Expression of Interest (EoI) for inviting from Reputed Bidder for Establishment of Center of Excellence in Artificial Intelligence Based Skilling and Assessment at VTU Regional Centre, Kalaburgi under KKRDB Funds

Visvesvaraya Technological University

JnanaSanagam, Belagavi – 590 018

Expression of Interest – 04

Schedule of Event

DOCUMENT AVAILABLE FOR DOWNLOAD	**04-06-2025 to 10-06-2025 up to 2.30 p.m.**
LAST DATE OF RECEIPT OF DOCUMENT	**11-06-2025 before 5.30 p.m.** **at office of the Registrar, VTU, Belagavi**
Tender Application fees	Rs.590/- (DD in favor of Finance Officer, VTU, Belagavi)
Earnest money deposit	Rs.25,000/- (DD in favor of Finance Officer, VTU, Belagavi)
AVAILABLITY OF DOCUMENT	http://www.vtu.ac.in
ADDRESS FOR COMMUNICATION	The Registrar Visvesvaraya Technological University, "Jnana Sangama" Belagavi – 590 018

Note: Both the DD's take separately.

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1. INTRODUCTION

Karnataka state has been at the forefront of embracing and pioneering such transformations. Karnataka is one of the most advanced states in India, driven by its entrepreneurial spirit, innovative outlook and a stable, approachable Government. These attributes have made it the faster growing state in India, propelling the country's growth to greater heights.

While it is the largest contributor to India' GDP in the services sector (IT/ITES), the state wants to accelerate its contribution to the Manufacturing/Industries sector as well. In that endeavor, Karnataka has created comprehensive infrastructure facilities for setting up of Industries in the State. The government is committed to develop North Karnataka region into an industrial powerhouse. This major initiative to boost investments in smaller cities outside Bengaluru Global manufacturing clusters are proposed to be set up in north Karnataka region - toy cluster in Koppal, textile cluster in Belagavi, FMCG cluster in Hubballi, solar power cluster in Kalaburagi and agro-implements cluster in Bidar.

With this emphasis laid by Karnataka on the industrial sector, the state acknowledges that manufacturing sector will play the lead role in India's economic progress in its journey towards 100 years of independence. For this to happen, both the manufacturing sector and its allied supply chain, logistics sectors must embrace the new age technologies rapidly. Innovating the future factories and optimizing the supply chain/logistics to achieve efficiencies need to be instilled in the young minds today, for them to lead this huge countrywide transformation.

To enable this transformation, VTU embarks on an initiative of empowering the students with access and Skilling on these next-generation technologies by Establishment of Center of Excellence in Artificial Intelligence Based Skilling and Assessment at VTU Regional Centre, Kalaburgi.

KKRDB:

The mission of the KKRDB is to achieve rapid inclusive growth and balanced regional development with social justice for the six districts coming under Kalyana Karnataka Region. The vision is to achieve this through Macro and Micro level planning by filling the historical developmental gaps in such a way that the centres of growth and the peripheries develop in tandems and in an interdependent manner.

In summary, it is evident that the manufacturing sector will play the lead role in India's economic progress in its journey towards 100 years of independence. For this to happen, both the manufacturing sector and its allied logistics sector must embrace the new age technologies rapidly. Innovating the future factories and optimizing the logistics to achieve efficiencies need to be instilled in the young minds today, for them to lead this huge countrywide transformation.

2. PURPOSE OF EXPRESSION OF INTEREST

To enable this transformation, VTU, Belagavi embarks on an initiative of empowering the interested participants with access and Skilling on these next-generation technologies by Establishment of Center of Excellence in Artificial Intelligence Based Skilling and Assessment at VTU Regional Centre, Kalaburgi.

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This centre will cater to all interested participants residing in the region of KKRDB, Karnataka. Beneficiaries to the participants of Kalyana Karnataka Regional Development Board (KKRDB), region is as follows

(a) Approx 50+ Engineering Colleges, Government aided and autonomous

(b) Industrial tool rooms

(c) Diploma and polytechnic institutes

(d) MSMEs, Industry workforce for skills up-gradation across industries

(e) Research Institutes
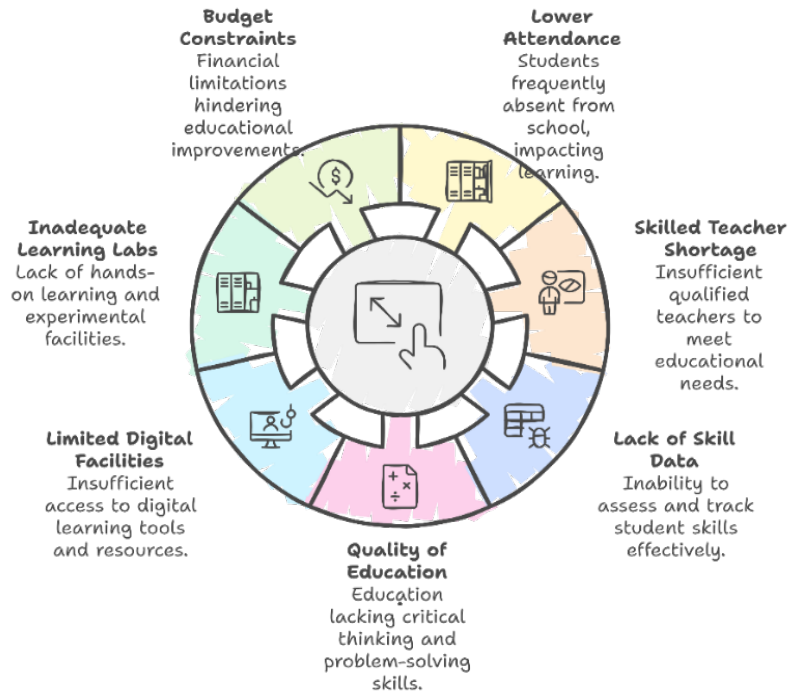
(f) Startup Ecosystem

3. SCOPE OFWORK

EDUCATION IN INDIA:

Education is the key element in the development of sustainable cities. Education in India is provided by the public sector as well as the private sector, with control and funding coming from three levels: central, state, and local. As per 2018 Census, India has attained only 75% literacy rate among its 1.4 billion people. Further to that, only 2% of the population comprise of skilled workforce. Percentage of people under age 19 comprise of 40.71%, thereby making education system a key element in achieving efficient growth and sustainable development.

With the growing trend in usage of Internet, smart phones, mobile apps, tablets, laptops, and other modern technological devices, world is moving towards a digital era. The education system in India's metropolitan cities, urban area has also started to move towards digital education to a great extent, making way for digitization. With a number of higher education private institutions introducing digital education and Digital learning systems, Language Learning Digital Solutions, Digital libraries, Science Labs and more, students studying in Government institutions / universities are left out of the competition, creating a huge gap between expectation and reality. This also discourages students to progress further in the career owing to the limitations and challenges being faced. Thus, it is essential to address the gap in the current educational system being practices in the Government institutions and universities to ensure that the students are given equal opportunity for growth.

We are currently facing new and difficult challenges which, coupled with the need to establish India as a smart economy, will require our grassroots education system to continue to adapt and adjust to the changed circumstances. In spite of the continuous efforts and initiatives taken up by National and State governments, the following are the major challenges being faced in the educational system:
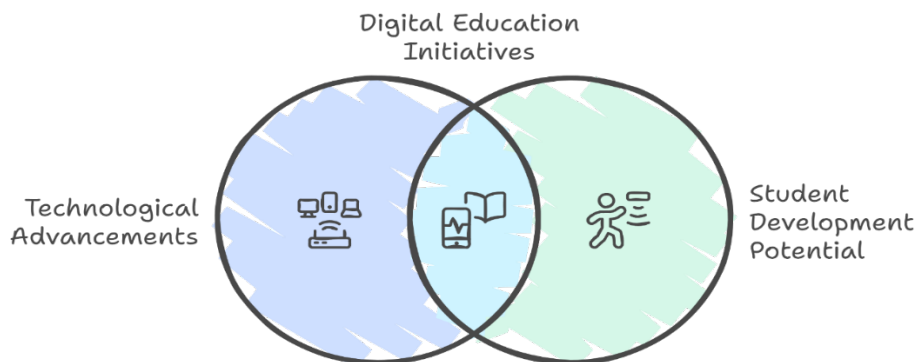
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Challenges in Indian Education

Budget Constraints
Financial limitations hindering educational improvements.

Lower Attendance
Students frequently absent from school, impacting learning.

Inadequate Learning Labs
Lack of hands-on learning and experimental facilities.

Skilled Teacher Shortage
Insufficient qualified teachers to meet educational needs.

Limited Digital Facilities
Insufficient access to digital learning tools and resources.

Lack of Skill Data
Inability to assess and track student skills effectively.

Quality of Education
Education lacking critical thinking and problem-solving skills.

The convergence of Information and Communications Technology and also the introduction of model and tool based with learning methodologies is having the most profound impact on our society and economy. It is also clear that when such technologies are deployed in institutions, they are being embraced enthusiastically by teachers and students globally.

To ensure that India keeps pace with global technological developments and to truly support every student's development potential, strategic and contextual initiatives in Digital Education are needed.

Enhancing Student Potential through Digital Education

Digital Education Initiatives

Technological Advancements

Student Development Potential

Sl. No	Description	Delivery Schedule
01	**Provide Comprehensive Skill Training in Identified Subjects**	30 Days
02	**Provide Robust Skill Assessment Mechanism & Issuance of Skill Cards**	
03	**Provide Mock Interview Sessions using AI Interviewer**	
04	**Provide State-of-the-Art Skilling and Skill Assessment Lab Infrastructure**	

Technical Requirements

1. Provide Comprehensive Skill Training in Identified Subjects:

- **Structured Skill Development**: Specialized training modules designed explicitly in alignment with current and emerging industry needs, covering critical subjects such as Artificial Intelligence (AI) in various domains (Civil Engineering, Logistics and Supply Chain, Marketing, HR, VLSI, Full Stack Development), Cyber Security, Python Programming, Algorithms, Database Systems, and more.
- **Interactive Learning Methodologies**: A blend of instructor-led sessions, interactive online modules, and hybrid training formats that facilitate active learning and deeper understanding.
- **Practical Application & Real-World Simulations**: Extensive use of hands-on exercises, practical simulations, real-world case studies, and project-based learning to reinforce theoretical knowledge.
- **Continuous Curriculum Updates**: Regular engagement with industry experts to ensure the curriculum remains up-to-date, industry-aligned, and relevant.

2. Provide Robust Skill Assessment Mechanism & Issuance of Skill Cards:

- **AI-Powered Adaptive Assessment**: Implementation of advanced AI-driven adaptive assessments which dynamically tailor question difficulty based on the real-time performance of each learner.
- **Scenario-Based Evaluation**: Practical, scenario-driven testing designed to measure student proficiency in real-world contexts and scenarios.
- **Detailed Skill Cards**: Provision of comprehensive Skill Cards outlining each student's proficiency across critical cognitive domains, including Remembering, Understanding, Applying, Analysing, Programming, Debugging, Problem-Solving, and Logical Thinking.
- **Actionable Insights & Reports**: Real-time analytics and personalized feedback aimed at highlighting student strengths, identifying areas of improvement, and recommending actionable strategies for skill enhancement.

3. Provide Mock Interview Sessions using AI Interviewer:

- **AI Interview Avatars**: Implementation of interactive, AI-driven interviewer avatars capable of conducting realistic mock interviews for both HR and technical rounds, thus simulating authentic recruitment scenarios.
- **Personalized Interview Coaching**: Individualized interview feedback highlighting specific communication, technical, and interpersonal skills, and providing practical recommendations for improvements.

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4. Provide State-of-the-Art Skill Lab Infrastructure:

- **Advanced Computing Facilities**: Provision of a dedicated Skill Lab equipped with 10 high-performance desktop computers, enabling immersive and interactive learning experiences.
- **EEG Headband Integration**: Incorporation of EEG (Electroencephalogram) headbands to monitor and enhance cognitive engagement, thereby optimizing learning efficiency through neuroscience-driven methods.
- **Regular Experiential Learning Sessions**: Facilitating regular hands-on training and practical lab exercises supervised by qualified professionals to ensure comprehensive skill acquisition.
- **Maintenance & Technical Support**: Ongoing vendor-led infrastructure maintenance, technical assistance, and support services to ensure uninterrupted operation and maximum uptime.

Detailed technical requirement:

1. **Comprehensive Skill Training in Identified Subjects**

The selected vendor shall be responsible for implementing structured and comprehensive skill training programs aligned explicitly with industry standards and evolving job market needs. The implementation must clearly adhere to the following parameters:

- **Structured Training Modules:** Vendor must provide meticulously designed training modules covering each identified subject such as Artificial Intelligence (across various specialized domains), Cybersecurity, Programming Languages (Python, Java, C), Data Structures, Cloud Computing, Machine Learning, and Brain-Computer Interface technologies.
- **Interactive Delivery Models:** The training sessions should be delivered through flexible and engaging formats, including online self-paced modules, live instructor-led sessions, and hybrid interactive workshops.
- **Practical and Experiential Learning:** The training approach must integrate substantial practical exercises, real-world scenarios, and project-based learning opportunities, ensuring students achieve proficiency through hands-on experiences.
- **Regular Curriculum Updates:** Continuous interaction with industry professionals for timely curriculum updates, maintaining the relevance and accuracy of training content with real-world technological and market developments.

Providing Training Materials

The vendor must provide comprehensive, high-quality, and easily accessible training materials supporting effective and interactive learning. These training materials should be tailored specifically for self-learning as well as guided instructional methods, ensuring inclusivity for diverse learner needs:

- **Digital Learning Resources:** A wide range of digital resources, including interactive e-learning modules, PDFs, PPTs & detailed video lectures, and engaging animated tutorials.
- **Project-Based Resources:** Availability of case studies, real-world simulations, project guidelines, and assignments specifically designed to develop practical competencies.
- **Comprehensive Documentation:** Provision of extensive e-books, reference manuals, and structured guides that complement theoretical and practical training modules.
- **Accessibility and Flexibility:** All resources must be accessible on-demand, 24/7, facilitating learning at the student's own pace and convenience.

2. Robust Skill Assessment Mechanism & Issuance of Skill Cards

A robust and rigorous skill assessment framework must be provided by the vendor, employing advanced technological and AI-driven methodologies to accurately gauge student competencies. The assessment processes should align directly with industry standards, ensuring meaningful certification and real-world relevance:

- **Adaptive AI-Based Assessments:** Vendor must utilize sophisticated AI-powered adaptive testing that dynamically adjusts question complexity based on real-time student performance.
- **Scenario and Competency-Based Evaluation:** Implementation of assessments that simulate real-world job scenarios, challenging students' practical application and problem-solving skills in authentic contexts.
- **Detailed Skill Analytics and Reporting:** Real-time analytics and comprehensive reporting must be provided, highlighting detailed insights into student performance, including identified strengths, weaknesses, and actionable improvement strategies.
- **Issuance of Industry-Recognized Skill Cards:** Post-assessment, detailed Skill Cards must be issued, clearly documenting each student's proficiency across multiple critical skill areas, aiding in enhancing their employability and career prospects.

List of Subjects to be provided for Skill training & Assessment

The vendor is required to deliver extensive skill training programs across carefully identified subjects that align directly with current industry demands and technological advancements. The following subjects must be comprehensively covered:

- AI in Civil Engineering
- AI in Logistics & Supply Chain
- AI in Marketing
- AI in Human Resource
- AI in VLSI
- AI in Full Stack Software Development
- Building an AI Chatbot
- AI Mock Interview
- Aptitude for Interviews
- Principles of Programming Using C
- Introduction to Cyber Security
- Introduction to Python Programming
- Analysis & Design of Algorithms
- Data Structures and Applications
- Database Management Systems
- Object-Oriented Programming with Java
- Artificial Intelligence
- Software Engineering & Project Management
- Cloud Computing
- Machine Learning
- Brain-Computer Interface

Each subject must be systematically structured to include clear learning objectives, practical exercises, and industry-aligned skill competencies.

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Training Hours & Material Availability

The vendor shall clearly outline and adhere to a structured schedule specifying training hours, ensuring substantial coverage and in-depth knowledge of each subject. Additionally, comprehensive training materials must be made available to students on-demand, ensuring flexibility and convenience in accessing these resources. The vendor must ensure:

- **Defined Training Hours:** Each skill-training module must include a minimum of 20 structured hours, adequately covering both theoretical understanding and practical application.
- **Flexible Learning Formats:** Availability of multiple learning formats including self-paced modules, live virtual classes, and hybrid training sessions catering to diverse learner requirements and schedules.
- **Round-the-clock Material Accessibility:** 24/7 uninterrupted access to an extensive repository of digital training materials such as interactive video tutorials, recorded lectures, e-books, real-world case studies, and detailed exercise guidelines.
- **Regular Updates:** Timely and regular updates to training materials, ensuring they remain relevant, current, and consistent with emerging industry practices and technological advancements.

Detailed requirement of the Skill Assessment tool & Methodology to be adopted

The vendor must employ a sophisticated and comprehensive assessment methodology, leveraging advanced AI technologies to provide precise, credible, and actionable evaluation of student skills. The assessment mechanism must ensure robust and authentic validation of competencies and clearly include:

- **AI-Driven Adaptive Assessments:** Implementation of an intelligent assessment system that dynamically adapts difficulty levels of questions based on individual learner responses, enhancing the accuracy and effectiveness of skill measurement.
- **Scenario-Based Practical Evaluations:** Incorporation of assessments rooted in realistic, scenario-based tasks that accurately reflect workplace challenges and demands, allowing for practical skill demonstration.
- **Comprehensive Skill Metrics:** Clear and comprehensive skill evaluation across key cognitive and technical domains including Remembering, Understanding, Applying, Analysing, Programming, Debugging, Logical Thinking, and Problem-Solving.
- **Real-time Analytics and Feedback:** Provision of detailed, real-time performance analytics, clearly highlighting strengths, skill gaps, and specific recommendations for improvement.
- **Skill Card Certification:** Issuance of detailed, validated, and industry-recognized Skill Cards to each student, documenting their skill proficiencies and providing credible proof of competencies for potential employers and higher educational pursuits.

3. AI Interviewer software & features

To comprehensively prepare students for the real-world hiring process, the vendor is required to implement an advanced AI-driven mock interview solution that closely replicates actual interview experiences. This component of the solution must equip students with the necessary interview skills, effectively improving their employability through realistic practice scenarios and personalized, actionable feedback.

Specifications of the HR Mock Interview required

The vendor must provide an interactive AI-powered HR mock interview solution designed to simulate real-world HR interview processes. This solution must include:

- **Interactive AI Interviewer Avatar:** A realistic, interactive AI interviewer avatar that communicates with students through natural language processing (NLP) capabilities, creating authentic conversational scenarios typically experienced during HR interviews.
- **Comprehensive HR Question Bank:** Extensive question sets covering various HR domains such as general awareness, interpersonal skills, communication, behavioral competencies, stress handling, decision-making capabilities, teamwork, conflict resolution, and workplace ethics.

Specifications of the Technical Mock Interview required

The vendor must provide a robust and interactive AI-driven technical mock interview platform specifically tailored to evaluate and enhance students' technical competencies relevant to their fields of specialization. This solution should comprehensively include:

- **Specialized Technical AI Interviewer Avatar:** A dedicated, subject-specific AI interviewer capable of simulating technical interview experiences across various fields including Software Development, Artificial Intelligence, Cybersecurity, Data Science, Cloud Computing, and other relevant technology-driven sectors.
- **Comprehensive Technical Question Repository:** An extensive, curated repository of technical interview questions covering practical coding challenges, algorithmic thinking, logical reasoning, problem-solving, debugging skills, and technical scenario analysis that align closely with industry-standard interview questions.

4. **Skilling and Skill Assessment Lab**

To practically reinforce and effectively complement the skill training, assessments, and AI-driven mock interview components, the vendor is required to establish a fully-equipped, state-of-the-art Skill Lab. The Skill Lab should serve as a centralized facility enabling students to seamlessly access and utilize all digital learning, skill assessment, and AI-based interview tools provided through this initiative.

The specific requirements and standards for the Skill Lab are outlined below:

Infrastructure & Technical Requirements of the Skill Lab

- **Computing Equipment:** Provision of **10 high-performance desktop computers**, each equipped with advanced hardware specifications suitable for smoothly running all required training software, AI-driven assessments, and mock interview platforms without interruption.
- **Android TV:** Provision of a minimum 50inch television with web camera and Mic with advanced hardware specifications suitable for smoothly running AI Mock Interviews.
- **EEG (Electroencephalogram) Headbands:** Integration of EEG headbands with the desktops to facilitate cognitive-based and neuroscience-driven experiential learning, allowing real-time monitoring and enhancement of student engagement and cognitive performance during training sessions.
- **High-Speed Internet & Networking:** Robust, uninterrupted high-speed internet connectivity ensuring smooth and lag-free operation of cloud-based training resources, assessment platforms, and AI-driven mock interviews.
- **Integrated Software Suite:** All desktop systems must be pre-loaded and fully configured to provide seamless access to:
  - o Comprehensive E-learning modules and digital training resources.
  - o AI-driven adaptive assessment software for skill evaluation.
  - o AI interviewer software for HR and technical mock interview sessions.
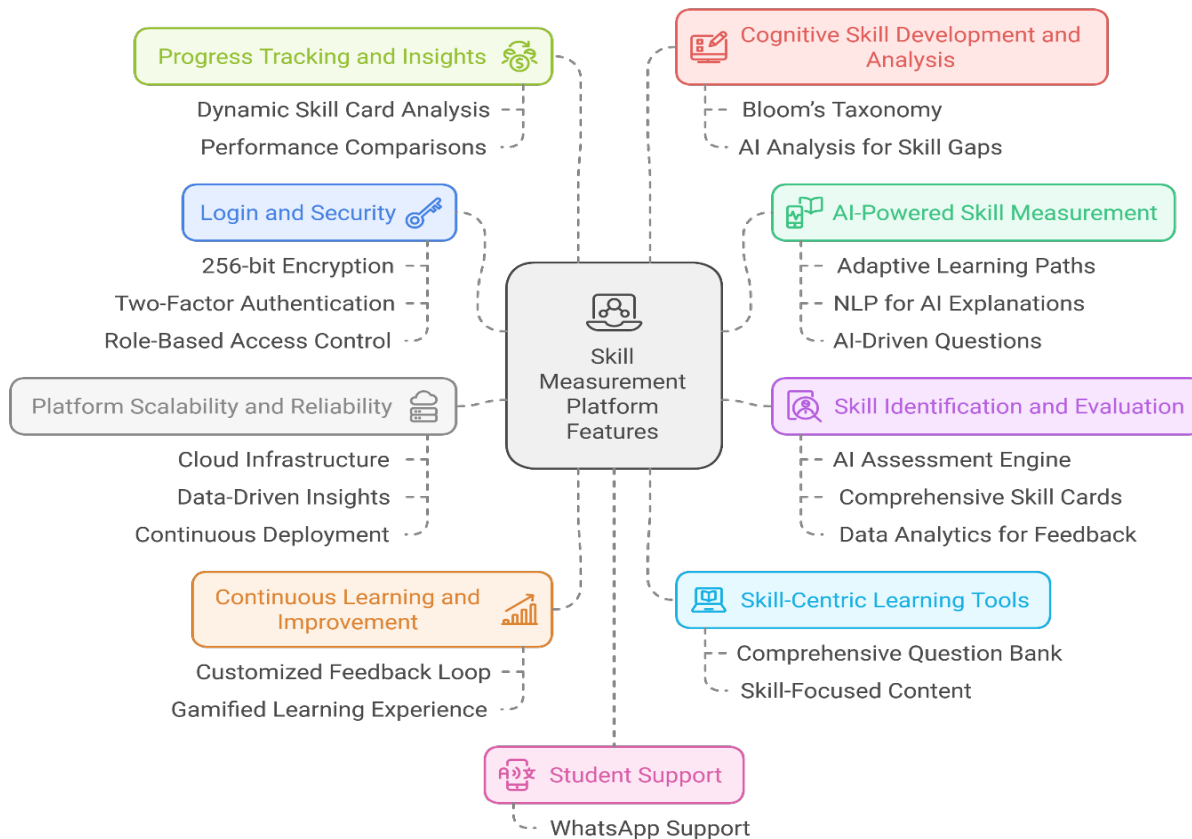
- **Secure Access & Data Protection:** Deployment of secure login mechanisms (including two-factor authentication and robust encryption standards) to protect sensitive user data, ensuring full compliance with data security and privacy standards.

Accessibility & User-Friendliness

- **Single-Sign-On (SSO):** Implementation of SSO functionality allowing students and administrators to access all platforms—E-learning modules, skill assessments, and mock interview software—using a single set of login credentials, ensuring ease of use and secure accessibility.
- **Intuitive User Interface:** The vendor must ensure an intuitive, user-friendly interface for all software applications, minimizing the learning curve and enhancing user satisfaction and productivity.

Operational & Maintenance Support

- **Continuous Technical Support:** Vendor provision of dedicated, responsive technical support to manage, troubleshoot, and maintain the Skill Lab infrastructure, minimizing downtime and maintaining uninterrupted access for students.
- **Regular Maintenance & Updates:** Periodic maintenance checks, timely software updates, security patches, and regular hardware performance reviews to maintain high-quality standards, reliability, and longevity of the Skill Lab resources.
- **Training & Capacity Building:** Regular vendor-conducted training sessions for institutional staff and students to effectively utilize all Skill Lab resources, ensuring optimal utilization and maximum educational benefit.

1. **Login and Security**

   o **256-bit Encryption**: implements **Advanced Encryption Standard (AES) with 256-bit key** to protect user login credentials, ensuring all data is encrypted both in transit and at rest. This encryption mechanism is used to secure sensitive information, making it practically impossible for unauthorized parties to decrypt user data without the correct key. AES-256 provides a high level of security, suitable for protecting personal and educational information.

   o **Two-Factor Authentication (2FA)**: To further enhance security, offers **two-factor authentication** during user login. This requires users to verify their identity using an additional layer of security beyond the standard password—such as a verification code sent via SMS or email, or a time-sensitive code from an authenticator app. This step ensures that unauthorized logins are effectively prevented even if a user's password is compromised.

   o **Role-Based Access Control (RBAC)**: The app uses **Role-Based Access Control** to manage user permissions. Students, teachers, and administrators have different levels of access, limiting who can view and modify data, adding an additional layer of security and usability.

2. **AI-Powered Skill Assessment**

   o **Adaptive Learning Paths**: employs **AI and Machine Learning algorithms** to generate personalized learning paths. These paths are customized based on each student's individual performance, progress history, and desired areas of improvement. The adaptive learning engine can continuously adjust the difficulty level and topics based on a student's evolving capabilities, ensuring a personalized and effective learning experience.

- **Natural Language Processing (NLP) for AI Explanations**: leverages **Natural Language Processing (NLP)** to produce detailed, human-like explanations for each question. This technology helps in breaking down complex concepts into simple, manageable components, allowing students to better understand the logic behind each solution step-by-step. The AI explanations are designed to mimic a tutor-like experience, making learning more interactive and less intimidating.

- **Skill Recognition via AI-Driven Questions**: The platform uses **AI models** to craft questions aimed at targeting specific cognitive skills, such as logical reasoning, problem-solving, or analytical skills. Each question is classified based on its intended skill target, difficulty level, and expected learning outcome, allowing students to focus on specific areas of need.

3. **Skill Identification and Evaluation**

- **AI Assessment Engine**: 's assessment engine leverages **AI techniques, including decision trees and regression models**, to evaluate student responses. The engine processes each answer, not just for correctness but also for the reasoning applied. By evaluating multiple cognitive aspects—such as the approach taken, time spent, and consistency—the AI engine generates a nuanced understanding of each student's capabilities.

- **Comprehensive Skill Cards**: The **Skill Card** generated by the AI assessment engine provides an in-depth analysis of performance. It categorizes abilities into cognitive domains such as **remembering, understanding, applying, analyzing, and creating**. Each Skill Card includes detailed metrics, such as percentage scores per skill type, proficiency heatmaps, strengths, and weaknesses, allowing both students and educators to target specific skills for improvement.

- **Data Analytics for Personalized Feedback**: The assessment platform applies **predictive analytics** to provide **personalized feedback** to each student. Using historical data and machine learning algorithms, it identifies patterns that can help predict which topics may need further reinforcement. This approach ensures feedback is both actionable and precisely targeted, enhancing the student's study efficiency.

4. **Continuous Learning and Improvement**

- **Customized Feedback Loop**: Feedback at is generated using a combination of **student performance data** and **AI-driven insights**. The platform encourages an iterative learning process, where students are given actionable suggestions—such as which skills to revisit or which question types to practice—based on their performance in assessments. This feedback loop helps students strengthen weak areas while also consolidating their knowledge in areas where they perform well.

- **Gamified Learning Experience**: To maintain engagement, integrates a **gamified learning experience**. The platform awards badges, levels, and other incentives based on learning milestones. The gamified elements use **behavioral analytics** to keep students motivated and provide a positive reinforcement mechanism for sustained learning.

5. **Skill-Centric Learning Tools**

- **Comprehensive Question Bank**: The question bank on is enriched by AI, with each question categorized according to various **Bloom's Taxonomy levels** (e.g., understanding, applying, analyzing). The repository contains thousands of questions specifically designed to challenge

students across different difficulty tiers and skill domains, providing them a structured way to learn incrementally.

- o **Skill-Focused Content Curation**: The learning material is tailored to focus on brain skills like **logical reasoning**, **analytical thinking**, and **problem-solving**. These are identified as critical for modern education and future employment. The questions and study material are developed in partnership with **educational psychologists** to align with the best practices in cognitive learning.

6. **Progress Tracking and Insights**

- o **Dynamic Skill Card Analysis**: Skill Cards are updated dynamically as students take additional assessments. This enables real-time tracking of **progress metrics** over time, allowing both students and educators to see a clear trajectory of improvement or stagnation. The platform displays this data through intuitive **visual representations** such as bar charts, heatmaps, and radar charts to make it easy to interpret the student's progress.

- o **Performance Comparisons and Benchmarking**: enables students to compare their progress against **class averages** or **regional benchmarks**. The app uses anonymized data to provide benchmarking insights, which allows students to understand where they stand relative to others, thus fostering a healthy competitive spirit while identifying opportunities for growth.

7. **Cognitive Skill Development and Analysis**

- o **Bloom's Taxonomy and Cognitive Psychology**: The entire skill assessment methodology is grounded in **Bloom's Taxonomy**. The AI evaluation engine looks at responses in various cognitive domains (e.g., comprehension, application, analysis). The platform is also informed by **cognitive psychology research**, ensuring that assessments are not just grade-focused but skill-centric, helping students build abilities needed for real-world problem-solving.

- o **AI Analysis for Skill Gaps**: Using **machine learning classifiers**, the system can accurately identify skill gaps, even at the micro-level, such as understanding versus applying a specific concept. By using techniques such as **clustering algorithms**, students with similar skill gaps can be grouped, allowing the platform to offer tailored learning material and group study opportunities.

8. **Platform Scalability and Reliability**

- o **Cloud Infrastructure and Microservices Architecture**: utilizes a **cloud-based microservices architecture** to ensure the scalability of its services. This architecture allows the application to handle increasing numbers of concurrent users, ensuring a stable experience. The cloud infrastructure also guarantees **high availability**, with systems in place for **automatic failover** and **load balancing** to minimize downtime.

- o **Robust Data-Driven Insights**: Leveraging **data lakes** and **big data processing tools**, collects and analyzes data from user interactions to produce meaningful insights for educational institutions. The platform generates insights that can be used to improve the teaching process, identify struggling students, and highlight effective learning patterns.

- o **Continuous Deployment and Updates**: The platform employs **DevOps practices** for continuous deployment, ensuring that the latest features, security patches, and performance improvements are pushed to the app with minimal disruption to users.

9. **Exclusive AI based WhatsApp student support number.**

Cloud-based Skill Training, Skill Assessment, AI Mock Interviews & Skill Lab
***AI – Artificial Intelligence**

Sr. No	Subjects for Skilling	Skill Training Hours	Skill Training Material	Skill Assessment
1	AI in Civil Engineering	20	Yes	Yes
2	AI in Logistics & Supply Chain	20	Yes	Yes
3	AI in Marketing	20	Yes	Yes
4	AI in Human Resource	20	Yes	Yes
5	AI in VLSI	20	Yes	Yes
6	AI in Full Stack Software Development	20	Yes	Yes
7	How to build an AI Chatbot	20	Yes	Yes
8	AI Mock Interview	20	Yes	Yes
9	Aptitude for Interviews	20	Yes	Yes
10	Principles of Programming Using C	20	Yes	Yes
11	Introduction to Cyber Security	20	Yes	Yes
12	Introduction to Python Programming	20	Yes	Yes
13	Analysis & Design of Algorithms	20	Yes	Yes
14	Data Structures and Applications	20	Yes	Yes
15	Database Management System	20	Yes	Yes
16	Object Oriented Programming with Java	20	Yes	Yes
17	Artificial Intelligence	20	Yes	Yes
18	Software Engineering & Project Management	20	Yes	Yes
19	Cloud Computing	20	Yes	Yes
20	Machine Learning	20	Yes	Yes

AI Interview

Sr. No	Components	Attempts per Student	Interview Training Material	Skill Assessment
1	HR Mock Interview	2	Yes	Yes
2	Technical Mock Interview	2	Yes	Yes

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Skill Lab

Sr. No	Components	Qty
1	Desktop Computers • Monitor • CPU • Keyboard • Mouse • Cables • Intel Core i5 or above, 256GB SSD, 1 TB HDD • Microsoft Windows 11 Home 64-Bit Trial • 24" FHD IPS Panel 60Hz 8ms Monitor wired keyboard/mouse combo • Compatible with Design, Analysis and Simulation Software & devices of above. • Warranty support – 03 years	10 Nos
2	EEG Headbands PRO	10 Nos
3	50inch Television • Web Camera • Mic	1 No

Technical Eligibility Criteria:

Sr. No	Description	Status
1	Platform aligns with VTU's educational framework and syllabus.	Available/Not Available
2	500+ questions in each subject evaluating all the skills.	Available/Not Available
3	Option to select any skill, difficulty level or category of question for assessment by students	Available/Not Available
4	Generate percentage-based reports for each skill and category, with downloadable reports available for each subject.	Available/Not Available
5	Skill categories to be assessed in each subject – Remembering, Understanding, Applying, Analyzing, Programming, Debugging, Problem Solving, Logical Thinking	Available/Not Available
6	Aggregated reports should be accessible at different institutional levels.	Available/Not Available
7	Each question should have a detailed solution	Available/Not Available
8	Actionable insights and recommendations based on student performance.	Available/Not Available
9	Demos & Training to students & all stake holders on campus at VTU Kalaburagi.	Available/Not Available
10	AI talking avatar for mock interview – HR round & Technical round	Available/Not Available
11	10 Desktop Computer	Available/Not Available
12	10 EEG Headband PRO	Available/Not Available
13	50 Inch Television	Available/Not Available
14	Web Camera & Mic	Available/Not Available

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ELIGIBILITY CRITERIA FOR THE BIDDER/CONSORTIUM INDUSTRY PARTNER:

1. **Technical Capabilities:**
   o The bidder/consortium industry partner must use advanced AI technologies in the assessment software solution.
   o The assessment platform should be an indigenous product.
   o Each subject should have a minimum of 1,000 questions for assessment, with detailed solutions for each question.
   o All assessment questions must be vetted by teachers with Ph.Ds. in their respective subjects.

2. **Assessment Platform Features:**
   o The platform should allow students the flexibility to pick any skill for assessment.
   o The assessment should evaluate students on various categories, including difficulty levels and different types of questions.
   o The platform should generate percentage-based reports for each skill and various assessment categories.
   o The system should provide downloadable reports for each subject.
   o Aggregated reports at class, department, institution, and university levels should be available to respective stakeholders at any time.
   o The detailed technical specifications/features is provided in Annexure A. The bidder/consortium partner should comply all the specification/features as per Annexure A.

3. **Flexibility and Scalability:**
   o The solution should be scalable to meet the growing needs of VTU and support the addition of new subjects or skills as per curriculum changes.
   o The platform must allow for customization to adapt to the specific requirements of VTU's educational framework and syllabi.

4. **Verification of Compliance:**
   o A technical evaluation committee appointed by VTU will visit the declared site if required or online verification of the software's features, and performance to ensure compliance with the above-stated criteria.
   o The bidder/consortium industry partner must be ready for live demonstrations of the platform and its capabilities.
   o The bidder/consortium industry partner should demonstrate at least 10 subjects for Skill assessment from the VTU syllabus within 48hrs of being called for demonstration before the technical evaluation committee.

4. **ELIGIBILITY CRITERIA**

Through this EOI, the proposals will be evaluated with the proposed solution and the technical & financial capabilities of the bidder,

4.1 Statutory Requirements:

a) The Bidder should furnish GST Registration Certificate.

b) The Bidder should be a Private Limited / Partnership firm /LLP

c) PAN Card Photocopy

d) IT returns for the past 3 years

e) GST returns for the Assessment for last 3 years

f) Manufacturer Authorization Form from OEM as per Annexure 4

General Eligibility Criteria

a) Only a single company fulfilling the eligibility criteria is eligible to bid. Consortium, joint ventures formed for the purpose of this project are not eligible to bid. Note: - The definition of consortium and joint ventures does not include any tie-up with OEMs on company's own account.

b) Companies should not have been declared ineligible / blacklisted by any State or Central Government. The bidder shall produce a self-certification declaring the same.

c) Companies should not have filed for bankruptcy/insolvency during the last three years.

d) Trusts & societies are not eligible to bid for this project.

e) Bidder should enclosed full detailed proposal (Technical specification, estimated cost etc.,)

Special Instructions to Bidders

The response submitted by the bidder shall comprise the following documents:

1. Proof of documents for all eligibility criteria should be provided

2. Completed format for Financial Capability as per Annexure - 3

Compliance with Eligibility criteria

The organizations desiring to respond to the EOI will submit their details regarding their meeting the eligibility criteria. The organizations are responsible for submitting all supporting documents that evidence their fulfillment of the eligibility criteria.

The VTU is entitled to ask the bidder to submit any additional supporting documents regarding its meeting the eligibility criteria, which may include letters from past clients, copies of contracts and it will be the responsibility of the bidder to satisfy VTU. The bidder will not take refuge under Non-Disclosure Agreements, Confidentiality agreements for non-submission of documents supporting its claims of fulfilling the eligibility criteria.

Validity of Proposals

Proposals shall remain valid for a period not less than 90 days from the EOI Due Date. VTU reserves the right to reject any proposal, which does not meet this requirement.

Late Application

Applications / responses received after the Application Due Date, as mentioned in schedule of events, shall not be considered and shall be summarily rejected.

Submission of Wrong Information

The VTU will disqualify any bidder at any stage of bid evaluation if it is discovered that the bidder

has made wrong claims regarding its fulfillment of the eligibility criteria and the department may black list and initiate a legal action.

In the event of contract being awarded to such a firm making false claims / suppression of truth / misleading claim / wrong claim regarding its fulfillment of the eligibility criteria, the department shall declare the company in breach of the contract and shall immediately terminate the contract and forfeit the Performance Bank Guarantee submitted by the company. The VTU may black list and initiate a legal action against such company.

Amendment to EOI

1. At any times even working days prior to the deadline for submission of bids, VTU, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder, may modify the bidding documents by amendment.

2. In order to allow prospective bidders reason able time in which to take the amendment in to account in preparing their bids, the VTU, at its discretion, may extend the deadline for the submission of bids.

Language

The proposal and all related correspondence and documents should be written in the English language. Supporting documents and printed literature furnished by Bidder with the proposal may be in any other language provided that they are accompanied by appropriate translations of the pertinent passages in the English language duly certified appropriately.

The Supporting materials, which are not translated into English, may not be considered. For the purpose of interpretation and evaluation of the proposal, the English language translation shall prevail.

5. EVALUATION ESTIMATION

Information relating to the examination, clarification and comparison of the EOI / bids and shall not be disclosed to bidders or any other persons not officially concerned with such process until the award to the successful bidder has been announced.

Evaluation of EOI responses

The responses to the EOI including the enclosed documentation shall be evaluated in the following manner:
  a) The documentation furnished by the bidder will be examined prima facie to see if the submissions meet the eligibility criteria as specified in related sections.

b) Preliminary scrutiny of the response to EOI will be made to determine whether they are complete, whether the documents have been properly signed, and whether the response is generally in order.

c) Prior to the detailed evaluation, EOI inviting authority will determine the substantial responsiveness of each bid to the bidding documents. For purposes of these clauses, a substantially responsive bid is one, which conforms to all the terms and conditions of the EOI document.

d) EOI inviting authority may waive any minor infirmity; nonconformity or irregularity in a response, which does not constitute a material deviation, provided such waiver does not prejudice or affect any bidder.

e) Based on the evaluation of this EOI, Intimate the estimate cost of the procurement to KKRDB.

f) Procurement procedure will be processed as per KTPP Act. upon receipt of funds from the KKRDB.

6. ANNEXURES

Annexure1 – Statutory Requirements

[On the Letter Head of the Bidder]

Particulars	Details
Basic information of Organization	
Name of firm	
Address of the corporate headquarters	
Date of incorporation	
Address of the Registered Office in India	
GST certificate	
PAN card	
IT returns for the past 5 years	
Any Other relevant information	

Note: - Kindly attach necessary supporting documents

Bidder   Registrar

Annexure 2 – Format for Technical Capability

Sl No	Client name	Purchase order Date	Details of the Project Executed

Annexure-3 – Format for Financial Capability

[On the Letter Head of the Bidder]

Financial Year	Turnover
2020-21	
2021-22	
2022-23	
2023-24	
2024-25	

Note: - Kindly attach necessary supporting documents

Annexure 4

<u>MANUFACTURERS' AUTHORIZATION FORM</u>

Date: ....

To

[NAME OF THE BIDDER]

Dear Sir:

We ………………………….. [NAME OF THE OEM] who are established and reputable manufacturers of ………………………….[NAME AND DESCRIPTION OF GOODS OFFERED] having offices at …………………………….. [ADDRESS OF OFFICE] do hereby authorize, subject to execution of distribution agreement, M/s ………………… [NAME AND ADDRESS OF BIDDER] to submit a bid, and sign the contract with you for the goods manufactured by us against the above EOI

       We hereby extend our full guarantee and warranty for the goods and services offered for supply by the above firm against this EOI.

Yours faithfully,

(Name)

(Name of manufacturers)

Bidder   Registrar

Annexure 5

<center>**FINANCIAL BID**</center>

Date: ....

Name of the Bidder: ………………………………………………………………………..

Sl. No.	Description	Price (In INR)
1	Cost of establishment of Center of Excellence in Artificial Intelligence Based Skilling and Assessment at VTU Regional Centre, Kalaburgi Under Kalyan Karnataka Regional Development Board (KKRDB) funds	
2	GST (at 18%)	
3	Grand Total (Inclusive)	

Signature and Seal of the Bidder: ………………………………

Bidder should be enclosed full detailed proposal with seal and signature (Technical specification, quantity, estimated cost etc.,)

Bidder   Registrar