TERMS OF REFERENCE

Hire a consultancy firm for the "Development of SMART Education Platform"

1. Introduction

As per the vision of the government and the national development agenda, education sector considered as a key trust area which is directly contributes towards the development of knowledge based society which will lead enhanced living of the citizens and economic growth meanwhile. ICT has a significant level of role in the development of education to the next era.

This will directly contribute government policy on "Digitization of the economy" by promoting IT education at all levels of education and made younger generation more competent and accessible to the information. It also aligns and contributes towards government education policy on "Facilitation to access to the digital world".

2. Background

With the increased Information and Communication Technology (ICT) advancements and penetration the role of ICT in the education sector has become more significant. Considering the fact that the digital technologies could play a vital role in uplifting the knowledge levels of students in a rapid phase intervention of ICT is considered as one of the most effective ways of ensuring the empowering citizens at all levels through facilitating lifelong learning for all.

On the other hand, new generation (Gen Y) will have more capabilities, eager to learn new things and happy to embrace technology. Surveys have identified that 35% of the global workforce will be built up with millennial by 2020. So looking ahead SMART Platform for education is an upfront investment.

Having a national level education platform will improve the social inclusion, equity, good governance and effective use of the information regardless of age or geo boundaries.

3. Project objective

Develop a common platform which provides seamless access to quality and trusted educational related digital content.

This will be facilitated by managing indexed data collected from various data sources. Platform will also provide searchable content for all level of users and facilitate content provision for various content providers.

Scope of Services, Tasks (Components) to be carried out

Overall architecture
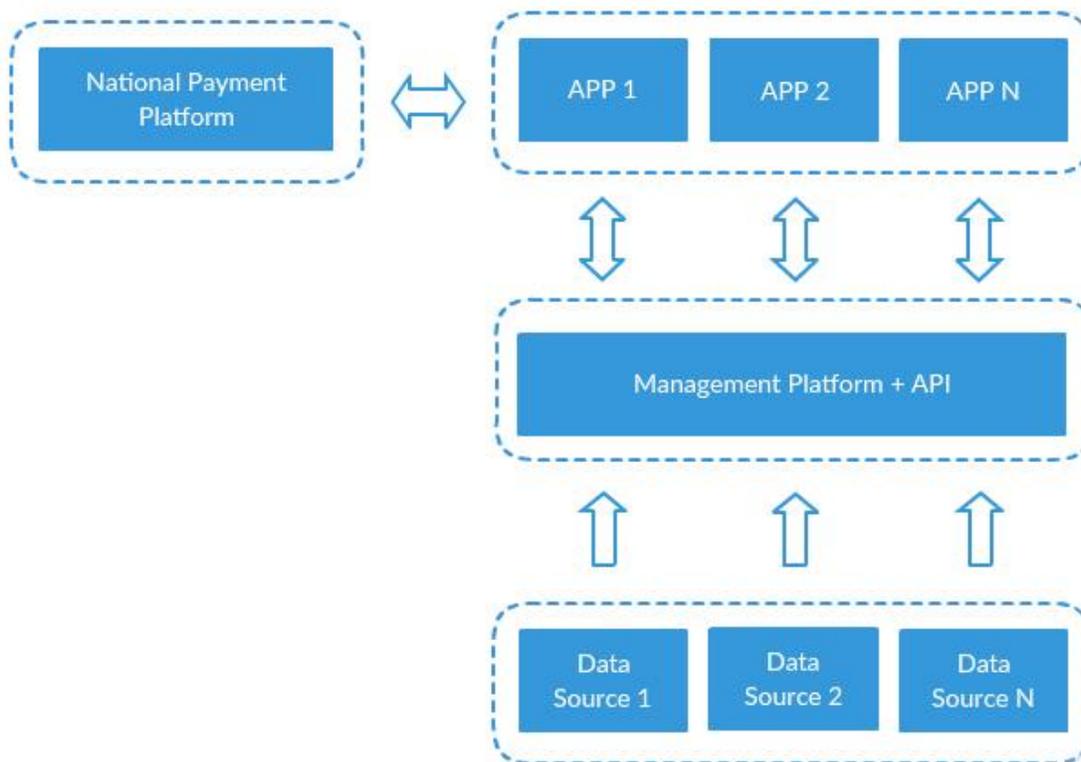
- Data sources - The source of the data where it can be in text, audio and video. There can be N number of data sources/content providers in the eco system.

- Management Platform + API – The management platform should allow to administrate and govern the eco system as required. It also should consist an API layer which is exposed applications (APP1, APP2) in order to retrieve necessary information to be shown to the user.

- APP – The applications are the user interaction point where users are able to search for content.

- National Payment Platform (NPP) – The National Payment Platform is envisioned to be the common payment gateway for the government payments. For payments which are done through the application will be handled through NPP. This integration is not expected in this tender but the application should have provision to integrate at a later time.

The learning platform will contain content acquisition, content authorization and indexing.
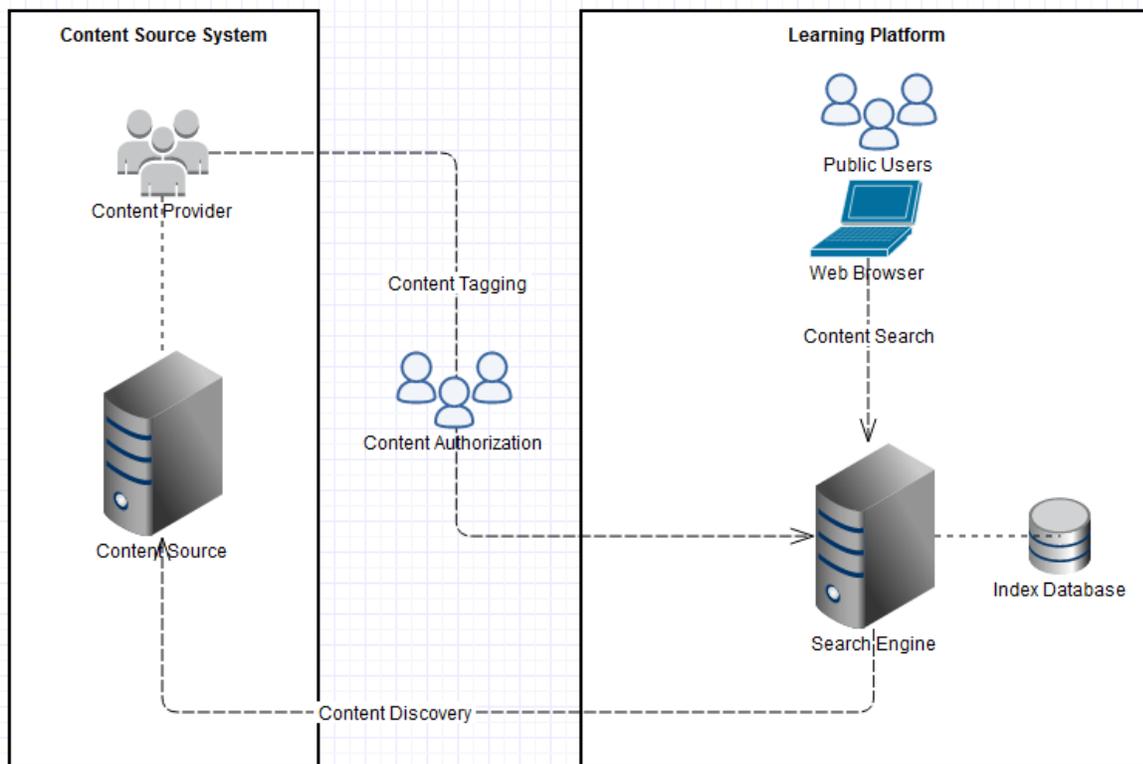
Refer to user stories at **Annexure_1**

Content Acquisition - Acquire content from third party content providers
Content Authorization - Authorize collected content via defined process
Indexing - Collects, parses, and stores data to facilitate fast and accurate information retrieval.

Learning Platform

4.1 High-level functional and Non-functional requirements

4.1.1 Functional Requirements

Functional requirements are listed as below (not limited to),

Platform

4.1.1.1 User Management - Role based access control, per role permission assignment and user account creation etc

4.1.1.2 Acquisition - The platform should facilitate content acquisition via a suitable method

4.1.1.3 Content tagging - The platform should facilitate a mechanism to tag the submitted content

4.1.1.4 Content Authorization - An authorized user should be able to edit, approve and reject the content request

4.1.1.5 Content categorization - Authorized content need to be categorized based on a specified/given classification.

4.1.1.6 Content Indexing - The authorized content should be indexed using a suitable structure in order to fasten the retrieval of information.

4.1.1.7 REST API - The platform should contain a REST API with required business functionalities in order to be consumed by the applications.

4.1.1.8 Manage APIs -The platform should have the capability to manage of applications which utilize the REST API.

Application

4.1.1.9 Content Search - Authorized and indexed content to be searched by a user

4.1.1.9.1   Content Filter - Advanced search functionality should be available in the application.

4.1.1.10 Site Navigation – The application should facilitate easy navigation across the application.

4.1.2 Nonfunctional requirements

Refer to **Annexure - 2**

4. 2 Tasks to be carried out

4.2.1. A literature review on similar platforms

4.2.2. Identify and analyze gap with regard to enhancing the system considering the best practices and scalability

4.2.3. Identify functional and nonfunctional requirements of the system

4.2.4. Provide Software Architecture (SA), prototype along with project plan, System Requirement

Document(SRS), Detailed Software Technical Documentation (DSTD), Software Quality Assurance Test Plan (QATP)

4.2.5. Obtain Signoff for SA, SRS, DSTD, QATP

4.2.6. Identify user experience to be embedded to the system

4.2.7. Design and develop

4.2.6.1 Authentication and Content authorization manager of the Learning platform

4.2.6.2 Search engine

4.2.8. Preparation of Software Quality Assurance Test Cases (QATC)

4.2.9. Functional and nonfunctional testing and comprehensive test results and final test report

4.2.10. Produce deployment guideline and User Manual

4.2.11. Liaise with ICTA and ensure smooth implementation and provide consult progress input whenever requested by ICTA on certain specific matters

4.2.12. Consultant is required to present the progress of the project/ assignment during the weekly review meeting at ICTA.

4.3 Maintenance of Platform

Following services should be provided by the consultant for a period of a one (1) year without any additional cost.

4.3.6 Manage and maintain the eLearning platform for a one (1) year period from the date of acceptance letter (sign off) issued by ICTA.

4.3.7 Updates requested by the ICTA should be uploaded within 24 hours of receiving the information.

4.3.8 Provide Helpdesk support to user in updates and contents management for one (1) year period from the date of signoff.

4.3.9 Attend to all types of corrective maintenances (Bug fixing and installing of security patches). If user discovers any error/failure in the platform or the app, consultant should respond and rectify immediately. Meantime to Response (MTR) should not exceed one hour and Mean Time to Resolution should not exceed 24 hours from the time of being

informed. Notification of errors/failures should be possible through email, telephone, and fax or in letter format

5. Deliverables and Timeline;

The Consultant will be engaged for a period of 8 months. All the following deliverables should be delivered in a manner acceptable to Review Committee which comprises representatives of ICTA and Ministry of Education.

No	Deliverables	Deliverables Submission
1	**Milestone 1** • Inception Report • Project Management Plan	Commencement Date + 2 weeks
2	**Milestone 2** **Successful acceptance of the following** • Detailed software requirements documentation (DSRS) • System Architecture Document (SA) • Quality Assurance Test Plan (QATP) • Detailed Software Technical Documentation (DSTD) • Proof of Concept (Scope of the POC will be finalized on agreement with review committee ICTA	Commencement Date + 6 weeks
4	**Milestone 3** • Deployed, tested and final working version of final iteration Integrating of all the modules and deployed • Quality Assurance Test results on phase 2, Regression test results for whole system • Acceptance of the following Operational Acceptance Testing (OAT) • User Acceptance Testing (UAT)	Commencement Date + 20 weeks

5	**Milestone 4** Successful acceptance of the following; - Final Completion Report, Test Report, Live rollout - User Manual - User Training - Deployment Guide - Monthly Support and Maintenance Report	Commencement date + 22 weeks

6. Minimum Qualification for the Consultant

No	Key Experts (Positions) required	Preferable Qualification	Preferable Experience	Minimum Number of Positions
1	**Consultancy**	Degree from a recognized University Expert on eLearning eLearning in higher education	Knowledge and Ability to assist development of latest digital learning platforms. Experience in education sector	1
2	**Project Manger**	B. Sc. Degree from a recognize University in IT or related subject with Professional Qualification	Knowledge and Ability to assist development of latest digital learning platforms. (Demonstrated ability in assist a team throughout designing, developing and delivering the system.)	1
3	**Tech Lead**	Degree from a recognized University	Demonstrate at least 3 years of experience in similar capacity.	1
4	**Senior Software Engineer**	Degree from a recognized University or Diploma in IT related subject with Professional Qualification	Demonstrate at least 3 years of experience in similar capacity with Knowledge on Sinhala and Tamil Unicode	2

			Demonstrate at least 3 years of experience in similar capacity with Knowledge on Sinhala and Tamil Unicode and open source CMSs.	
	Software Engineers	Degree from a recognized University or Diploma in IT related subject with Professional Qualification	Demonstrate at least 3 years of experience in similar capacity	1
6	**UX Designer**	Diploma in IT or related subject with Professional Qualification	Demonstrate at least 2 years of experience in similar capacity	1
7	**QA Engineers (s)**	Diploma in IT or equivalent qualifications	Demonstrate at least 2 years of experience in similar capacity with Knowledge on Sinhala and Tamil Unicode and open source CMSs.	2

7. Client Input

ICTA will provide the following facilities to the development team.

- Setup meetings with key stakeholders

- Co-ordinate and arrange all appointments

- Provide content and translations which requires government expertise on time with a responsible person for clarifications/inputs

Other than above listed facilities, no facilities whatsoever will be provided to the successful bidder by the Client.

8. Review committee and review procedures

All deliverables will be reviewed by the review committee appointed by the ICTA

Annexure - 1

User stories

Public User
- Users should be able to launch the system by typing the URL in the web browser

- As a public user I should be able to see the search text filed in the home page of the application
- As a public user I should be able to search content by typing an arbitrary keyword in the search text field
- As a public user I should be able to see the list of suggestions related to a given keyword while key-in on search field
- As a public user I should be able to see the list of search results with a clickable title & short description
- As a public user I should be able to click on the title of the search result & navigate to the content providers web page

Content Provider

- As a content provider I should be able to Tag my content for the system
- As a content provider I should be able to submit my content provision request to authorized users
- As a content provider I should be able to get notified regarding my request status (Approved/Rejected)

Content Authorizer

- As a content authorizer I should be able to login into the system by providing valid username & password
- As a content authorizer I should be able to input trusted content indexes to the system by entering the URL, type of content & short description of the content provider. Upon submitting the system should crawl the content providers web site and populate the index database internally
- As a content authorizer I should be able to search the list of trusted content providers by typing an arbitrary keyword in the content provider search text field

Annexure-2

Non-Functional Requirements

Security and Authentication

- Only authenticated users should be allowed. Access privileges should be granted to a user by assigning roles. The roles should be created by assigning tasks. (Refer Chapter XX of DSRS).
- The application should ensure "confidentiality" and "integrity" wherever applicable by adhering to transport and message level security standards. (i.e. HTTPS, WS-Security).

Audit Facilities

- An audit trail of all activities must be maintained. On a service or operation being initiated, the system should log the event, creating a basic 'audit log entry'. It should not be possible for the operation to be executed without the log entry being made.
- The information recorded in the audit trail depends on the type of activity which takes place. Each service would be responsible for logging detailed information. The different types of operations are; (not limited to)
  - Data Capture & Maintenance
  - Creation of an entry / item
  - Modification an item
  - Deletion
  - Control (or status change)
  - Process execution
  - Data synchronization
  - Print (only selected item)
  - Retrieval
  - Monitor
- Detail logging may be enabled or disabled for each type of operation, and/or for each business object. It should be possible to configure which attributes of a data item should be traced at the detail level. Tracing of some attributes may be considered mandatory, and they should not be turned off.

High Availability and Backup

- Application level high-availability should be ensured. There shouldn't be any single-point-of-failure.
- Necessary mechanisms for off-site backup should be implemented. Backup procedure and restoration procedure should be properly documented and restoration should be properly tested.
- The main contingencies that should be considered and the training with regards to these shall be given to the relevant staff -
- Equipment failure
- Physical / natural Disaster

- Breakdown in EDM, messaging or communication facilities.

- Changes in operations and policy

- Sudden absence of key personnel

- Breach in Security

Performance

- Display search results for a given keyword in less than 1 seconds for 10 million indexes

- Crawl and build the internal index representation for a given content provider web site with 10 different web pages in less than 15 minutes

- Following performance criteria is provided as a guideline only. If the actual performance is falling below the stipulated figures, the consultant is to justify the reasons. However, the performance level must be accepted by the technical evaluation committee appointed by the client.

- The bandwidth is assumed at 256kbps with 50 concurrent users in total.

Item	Performance
Screen Navigation: field-to-field	<10 milliseconds
Screen Navigation: screen-to-screen	<5 seconds
Screen Refresh	<3 seconds
Screen list box, combo box	<3 seconds
Screen grid – 25 rows, 10 columns	<5 seconds
Report preview – (all reports) – initial page view (if asynchronous)	<60 seconds in most instances. It is understood that complicated / large volume reports may require a longer period
Simple enquiry – single table, 5 fields, 3 conditions – without screen rendering	<5 seconds for 100,000 rows
Complex enquiry – multiple joined table (5), 10 fields, 3 conditions – without screen rendering	<8 seconds for 100,000 rows
Server side validations / computations	<10 milliseconds
Client side validations / computations	<1 millisecond
Batch processing (if any) per 100 records	<120 seconds
Login, authentication, and verification	<3 seconds
Daily backups (@ Dept.) – max duration	1 hour (on-line preferred)
Total Restore (@Dept) – max duration	4 hours