TERMS OF REFERENCE

for

DEVELOPMENT OF ONLINE KNOWLEDGE ASSESSMENT SYSTEM

1.0. Background

The Tertiary and Vocational Education Commission (TVEC) being the apex level policy making body for Technical and Vocational Education and Training (TVET) sector of Sri Lanka is entrusted with the task of planning, coordination and development of TVET at all levels in keeping with the human resource needs of the economy. In order to achieve these objectives, the TVEC expects to introduce Online Knowledge Assessment system for different occupations and Admission Selection Test for the applicants of the public and private training institutes under the purview of the Ministry of Industry & Commerce, Resettlement of Protracted Displaced Persons, Co-operative Development and Vocational Training & Skills Development. Currently the knowledge assessment is conducted through written examination and the entrants for the National Vocational Institutes are selected using an offline examination system. The proposed system will replace this system with an online examination procedure.

2.0. Objective of the Assignment

The objective of this assignment is to conduct Online Knowledge Assessment for NVQ in different occupations and to conduct selection examinations for TVET institutes.

The specific objective of this assignment is to get a service of a reputed vender to develop Online Knowledge Assessment system for National Vocational Qualification (NVQ) certification.

3.0. Activities to be carried out

- Detailed requirement study should be carried by the consultant to identify the requirements of the TVEC in developing of Online Knowledge Assessment system.
- The Consultancy Firm should develop the Online Knowledge Assessment system with the features required by the TVEC.

3.1. Feature of the system

The Consultancy Firm shall develop Online Knowledge Assessment system with following features but not be limited to the following,

1) The system should have facility to display all the content (Interface and Questions) in three languages (Sinhala, Tamil and English), based on the user request. And also searchable facility in three language.
2) The system should be facilitated to Add, Update and Delete the questions or other related information in the system.
3) The systems should support with an audit trail facility to trace the modifications to the database, or related information.
4) Log recodes should be maintained as appropriate and available when required.
5) The system should be facilitated to conduct exams for National Competency Standard (NCS) unit / NCS package.
6) The system should be facilitated to evaluate the students in following criteria.
   a. National Competency Standard (NCS) unit and version wise.
   b. Pass marks will be calculated unit wise and overall and those pass marks will be revised time to time.
7) The system should be facilitated to take individual units at another time which are not success in any attempt.
8) The students will be eligible for the final assessment after completion of the all units.

9) Questions may include following types

    a. Drag and drop

    b. Matching

    c. Multiple Choice

    d. Random Short Answer Matching (Marks will be vary based on answer)

    e. Select missing words

    f. Numerical

    g. True/False

    h. Other

10) The system should have to user friendly navigation method.

11) Questions appear to the student has to be randomized and shuffled the answers.

12) The system should be able to generate relevant standard and customized reports to the users.

13) Question paper will be available for students in given time period.

    a. Timer will be on screen in decrease order.

    b. Auto saving facility

    c. When the given time over, answers will automatically submitted.

14) A question paper which is answered by a student can be traced.

15) The system should have strong security features to prevent unauthorized access.

16) The system should have Role-Based Access Control (RBAC) to authorize system resources allocation to users based on roles.

17) All communication between the server and client will be done over SSL and All requests and data transfer between the server and the database must be done over an SSL connection.

18) The system should facilitate issuing online test admissions.

19) Information dashboard should be available.

4.0. Other features of the system

1) Upload Student information by CSV file and assigned into group of batches to the central database.
2) Ensure compatibility to all the browsers (Mozilla Firefox, internet Explorer, Google Chrome, Opera, Safari).
3) The portal should run on a PC connected to a network with minimum bandwidth
4) Provide user with interactive help facility for each screen.
5) Maintain consistent aesthetics in UI of the system.
6) Ensure disabling the Internet browsing when conducting examination.
7) Backup & Recovery:
   a. The system should automatically perform regular backups of all critical items including; quiz data, system logs, reports and the database in an encrypted format. The backups shall be stored in an off-site storage location or preferably a secure cloud storage. The backups will regularly be tested to ensure integrity of the backups.
8) Disaster Recovery/Management:
9) The system should be able recover/restore in an event of failure during the examination.
10) Preferred open source software

5.0. Technology / Knowledge transfer and Training

1) Consultancy Firm should develop knowledge transferring proposal in consultation with TVEC.
2) As per the agreed proposal given by the Consultancy Firm, requires to provide training to all the users (Approximately 20 users in the district of Colombo) about the management and administration of the system. This is to provide an understanding of the system, its database and infrastructure configurations of the system.
3) Should prepare user manual and technical manual.

6.0. Ownership

The ownership of the product shall be transferred to TEVC. This includes all sources codes, relevant documents (User manual, Database Diagram, etc.), and other third party software which are necessary to operate the Online Knowledge Assessment System.

7.0. System hosting

TVEC will purchase cloud space to host this online knowledge assessment system. The Consultancy Firm should provide the requirement of the cloud as per the agreed timelines with TVEC. After completion of the system, Consultancy Firm should transfer the system to the cloud space and ensure for the effective functioning.

8.0. Warranty

Provide **three** year warranty after the user acceptance signoff. During this period, the Consultancy Firm is responsible for the following technical support;

i. Update patches, Fix bugs, and Make post-deployment changes to the system based on feedback from user experience and service warranty according to the agreed period of time.

ii. The maintenance plan for another **two** years after the three year warranty period needs to be submitted.

9.0. Security audit

After completion of the system, TVEC will conduct security audit with the support of external party. The Consultancy Firm should address the recommendation by the external audit to fix the bugs.

10.0. Connecting/Interfaces Existing Systems

Consultancy Firm should provide an application program interface (API) for other existing systems used in TVEC. Study the nature of existing systems in the details requirement study.

11.0. Key Deliverables and Payment Schedule

Duration of the assignment shall be 16 weeks.

Activity	Deliverable	Delivery Date contract
Requirement study	Inception report	Contract date + Week 1
Detail requirements study	• Requirement specification • Detailed technical design • Training plan • Cloud Specification • Technical specification to run the system	Contract date + Week 3
Software development and UAT testing	After User acceptance testing	Contract date + Week 9
Cloud transfer & Testing	Test in cloud environment	Contract date + Week 10
Finalization	Completed system	Contract date + Week 11
User training / manuals	As per the section 05 of the TOR requirements	Contract date + Week 14
Pilot run in different locations	Meet the requirements	Contract date + Week 16
System maintenance		3 Years from system handover

12.0. Qualification of the Key staff

The Key exerts shall have sufficient qualifications and experience in the field of monitoring and evaluation, related consultancy/research assignments preferably for the public sector development projects. Table 3.0 below shows the details of the positions required, respective qualifications and experience.

Table 3.0: Qualifications and Experience of the key experts

Position	Preferable Academic Qualification	Preferable Experience
Project Manager	Minimum Master Degree or professional qualifications in specific to the assignment.	A minimum seven years of work experience in the field ICT development projects. Should have pleasant personality & ability to maintain good interpersonal relationships. Good analytic, writing and communication skills;
System Analyst	Minimum Master Degree qualifications in ICT and relevant qualifications specific to the assignment	A minimum five years' experience in a similar field.
Software developers	Minimum Basic Degree qualifications in ICT and relevant qualifications specific to the assignment	Minimum 3 years of experience in designing and development of web based / e-learning platforms.
Quality Assurance	Minimum Basic Degree qualifications in ICT and relevant qualifications specific to the assignment	Minimum 3 years of experience in designing and development of web based / e-learning platforms.
Technical Lead	Minimum Basic Degree qualifications in ICT and relevant qualifications specific to the assignment	Minimum 5 years of experience in ICT project.
Database	Minimum Basic Degree	Minimum 3 years of experience in ICT

administrator	qualifications in ICT and relevant qualifications specific to the assignment	project.
Translator (Sinhala /Tamil /English)	In the government translation service / relevant qualification	Minimum 2 years of experience in translation.