Terms of Reference

Development of a web application and a mobile application for e-Heritage Project

ICTA/GOSL/CON/FBS/2016/81

1.   Introduction

"Cultural Heritage"[1] is considered as an integral feature among Sri Lankans' way of life. Many of the cultural heritage sites in Sri Lanka have become leading tourist (foreign and local) attractions. In Sri Lanka, six locations are inscribed on the World cultural heritage list[2],   viz. Ancient City of Polonnaruwa, Ancient Rock City of Sigiriya, Golden Temple of Dambulla, Old Town of Galle and its Fortifications , Sacred City of Anuradhapura and Sacred City of Kandy.

All the above mentioned sites are visited by local and foreign tourists frequently. Among the tourists, there area considerable number of school children from all parts of the country and there could be academia and researchers who wish to explore more on cultural heritage sites. However, at present the access to information on cultural heritage is limited and scattered. The accuracy and consistency of available information are also concerns.

Given the context and heritage tourism emerging as one of the most successful types of modern tourism, the Information and Communication Technology Agency (ICTA) of Sri Lanka, the apex ICT institution of the Government, in line with its Vision3, has initiated "e-Heritage: Introduction of cutting-edge technology for storage and dissemination of information on cultural heritage of Sri Lanka" Project with the objective of enhancing the knowledge of tourists on cultural heritage sites in Sri Lanka using cutting-edge technology. The duration of the Project is three (3) years.

The project aims to develop a comprehensive national digital heritage content management framework to facilitate access to accurate information on cultural Heritage sites in Sri Lanka with web and mobile applications to provide location-based information for tourists (Local and foreign) by using information and communication technologies.

---

[1]As per the Article 1 of Convention Concerning the Protection of the World Cultural and Natural Heritage for the purposes of this Convention, the following shall be considered as "cultural heritage"
Monuments: architectural works, works of monumental sculpture and painting, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features, which are of outstanding universal value from the point of view of history, art or science;
Groups of buildings: groups of separate or connected buildings which, because of their architecture, their homogeneity or their place in the landscape, are of outstanding universal value from the point of view of history, art or science;
Sites: works of man or the combined works of nature and man, and areas including archaeological sites which are of outstanding universal value from the historical, aesthetic, ethnological or anthropological point of view.

[2]http://whc.unesco.org/en/statesparties/lk

[3]"To harness ICT as a lever for economic and social advancement by taking the dividends of ICT to every village, to every citizen, to every business & to re-engineer the way government thinks & works"

Development of such a framework requires identification of appropriate sites, buildings and monuments and the relevant text content as a foundation. The text content will be supplemented by voice/ audio, photographs, Augmented Reality (AR) and Virtual Reality (VR) features.

In order to disseminate the developed content for quick global access, it has been planned to develop a comprehensive technology framework for eHeritage project that includes web application and mobile application.

2.   Purpose of the Assignment

The objective of this project is to develop a comprehensive technology framework for eHeritage project that includes mobile application and web application using the existing Sri Lanka Museums Mobile application.

Specific objectives

- Develop a web application which consist of a backend (for content management) and a front-end(for information dissemination for citizens)
- Develop Native Mobile Applications(should support Android, Windows and iOS) for eHeritage Project.
- Provide maintenance service for one (1) year.

3.   Description of Services / Scope of Work

3.1 Web Application

- *Translation*– Establish a mechanism to translate the English Content to top ten most spoken languages in the world or top ten foreign language translation requested by ICTA. (If there is a cost for using the API for translations, such costs will have to be borne by the Developer)

- *Virtual tour* - The virtual tour allows the visitor to take a virtual, 3-D, self-guided tour to some designated sites. The object of having virtual tour is to encourage the mobile application user to visit the sites. Icons indicating additional information such as videos, audio and links to online resources should be included.

- *Social Media* – Social media need to be integrated with the applications in order to share the user's experience in most popular social media such as Facebook, twitter, LinkedIn and Google +.

- *REST API* – To facilitate the mobile application. The mobile application will get data from the web application via web service.

- *Responsive UI*–Web application should be viewable on any computing devices.

- *Analytics* – Analytical module should be made available (i.e –Google analytics)

- *Statistics* –Reports on number of sites/ buildings/ monuments visited should be indicated to the user real time

- *Other -* Web application should follow ICTA web standards and consist of standard modules such as user management, user interactions, reporting, etc

3.2 Mobile Application

- *Sri Lanka Heritage Mobile Applications -* Mobile applications (native or hybrid) for Android, Windows and iOS mobile operating systems, need to be designed and developed.

- *Augmented Reality (AR)-* Once the smart device's camera is pointed towards the artifact, the artifact should be recognized and facilities should be available to reconstruct the artifact into a 3D object and should animate accordingly in the 3D Sphere, so the user will get an understanding about how that artifact was in the past. There will be 40 main artifacts to be re-constructed in 3D in 2017and 2018 therefore, the application should have provision to support AR features)

- *Geo Location Based Augmented Reality -* Incorporate a module to locate the sites, monuments, buildings based on the geo location of the visitor.

- *Virtual tour* - The virtual tour allows the visitor to take a virtual, 3-D, self-guided tour to some designated sites. The object of having virtual tour is to encourage the mobile application user to visit the sites using 360 degree photos. Icons indicating additional information such as videos, audio and links to online resources should be included.

- *Social Media*– Social media need to be integrated with the applications in order to share the user's experience in most popular social media such as Facebook, Twitter, LinkedIn and Google +.

- *Analytics* – A mechanism should be available to provide information to web analytical module

Consultant should host the databases of web and mobile applications; any other applications in Lanka Government Cloud (LGC)and provide one year maintenance services both mobile and web applications.

Consultant firm should publish Heritage mobile application in Google Play Store, Microsoft App Store and App Store on behalf of ICTA or should facilitate ICTA to publish the applications.

It is highly recommended to use free and open source software for the development of web applications and mobile application.

Technical Requirements

- Developer is free to propose a suitable architecture after assessing the requirements, and the existing Sri Lanka Museums Mobile application. The system should be developed leveraging Free and Open Source application.
- The weband mobile applications should meet the functional and non-functional (security, performance, etc) requirements given by ICTA.

General Conditions
- Review and familiarize with the Project related documents, and the requirements relating to the completion of the task.
- Attend all meetings relevant to the Project, liaise and coordinate with the ICTA Project Team, the Steering Committee and the content developers
- Attend to any other matters relevant to the conduct of the Project as and when identified by the ICTA.

4.   Final outputs (Deliverables , time schedule for deliverables)

Initial Contract Period is 18 Months, commencing from August 2016. The various stages to be implemented in delivering eHeritage Web & Mobile applications includes –
- Stage -1 : Assess (Project Inception, Requirement Analysis)
- Stage -2: Design (Design Definition, Architecture Definition, Testing Strategy)
- Stage -3: Construction (Development and Testing)
- Stage -4: Implement (User Acceptance and System Stabilization, Documentation and User Training)
- Stage -5: Maintenance

Note:
1) The below mentioned stages should be followed in developing both Web & Mobile applications.
2) The below mentioned activities and deliverable are applicable for both Web & Mobile applications

	Stage	Activities	Deliverables	Payment of Total Payment	Due Date (from signing of contract)
1	**Assess** This stage mainly involves the inception of the project, agreeing on the project schedules and analyzing the business requirements of the Client for application development	**Project Inception** - Project Initiation and Kick-off - Project Planning and Scheduling - Project Plan Review and - Analyse proposed solution requirements - High level architecture - Review and sign-off of deliverables	• Project management plan and implementation approach • QA plan and test cases • Acceptance criteria for Deliverables, UAT, Operational acceptance	10%	3Weeks

2.	**Design** This stage involves with producing the solution design and other design related activities such as the testing strategy, training strategy, etc... Iteration plans shall be finalised at this stage. Certain activities of the design stage shall be repeated based on the iteration plan.	**Design** - Conceptual solution architecture design - Application screen design - Logical data model design - Services design - Design documentation Testing Strategy and Planning - Define acceptance criteria for deliverables, UAT, operational acceptance - Design test strategy and prepare test plans	• Iteration plan • Solution architecture • Design document • UI standards • Data migration and integration plan (if applicable) • Release Management plan (including staging, production and support and maintenance) • Test plans • Test cases and test scenarios • Repeated revisions to the solution design • Repeated revisions to the test cases	10%	6 Weeks
3	**Construction** This stage is where the software is developed and tested to suit the requirements. Development shall be carried out according to the agreed upon iteration plan.	**Develop and Test** - Develop, unit test and configure proposed solution - Application development and test - Functional and System integration testing and issue fixing - Deliver code	• Proper maintenance of source code in SCM • Proper maintenance of issues in the Issue tracking System • Working version of the agreed iteration • Hardware requirements for production	30%	18Weeks
4	**Implement** This stage involves the actual implementation of the projectwhere the UAT and production deployment is carried out	**UAT and System Stabilization** - UAT - Production deployment - Operational Acceptance, Testing Documentation and User Training - Prepare and submit user/ technical manuals - User training	• Solutions installation guide • User manual • Administrator manual (if applicable) • Successful UAT acceptance of the solution • Production Deployment Confirmation	30%	20Weeks
5	**Operate & Review** This stage involves the continuous project monitoring, support and maintenance activities of the project.	**Support and Maintenance** - Ongoing project monitoring and tracking - Monthly progress meetings / Updates -	• Monthly Support and Maintenance Report • Proper maintenance of issues in the Issue tracking System	20%	UAT Acceptance Date + 1 Year

5. Qualification of the Consultant (Competencies, Experience and Skill)

Position	Minimum academic qualifications	Minimum years of experience in relevant field
Project Manager	Bachelors' Degree in relevant field from a recognized university	5 years of experience in IT project management
Technical Lead	Bachelors' Degree in relevant field from a recognized university	2years of experience in similar capacity.
Senior Software Engineer*2	Bachelors' Degree in the relevant field from a recognized university	2 years of experience in similar capacity
Software Engineer*2	Bachelors' Degree in the relevant field from a recognized university	1 year experience in similar capacity
UI Engineer	Bachelors' Degree in the relevant field from a recognized university	3 years of experience in Creative field
QA Engineer	Bachelors' Degree in the relevant field from a recognized university	2 years of experience in similar capacity

6. Review Committees and quality assurance procedures

ICTA will appoint a technical review committee in collaboration with stakeholder organizations to review and approve the deliverables.

The consultant/ developers shall work closely with the Client, ICT Agency and the Review Committee, comprise of stakeholder agencies and ICTA Tech Team.

7. Services and Facilities provided by ICTA

- The source code of the content management framework of Sri Lanka Museums mobile application will be provided to the selected consultant/ software developer. The selected consultant should be able to utilize the existing application to develop the above mentioned application.
- Project documents
- List of sites, monuments, buildings and the guideline for text content development
- Selected Content (Text, Voice (Audio), Photos, Geo locations, Videos, etc.)to test the applications
- Infrastructure to host the web application.
- Android, iOS and Windows developer account to publish the mobile application
- Organizing workshops, events and demonstration sessions with and for stakeholders and steering committee