<div align="center">**TERMS OF REFERENCE FOR THE R&D PROJECT**</div>

**Title: Implementation of the 2-D Assessment System in Confidence Based Learning (CBL)**

1. **Background:**

   a) In recent years most of the automated assessment techniques that are deployed in e-learning are based on Item Banks that are having Objective type items / Questions. This is a good method of testing the knowledge / comprehensive level of the learners. In many faculty this is the prime criterion for assessment of the learners.
   However, in places where authentic learning is the key to assessment of the learners, it is required to not only judge the knowledge / comprehension level of a learner, but there is a requirement for estimating or judging the knowledge level with a requirement of level of confidence in implementing the decision from the knowledge he / she has in this case. Therefore, in real world situations or from the world of work, a learner is required to have knowledge along with a level of confidence to implement his judgment in the world of work. 2-D Assessment, also known as Confidence Based Assessment (CBA) plays a vital role in real world deployment both in the Academic and Professional world

   b) Confidence Based Assessment (CBA) is the need of the hour where there is a requirement of establishing the knowledge as well as level of confidence in that knowledge acquirement. This type of assessment is required in the true sense in the domain of work particularly, where the human life and the property and other resources are at stake. This can be truly applied in the following domain of the works:

      ❖ Educational and Skill enhancement domain

      ❖ Medical Science where the patients are the biggest and the most vulnerable stakeholder.

      ❖ Logistics where the transportation of various types of materials area challenge including Hazardous Goods

      ❖ Airline Industry where the safety and security of the passengers are a matter of great concern.

      ❖ Railway Network and Other modes of Transportation where safety and security of passengers are of utmost importance.

   This research project will result in a detailed technical study report on the above topic highlighting the analysis and examination during the practical implementation of CBA, which may serve as the input for a potential new standard in the future.

2. **Scope**:

The scope of the research project includes:

a) Implementation of a sound mechanism for deployment of the Confidence Based Assessment (CBA) & analysis of the structure of content

b) Analysis of the items based on various levels of cognitive domain according to Bloom's Taxonomy & investigation of mechanism of deficiency diagnosis based on the CBA

c) Examination of the performance of individual learners in terms of incremental /decremental learning/confidence developed through iterative approach & researching the possibilities of content management

3. **Expected Deliverables**:

a) A detailed technical study report describing in detail the implementation of the 2-D Assessment System in Confidence Based Learning (CBL) & other parameters as enlisted in the Scope above (S.no 2). This document may provide the required inputs for a potential new standard development in the future.

4. **Research Methodology**:

a) Literature Review: A comprehensive literature review to be done to understand the existing standards and relevant studies.

b) Data Collection: Gathering data on 2-D Assessment System in Confidence Based Learning (CBL) Standards available in the market.

c) Focus Group Discussions: Conducting focus group discussions with potential users and experts in the field to identify key performance parameters and safety concerns.

d) At least 2 Visits to institutions where this may be implemented: At least 2 visits to the institutions or industries where this may be implemented to understand the Standards being used for 2-D Assessment System in Confidence Based Learning (CBL) testing and identification of gaps.

e) Feedback and Expert Consultation: Seek feedback and consultation from experts in 2-D Assessment System in Confidence Based Learning (CBL).

f) Any other research methodology to address the expected deliverables for this project.

5. **Requirement for the CVs:**

The individuals engaged in this project should possess a strong research work experience and educational background in the e-Learning area or IT for Learning, education & training area with an awareness of relevant standards.

6. **Timeline and Method of Progress Review:**

a) Project start (Month 1): The project officially begins with a detailed review of objectives and methodologies.

b) Data Collection and evaluation (Months 1-2)

c) Mid-term Review (Month 3): A mid-term review is conducted to assess progress and adjust methodologies as necessary.

d) Final Analysis and Assessments (Months 3-4)

e) Submission (Month 5): The project deliverables are submitted.

7. **Support BIS will Provide:**

BIS will provide access to latest available editions of Indian standards and/ or international standards relevant to the project, on request.

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