Terms of Reference (ToR) for Development, Implementation and Maintenance of Muktopaath (e-Learning Platform)

I. TERMS OF REFERENCE (TOR)

(a) Background

The Muktopaath (www.muktopaath.gov.bd) is an e-learning platform for education, skills and professional development. Various educational courses and contents are delivered through MuktoPaath to diversified professionals including teachers, migrating workers, unemployed youths, farmers, journalists, government officials and NGOs. The Muktopaath also offers courses and tutorials for the unemployed and under-employed youths of Bangladesh with a view to encourage them in self-employment. The courses and contents are designed and developed by relevant experts under supervision of appropriate domain specialists.

The Muktopaath platform is designed and developed as a learning management system (LMS) so that the participants of this e-learning platform can learn appropriate knowledge and skills in a chronological way with appropriate support from online facilitators. The participants’ learning progress is recorded and tracked by the LMS and they are notified about their progress. There are dedicated online facilitators who communicate with the participants and provide necessary supports. The learning activities in MuktoPaath include watching attractive videos, taking part in forum discussions and live sessions and submitting assignments and quizzes.

This platform uses elements of ‘Gamification’ in an attempt to create a virtual ‘incentive’ for the participants to involve them regularly and actively. Every week some participants are selected as the most active users based on various criterions including the activities, quizzes, assignments, forum discussion and blogs. The participants’ learning is guided and monitored regularly by the assigned coordinators and facilitators who communicate and provide feedback to individual participant and help individuals to complete the courses. The best performers of a course has opportunities to be a facilitator in the future course-sessions and to get other facilities.

The MuktoPaath e-learning platform is becoming popular and many government and non-government institutions are showing interest to provide their professional training courses through MuktoPaath. Already more than 30 partners institutions are working with MuktoPaath and more than 1,00,000 participants registered in this platform to learn different courses. It is targeted that more than 1,00,00,000 people will learn and develop their professional knowledge through MuktoPaath in future.

There is a growing need to include different educational and administrative features in the MuktoPaath platform. This platform also needs to be made more secured and scalable so that multiple partner organizations can use this platform to deliver their professional learning and training courses with appropriate flexibility and security. Therefore, a new version of the MuktoPaath e-learning platform will be created with improved features and supports.

Objectives: The overall objectives of the assignment will be the following:

- To rebuild the MuktoPaath e-learning platform making its architecture robust, secured and flexible to integrate different e-learning features.
To develop MuktoPaath as an e-learning framework based on multilayered business, content and operational components along with multitenancy supports.

Develop native mobile application (Android) of Mukthopaath e-learning platform.

(d) Scope of Work /Description of Work:

The design & development scope will be limited to the scope of work as identified in the TOR. The scope of work can be categorized with the following tasks:

1. Conduct a needs assessment of the existing system to prepare the precise System Requirement Specification (SRS) for designing and developing a new version of Muktopaath e-learning platform and Provide concrete development plan in the SRS, which should include context diagram of the proposed system, Sequence Diagram, Use case Diagram, and Process Flow Diagram.
2. Design the solution architecture of the Muktopaath e-learning platform in a manner for better performance, flexibility, scalability, extendibility and multitenancy of the system for future expansion.
3. Compatible for exchanging data with other e-learning platforms or a2i-owned portals/platforms (eg. Teachers’ portal, InfoKosh etc.)
4. Ensure access control, application level security and on-demand support to Helpdesk (layer-2) for uninterrupted LIVE service.
5. Design and develop Role-wise credential system incorporation for better user role management. System should support user registration in multiple ways including mobile number, Google ID, email, NID etc. User information can be imported from the NID system.
6. System shall provide the ability to encrypt user IDs and passwords and impose minimum password lengths along with ability to reset passwords following a standard password strategy. User log management shall be recorded.
7. The system will have an e-communication module, which will be used for sending email and sms the categorized users and relevant reports of e-communication should be produced.
8. There will be a Dashboard presenting dynamic data in reports in tabular and graphic presentations.
9. Develop a native android application of Mukthopaath e-learning platform with features as required.
10. The MuktoPaath will have Accessibility compliance as per W3C to support learning for the differently abled persons.
11. The proposed Mukthopaath e-learning platform should have a robust multimedia content management system with support of video, audio, pdf, word, ppt etc. It should have an on-demand video streaming capability for conducting live sessions. It should have provision for Two-way real-time audio and video chat support. Third party tools can be integrated for this.
12. The system should have provision for periodical & instant Data Backup & Auto Archiving System.
13. The system should migrate all data from previous version of MuktoPaath with appropriate data validation; a report should be presented of data migration.
14. It should have a dynamic content management system (CMS) with support of contents upload, tagging, searching and download features. Content hit/view/download count will be recorded and presented in dashboard and printable reports. A user level permission will be set to control who can upload, publish and download contents. The CMS should also migrate contents (video, audio, images, texts, pdf etc.) form the previous version of MuktoPaath.
15. There should be provision to integrate payment gateway integration in the system for the paid courses of MuktoPaath.
16. Mukthopaath e-learning platform should be SCORM compliant: it should have open ended API to share or exchange data with 3rd party e-learning system.
17. Mukthopaath e-learning platform should be cross browser compatible, responsive and graphically attractive.  
18. The system must have a Certificate Verification mechanism with Block Chain Technology.  
19. The developed system must support Bengali UNICODE enable font so that Bengali content can be viewed properly from any machine, which support Unicode. The proposed system must facilitate for showing the content both in English and Bengali Language.  
20. Vendor Company will ensure system to be tested at module integration and load level. All necessary security test at application level architecture needs to be followed and conducted by the vendor.  

**Support & Maintenance Requirement**  
1. Provide 2 Years support & maintenance service of the Mukthopaath e-learning platform from the date of contract signing. Support & Maintenance will cover fixing all bugs and system errors as and when identified by the system users.  
2. Vendor shall take or advice server maintenance engineer to take timely backup of the entire database to meet up the challenge of system recovery, in case of any disaster or missing data.  
3. The vendor’s team will work at their office premises, but in case of special requirement, they may work at the client’s premises or any client designated location.  
4. Assign a Project Manager who will work closely with the clients designated official to ensure proper delivery of any assignment during the support and maintenance phase.  
5. The concerned company cannot assign the programmers to other project till completion of the assignment and will ensure the continuity of the scheduled work by other programmer in case of his/her absence.  
6. The hired and assigned IT personals for support & maintenance must be regular employees of the vendor company.  

**(c) Expected Outputs/Deliverables**  
1. Inception Report  
2. Software Requirement Specification SRS.  
3. Development of Mukthopaath e-learning platform  
4. Development of Mukthopaath e-learning platform Android Mobile App  
5. Data Migration Document  
6. API Specification of the Mukthopaath e-learning platform  
7. Software Deployment on Live Server.  
10. Source code & database  
11. Project Completion report including upcoming challenges if any.  

**(d) Technological Specification**  
1. Need to use Open Source Development Platform.  
2. PHP based platform with tool architecture like Bootstrap, framework like CakePhp/Laravel/codeigniter can be used.  
3. Android app should be developed in native android app development language.  
4. Future technology Change, iterative prototyping and agility in product design are the generic expectation.  
5. Technology and all related design/data will be open to Client.
6. Need to work in IDE with a2i Education Team or other assigned team.
7. The vendor should follow any of the industry standard secure development methodology such as (but not limited to) Comprehensive Lightweight Application Security Process (CLASP) by OWASP etc. The vendor should consider (but not limited to) common vulnerabilities such as SQL Injection, Cross Site Scripting (XSS) etc. Vendor will undertake responsibility for Input Validation Controls, Authorization/Authentication Control and other security controls in place in both test and production environment of application.

(e) Project Time Line:

Duration of this contract is 24 calendar months. To be effective from the date of signing the contract.

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<thead>
<tr>
<th>SN</th>
<th>Activity</th>
<th>Time</th>
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<tbody>
<tr>
<td>1</td>
<td>Phase 1: Development</td>
<td></td>
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<tr>
<td>2</td>
<td>Conduct background scoping and research work and finalizing the system</td>
<td>20 days</td>
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<tr>
<td>3</td>
<td>Development of Mukthopaath e-learning platform including LMS, interactive features, mobile app, dashboard, communication, payment supports etc. to incorporate client requirement as per approved SRS</td>
<td>120 days</td>
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<td>4</td>
<td>1st level feedback collection and incorporation</td>
<td>10 days</td>
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<td>5</td>
<td>Testing, debugging, update</td>
<td>10 days</td>
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<tr>
<td>6</td>
<td>Delivery of UAT and 2nd level feedback collection</td>
<td>5 days</td>
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<td>7</td>
<td>Knowledge transfer through workshop/training</td>
<td>5 days</td>
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<td>8</td>
<td>Delivery of the final version of the system along with all required</td>
<td>10 days</td>
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<td>documentation including source code, user manual and technical documentation (SRS Final Version)</td>
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<td></td>
<td>Sub-Total</td>
<td>6 Months</td>
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<td></td>
<td>Phase 2: Support</td>
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<tr>
<td>10</td>
<td>Provide required and necessary support &amp; maintenance</td>
<td>18 Months</td>
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<tr>
<td></td>
<td>Total</td>
<td>24 Months</td>
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(f) Supervision and Performance Evaluation.
Awarded vendor will be working with a2i Education Team.

(g) Project Management
The bidders are expected to provide a detailed project plan and an implementation strategy of the project. This plan is expected to include:

1. Information regarding the development process (the bidder will comply with all standards).
2. Application development tools, language, and database requirements
3. Maximum lead time for delivery of services.
4. A development method and schedule with indicative timeline (Gantt chart).
5. Risk management strategy and quality control mechanism.
6. Any development tasks or assumptions that may be required to render the solution fit-for-purpose.
7. Any anticipated integration tasks.

(h) Bidders Qualification:

1. Must submit valid Trade License, TIN, VAT & updated BASIS Certificate.
2. Minimum 5 years’ experience in Software development business in Bangladesh.
3. Firm should have experience in e-learning/similar type of work.
4. The firm must have experience of managing at least Two (2) web-based applications with GoB or with large scale corporate sector/educational institutions.
5. Firm must demonstrate its management capacity (website link/brochures and other documents describing similar assignments, experience, availability of appropriate professional staff and experience among applicant’s staff, resources to carry out the assignment).
6. Firm should demonstrate its logistical capability (well-equipped office space at Dhaka with necessary facilities).
7. Must submit last 2 (Two) year’s financial audit report showing annual turnover at least BDT 2 crore.
8. Must have working capital/liquid assets/credit facilities not be less than at least BDT 50 Lacs.
9. Proven track record of a single project aging at least 2 years in the field of Web-based IT Solution/Portal Development & deployment that works on public cloud.
10. List (Name, designation, years of experience, number of projects, expertise) of IT personals who can be engaged to performed the assigned task.
11. Multiple Companies having technical and legal competency for developing such Product can bid jointly but they must have legal agreement among them where one company needs to be master. Master company needs to fulfil all conditions mentioned in this ToR. Joint-venture agreement needs to have clear identification about each responsibility matrix along with IPR.

(i) Team Requirements:

<table>
<thead>
<tr>
<th>Number of Persons</th>
<th>1 person</th>
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<tbody>
<tr>
<td>Job Description</td>
<td>The Project Manager is responsible for the day-to-day operational management of the project, including developing and overseeing work and preparation of project progress reports. S/he is responsible for regular reporting to the client. The chosen candidate is responsible for overseeing all technical aspects of the project implementation including analyse the user requirements, develop software design, choose the right technical solution as well as oversee the right implementation to</td>
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### System Analyst

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<tr>
<th>Number of Persons</th>
<th>1 person</th>
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| **Job Description** | The System Analyst is expected to analyse the user requirements through meetings and discussion session with the targeted beneficiaries. After finalizing the primary draft of User Requirement Specification through vetting with the users, the System Analyst will prepare the Software Design Document in consultation with the Team Leader /Project Manager and share the document with QA Specialist. Specifically, the System Analyst will –  
  - Design the architecture for systems integration as required  
  - Prepare plans for optimal data storage and retrieval procedures  
  - Prepare plans for data standardization  
  - Prepare SRS  
  - Prepare other technical documentation as per project requirement. |
| **Requirements** | i) Minimum graduate in Computer Science and Engineering / relevant subjects.  
  ii) 5 years of progressive experience in the sector of software development  
  ii) Experience of working with similar projects. |

### Senior Software Engineer

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<th>Number of Persons</th>
<th>2 persons</th>
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| **Job Description** | The Senior Software Engineer will provide support to development team to develop and design different modules for technology solutions for the target population. The systems will be designed after taking necessary input from the target population. He will be responsible for designing and developing system for successful deployment. Additionally, he will monitor the programmers for executing different development tasks to implement different modules of the system. The position is also expected to provide necessary technological solution to the Software Engineers to the team if required. Additionally, the position will –  
  - Conduct requirement analysis for a particular ICT for development solution  
  - Develop the necessary business and system specifications  
  - Provide assistance to develop system design for any technical solutions  
  - Develop URS, SRS for any outsourcing of project work  
  - Carry out the technical evaluation for project development standardization  
  - Monitor execution of the outsourced project work. |
| **Requirements** | i) Minimum graduate in Computer Science and Engineering/ICT  
  ii) 8 years of progressive experience in the related field. |

### Software Engineer

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<th>Number of Persons</th>
<th>3 persons</th>
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<tr>
<td>Job Description</td>
<td>The Software Engineers are expected to drive the major software programming initiative in the project. This includes design, develop, and modify the modules with arranging the needed functionalities accordingly. The database backend is also expected to be developed by this team, including adding and modifying the structure, the stored procedures (if any), SQL queries, triggers and enable necessary security with backup features.</td>
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| Requirements | i) Minimum graduate in Computer Science and Engineering/ICT  
ii) 4 years of progressive experience in the related field. |

| QA Engineer | 2 persons |
| Job Description | The QA Engineers will work under the supervision of the QA Specialist for ensuring the quality of the products that reach the client. Specifically, they will:  
- Prepare test cases in accordance with the test plan and share with QA Specialist  
- Execute the test cases, log the results and ensure steps to reproduce (in case of software bug)  
- Share the results with the QA Specialist within expected deadline |
| Requirements | i) Minimum graduate in Computer Science and Engineering or relevant subjects  
ii) 3 years of progressive experience in the sector of software testing and quality assurance |

| UX Designer | 1 person |
| Job Description | The UX Designer will be responsible for supplying all digital imagery required for preparing the software including CSS templates, GUI for each screen. Specifically they will –  
- Understand the full functionality of the software applications and organize the UI components in different pages, sections, tabs to ensure maximum user-friendliness and aesthetics  
- Prepare mock HTML/PSD screens for each page of the web-based applications and get the design approved from the relevant authority  
- Prepare and supply the developer team with CSS, GIF, and JPEG files for screens, buttons, banners and other items as required  
- Prepare the help files, manuals, and other documentation to ensure accessibility and attractiveness |
| Requirements | 5 years of progressive experience in the sector of UX designing for software development purpose. |

| Support Engineers | 2 persons |
| Job Description | The support engineers will be responsible for helping the end user use the software applications developed in every mean possible, by identifying and solving the issues, |
and work as the interface between the software engineer and the targeted users.

| Requirements | 2 years of experience in IT-related fields, with clear understanding about web-based applications development based on 3-tier technology, and hands on-experience in solving end-user problems. |

**(j) Special Note:**

1. a2i will preserve full rights to be confirmed security clearance of the personnel [if necessary] who will be working for this assignments through proper agency.
2. Contractor may need to sign separate non-discloser agreement with a2i considering data/information sensitivity [if needed].
3. Intellectual Property Right will strictly be controlled under regular state law for IPR protection.
4. VENDOR WILL HAVE TO BE CLEAR CONCEPT ON THE EXPECTED COMPONENTS BEFORE START WORK.

**(k) Support/Assistance to be provided by A2I**

1. Training venue will be provided.
2. System design supports.
3. Coordination in hosting Muktopaath platform in BCC.