NA	
	AMS service provided	4	NA	
	Data Analytics	2	NA	
	DevOps Integration	3	NA	
1.C Development or AMS services given to any Academic/ Research university *(please specify the <u>Yes/No</u> in the Bidders response column)*				**Project Name, Client name and other supplementary documents**
#1C	Services given to any Academic/ Research university	2	NO	
2. Methodology, Work plan				
The Bid Evaluation committee shall evaluate the presentation based on the following criteria: Demonstration of				**Write up and/or Presentation slides**
	Understanding regarding the project scope	10	Doc Attached	
	Methodology and staffing for development and maintenance support	10	Doc Attached	
	UI/Code Testing & Quality management plan	10	Doc Attached	
	Approach to Software Releases and Upgrades	5	Doc Attached	
	User documentation, System documentation	5	Doc Attached	
3. Suitability of the Key Personnel for the assignment				
3.A Experience in domains *Please specify the Number of years of experience in the column "Bidder's response"* *Attach a table of Personnel Name, Experience, Certification, Weekly hours to be assigned on this Project*				**Resume and profiles of specific persons to be assigned to this project: Name, Experience, Certification, Weekly hours to be assigned on this Project**
#3 a	**Team Members**		**Number of Years of**	
1	Project Manager with Full Stack Development Experience	5	Less than 1 year	
2	Development Operations (DevOps)	4	Less than 1 year	
3	Developer Backend	3	Less than 1 year	
4	Developer Frontend	3	Less than 1 year	