



Request for Expression of Interest (REOI)

Memo No.: PARTNER/APCU-BARC-85/SD12/2024/1151

Date: 03/10/2024

1	Ministry/ Division	Ministry of Agriculture
2	Agency	Bangladesh Agricultural Research Council
3	Procuring Entity Name	Dr. Md. Ashraful Alam, Agency Program Director, PARTNER, APCU-BARC
4	Procuring Entity District	Dhaka
5	Request for Expressions of Interest for Selection of	Consulting Firm for Repository Management Software
6	REOI Ref No.	SD/PARTNER/BARC-12 Date:03/10/2024
KEY INFORMATION		
7	Procurement method	Quality Cost Based Selection (QCBS)
FUNDING INFORMATION		
8	Budget and Source of Funds	World Bank & IFAD
PARTICULAR INFORMATION		
9	Project/Programme Code (if applicable)	N/A
10	Project/Programme Name (if applicable)	Program on Agricultural and Rural Transformation for Nutrition, Entrepreneurship and Resilience in Bangladesh (PARTNER), APCU-BARC
11	Eoi Closing Date and Time	20/10/2024 at 5.00 PM
12	Place of Eoi Submission	Office of the Agency Program Director, PARTNER, APCU-BARC, Admin building (2 nd Floor), Bangladesh Agricultural Research Council, Farmgate, Dhaka-1215
13	Joint Venture	Not allowed
INFORMATION FOR APPLICANT		
14	Brief Description of the Assignment	<p>The assignment focuses on the Consultancy Services for the Development and Implementation of an e-Repository System for the library of Bangladesh Agricultural Research Council (BARC). The e-Repository will serve as a user-friendly, digital platform where research papers, videos, PDF leaflets, and other educational content will be stored and made accessible to the researcher of NARS institutes.</p> <p>The key tasks of the consultancy firm will include:</p> <ol style="list-style-type: none">Design and Development of the e-Repository Platform: The e-Repository will feature a fully responsive, SEO-optimized interface that allows users to easily navigate categorized content. The system will include a robust search function, video streaming options, and detailed content pages with metadata for research papers, leaflets, and videos.Admin Interface: Develop a secure admin interface for managing and uploading content, with features like role-based access control, content categorization, and editing/deletion options. The system will also have a user management module to oversee admin permissions and activity.Video Platform and SEO Optimization: The platform will support multiple video resolutions (480p, 720p, 1080p, 4K) with adaptive streaming and multi-language caption support. SEO features will include metadata tagging, structured data implementation, fast load times, and content optimization for better search engine indexing.Performance, Scalability, and Security: Ensure the platform is scalable and capable of handling increased traffic and content uploads. This includes implementing caching, content delivery network (CDN) support, database indexing, and secure file storage. Role-based access control and SSL encryption will enhance the system's security.Content Scanning and Upload: The firm will scan approximately 60 booklets and leaflets (comprising around 20-30 pages per booklet) and upload them to the e-Repository, ensuring they are systematically organized with relevant video content.Training and Support: Provide full training for BARC staff on system usage, content management, and administration. Ongoing user support, including remote technical assistance, will be made available.Source Code and Documentation: Deliver technical documentation, including the source code, and conduct a User Acceptance Test (UAT) in collaboration with the BARC team to ensure the system meets all requirements. <p>(Detailed in TOR).</p>

15	Experiences, Resources & Delivery Capacity Required	<p>The firms must meet the following minimum eligibility criteria:</p> <ol style="list-style-type: none"> 1. Legally established professional consulting firms or entity with minimum 10 (ten) years of working experiences in ICT business as a registered Company/ Entity with Register of joint stock & companies (RJSC) in Bangladesh; 2. Must submit valid (updated) Trade License, TIN, VAT, Incorporation & updated income tax Certificate, BASIS Membership, CMMI Level 3 or higher. 3. Must have ISO 27001 Certificate. 4. BACCO, BCS Membership are also preferable. 5. Must be a local company of having minimum 10(ten) years of experience in Software development business in Bangladesh or overseas. 6. The firm must have experience of managing at least two (02) web-based applications with GOB/Donor or with large scale corporate sector. Experience in Government sector will be given preference. URL of live applications needs to be provided. 7. Firm must demonstrate its management capacity (website link or 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). 8. Firm should demonstrate its' logistical capability (well-equipped office space at Dhaka with necessary facilities etc.). 9. Must submit completion certificates of the services completed within the last 5(five) years with details of issuing authorities; 10. The firm should have yearly turnover minimum 2.0 Crore. Must submit last 3 (Three) year's financial audit report. 11. List (Name, designation, Number, years or experience, number or projects, expertise) of personnels (Project Manager, System Analyst, Business Analyst, Database Administrator, Information Security Expert, Interoperability Expert, Sr. Software Engineer, Software Engineer, Quality Assurance Engineer, System Administrator, Network Engineer, Trainer, Technical Documentation Expert, Support & Maintenance Engineer) who can be engaged and performed the assigned task. Key Experts will not be evaluated at the shortlisting stage. 12. Experience developing bi-lingual (English, Bangla) software accessible across multiple devices like mobile, desktop PC, laptop. 13. Must have proven experience in mobile app development & should have apps published in any global online marketplace (e. g. App Store, google play, etc.) 14. Firm should have at least one web application/ software testing certificate, SQTC given by BCC. <p><i>The detailed Terms of Reference (TOR) for the assignment can be found at the following website: www.barc.gov.bd or can be obtained at the address given below.</i></p>
PROCURING ENTITY DETAILS		
16	Name of Official Inviting EOI	Dr. Md. Ashraful Alam
17	Designation of Official Inviting EOI	Agency Program Director.
18	Address of Official Inviting EOI	PARTNER, Bangladesh Agricultural Research Council, New Airport Road, Farmgate, Dhaka-1215
19	Contact details of Official Inviting EOI	Phone: +88-02-41025277 Email: ashrafulw@yahoo.com
20		<p>Special Conditions:</p> <ol style="list-style-type: none"> a) Consultants will be selected in accordance with the Public Procurement Rules-2008. c) Interested consultants may obtain further information at the address below during office hours. d) The authority reserves the right to cancel all or any of the Expression of Interest (EOI) without assigning any reasons whatsoever. e) Expression of Interest (EOI) shall be submitted in sealed envelope, delivered to the address of the undersigned.




 03.10.2024
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Government of the People's Republic of Bangladesh
Office of the Agency Program Director
Program on Agricultural and Rural Transformation for Nutrition, Entrepreneurship and Resilience in
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Terms of Reference (TOR)
for
Selection of Consulting Firm for Repository Management Software under Package No.:
SD/PARTNER/BARC-12

BACKGROUND:

The **Bangladesh Agricultural Research Council (BARC)**, operating under the Ministry of Agriculture, serves as the apex body of the National Agricultural Research System (NARS). Its primary mandate is to strengthen the nation's agricultural research capabilities through the strategic planning and integration of resources across various ministries and sectors. BARC functions as an umbrella organization, coordinating Bangladesh's agricultural research efforts in collaboration with several government ministries, including Agriculture, Fisheries and Livestock, Environment and Forest, Education, and more. The council's policy-making is guided by a governing body, chaired by the Hon'ble Minister of Agriculture, alongside co-chairmen from other ministries and various representatives from research institutes, farmers, and scientists.

BARC is tasked with preparing the national vision and agricultural research plan, providing the strategic direction for national agricultural research activities. Its responsibilities include fostering inter-institute collaboration, monitoring research programs, and ensuring efficient governance within NARS institutes. Through these efforts, BARC aims to create an effective, sustainable, and innovative agricultural research system, ultimately contributing to the nation's agricultural development.

To support its mission, BARC is initiating the development of an **e-Repository**, a digital platform designed to manage and disseminate agricultural research outputs, such as videos, research papers, and educational content. The e-Repository will be a user-friendly, SEO-optimized system, enabling researchers, policymakers, and the general public to access categorized and searchable content. This online platform will feature advanced functionality, including personalized user accounts, multi-language support, video streaming, and an intuitive content management system for BARC's administrators. The goal is to enhance the dissemination of agricultural knowledge and foster greater collaboration across the agricultural research ecosystem in Bangladesh.

GOALS AND OBJECTIVE OF THIS ASSIGNMENT:

The primary goal of this assignment is to design, develop, and implement a robust, user-friendly, and SEO-optimized **e-Repository** for the **Bangladesh Agricultural Research Council (BARC)**. This platform will serve as a centralized repository for storing and disseminating agricultural research outputs, fostering greater accessibility and collaboration within the agricultural research community and among stakeholders.

Goals:

1. **Centralized Access to Agricultural Research:** Create a digital platform that consolidates research papers, videos, articles, and other educational content, making it easily accessible to researchers, policymakers, and the public.
2. **Strengthen Knowledge Dissemination:** Facilitate the efficient dissemination of research outputs by providing a platform for categorized, searchable content, ensuring stakeholders can access relevant materials quickly and effectively.
3. **Enhance Collaboration Across Institutions:** Promote collaboration between NARS institutes, universities, private organizations, and other stakeholders by providing a shared repository for agricultural research.
4. **Improve Research Management:** Empower BARC administrators with tools to manage, upload, and categorize research content efficiently through a secure and scalable content management system (CMS).



5. **Promote Agricultural Innovation:** Support the development of sustainable agricultural technologies by ensuring that research findings and innovations are easily accessible to end-users, fostering practical applications in the field.

Objectives:

1. **Develop a User-Friendly Platform:** Create a fully responsive and intuitive web application that allows users to navigate content seamlessly on desktops, tablets, and mobile devices.
2. **Implement a Comprehensive CMS:** Equip BARC administrators with a content management system that includes content uploading, categorization, metadata input, and editing/deletion features.
3. **Enable Personalized User Experiences:** Provide user account features such as login, registration, and personalized dashboards for saving favorite content and receiving customized recommendations.
4. **Ensure Multimedia Support:** Incorporate support for video content, PDFs, and other document types, with features like multi-resolution video streaming and multi-language captions.
5. **Enhance SEO and Discoverability:** Optimize the platform for search engines through SEO-friendly URLs, meta descriptions, structured data, and fast load times to ensure that research materials are easily discoverable online.
6. **Ensure Security and Scalability:** Implement robust security measures, including SSL encryption and role-based access control, while ensuring the platform can scale to handle increasing content and traffic.
7. **Provide Training and Documentation:** Deliver training for administrators and users on the system's functionality and provide comprehensive documentation for managing and using the platform effectively.

By achieving these goals and objectives, the **BARC e-Repository Web Application** will contribute to the broader mission of advancing agricultural research and fostering innovation across Bangladesh's agricultural research system.

GENERAL OVERVIEW OF THE SOFTWARE:

The **BARC e-Repository** is a comprehensive digital platform designed to centralize, manage, and disseminate agricultural research outputs, including videos, research papers, PDFs, articles, and educational content. The platform is built to enhance user experience, provide administrative ease, and ensure scalability for future expansion. It is intended to support researchers, policymakers, educators, and the general public by providing easy access to categorized, searchable, and highly optimized content related to agricultural research and development.

This overview provides an in-depth look at the platform's features and functionalities, which have been carefully crafted to meet BARC's objectives and ensure seamless integration with their existing systems and research networks.

Key Features and Functionality:

Home Page Features:

- **Featured Content:** The home page will highlight key research materials, such as videos, research papers, and PDF leaflets, ensuring that important content is easily accessible.
- **Search Functionality:** The platform will allow users to search for content based on keywords, categories, or content types. This will make it easier for users to find relevant material quickly.
- **Content Categorization:** Content will be categorized into easy-to-navigate sections such as Videos, Research Papers, PDF Leaflets, and Articles, allowing users to browse different types of materials.
- **Latest Uploads:** The most recently added content will be displayed prominently, helping users stay up-to-date with the newest research and materials uploaded to the platform.

Category Pages:

- **Multi-Layered Subcategories:** Categories can have multiple layers of subcategories, making it easier for users to drill down to specific areas of interest.
- **List and Pagination:** Each category will display a list of content with pagination, ensuring users can browse large volumes of content without experiencing performance slowdowns.
- **Filters:** Users can filter content by type (e.g., video, PDF, research paper, article) to find the exact content they are looking for.
- **Sorting Options:** Content can be sorted by criteria such as date, popularity, and relevance to enhance the user experience.



Content Pages:

- **Detailed Content View:** Each content page will display a detailed view, including metadata such as title, author, publication date, and tags to help users understand the context and relevance of the content.
- **Video Player:** For video content, the platform will feature a video player with multiple resolution options (480p, 720p, 1080p, 4K) to accommodate different user preferences and internet speeds.
- **Caption Support:** Videos will include multi-language captions to ensure accessibility for users who may prefer or require alternative languages.
- **PDF Viewer:** PDFs, such as research papers and leaflets, can be viewed directly on the platform without the need to download.
- **Related Content Suggestions:** The platform will suggest related content to users, encouraging deeper engagement and exploration of similar materials.
- **SEO-Friendly URLs:** Each content page will have SEO-optimized URLs and meta descriptions to ensure better visibility on search engines.

User Account Features:

- **Login & Registration:** Users will be able to register for accounts using their email or social media platforms. They will also have access to password recovery options in case of lost or forgotten credentials.
- **Favorites:** Users can mark content such as videos, PDFs, and articles as favorites, allowing them to quickly access their preferred content later.
- **Personalized Dashboard:** Each user will have access to a personalized dashboard that displays their saved content and offers recommended resources based on their activity.
- **Responsive Design:** The platform will be fully responsive, ensuring that it can be accessed on mobile devices, tablets, and desktops without any loss of functionality.

Login & Authentication:

- **Secure Login System:** The platform will feature a secure login system with role-based access control, ensuring that different types of users have access to appropriate functionalities.
- **Multi-Factor Authentication:** Optional multi-factor authentication (MFA) can be implemented to enhance security, particularly for administrators.

Admin Dashboard:

- **Overview of Content:** Admins will have access to a dashboard that provides an overview of total content, recent uploads, and user activity.
- **Quick Links:** Admins will be able to quickly access tools for uploading content and managing existing resources.
- **User Management:** Admins will have full control over managing user accounts, including assigning roles and tracking login history.

Content Management System (CMS):

- **Upload System:** Admins will be able to upload various types of content (e.g., videos, PDFs, research papers, and articles) through an easy-to-use interface.
- **Auto-Generated Thumbnails:** For video content, the system will automatically generate thumbnails to enhance visual appeal and user navigation.
- **Metadata Input:** Admins will input metadata for each content item (e.g., title, author, publication date, keywords, and tags), making it easier for users to find relevant content.
- **Preview Before Publishing:** Admins will be able to preview content before publishing it live to ensure everything is accurate.
- **Content Editing & Deletion:** Admins will have the ability to edit metadata, re-upload files, or delete content when necessary.

Video Quality and Streaming:

- **Quality Selection:** Users can select from different video resolutions (480p, 720p, 1080p, 4K) depending on their internet speed and device capabilities.
- **Adaptive Bitrate Streaming:** The platform will use adaptive bitrate streaming to provide smooth playback, adjusting the quality based on the user's internet connection.
- **Video Hosting Optimization:** Videos will be hosted and streamed using optimized settings for fast load times and minimal buffering.

SEO Optimization:

- **On-Page SEO:** Each piece of content will be equipped with meta tags (title, description, and keywords) to improve search engine rankings.



- **Structured Data:** Schema.org structured data will be implemented for better indexing by search engines.
- **SEO-Friendly URLs:** The platform will generate SEO-optimized URLs (e.g., /category/content-title) for improved visibility on search engines.
- **Sitemaps & Analytics:** The system will auto-generate sitemaps to ensure all content is easily indexable by search engines. Admins can also monitor SEO performance via Google Analytics and Search Console.

Security:

- **SSL Encryption:** The platform will utilize SSL encryption to secure all data transmissions between users and the server.
- **Password Security:** User passwords will be stored securely using hashing algorithms to prevent unauthorized access.
- **Role-Based Access Control:** Admin access will be governed by role-based permissions, ensuring that only authorized users can manage sensitive data.
- **Content Moderation:** The system can include an optional approval process for content to ensure that it meets quality and security standards before being published.

Technical Specifications:

- **Frontend Technologies:** The platform will be built using **AngularJS, HTML5, CSS3 (Bootstrap or Tailwind)**, and **JavaScript (React.js or Vue.js)** for a responsive and dynamic user experience.
- **Backend Technologies:** **Node.js** will handle server-side logic, while **MySQL or MariaDB** will serve as the database for content management.
- **Server Infrastructure:** The platform will be hosted on an **Nginx** server running a **Linux-based OS (RHEL or Ubuntu)**, ensuring scalability, security, and performance.

Performance Optimization:

- **Caching:** Caching mechanisms will be implemented to improve load times for frequently accessed content.
- **Content Delivery Network (CDN):** A CDN will be used to distribute content globally, reducing latency and ensuring fast access for users worldwide.
- **Scalability:** The platform will be designed for horizontal scalability, allowing it to handle increased traffic and content uploads.

Data Security & Backups:

- **Database Performance:** Indexed fields will be used for quick content retrieval, and regular performance tuning will be performed.
- **Regular Backups:** Automated daily backups of the database and content will ensure data integrity in the event of system failure.

User Support and Helpdesk:

- **User Guides:** Detailed user manuals will be provided for both general users and admins, explaining how to navigate the platform, upload content, and manage resources.
- **Help & Support:** Users will have access to email, phone, and remote support for technical issues. An online helpdesk or ticketing system will be available for bug reporting and feature requests.

Scanning and Uploading:

- **Booklets and Leaflets Scanning:** The system will support the scanning and uploading of booklets (20-30 pages) and leaflets (2-5 pages) to ensure that printed content is digitized and made available online.
- **Systematic Organization:** Scanned content will be organized systematically alongside video documentaries for a comprehensive repository.

By incorporating these extensive features and functionalities, the **BARC e-Repository** is designed to meet the needs of diverse users while supporting BARC's mission of advancing agricultural research and innovation.

SCOPE OF WORK:

The scope of work for the development of the **BARC e-Repository** encompasses the design, development, testing, deployment, and maintenance of a comprehensive digital platform that will serve as a centralized repository for agricultural research content. The scope will include all aspects of the platform's functionality, performance, security, and user experience to meet BARC's objectives.

1. System Architecture Development:

- Develop a scalable, SEO-optimized, and user-friendly web application.
- Use modern technologies like **AngularJS, Node.js, MySQL/MariaDB**, and **Nginx**.

- Ensure the platform is fully responsive and accessible across desktops, tablets, and mobile devices.
 - Implement a multi-tiered architecture that ensures high performance and scalability.
- 2. User Interface (UI) & User Experience (UX) Design:**
- Design an intuitive home page featuring key videos, research papers, and other educational content.
 - Develop category and content pages for easy navigation, incorporating sorting, filtering, and pagination.
 - Enable powerful search capabilities by keyword, category, or content type for enhanced usability.
 - Ensure consistent and mobile-optimized UI/UX across all devices and platforms.
- 3. User Account System:**
- Implement user registration and login functionalities, allowing account creation through email and social media.
 - Develop a personalized dashboard for each user to save favorite content and receive recommendations.
 - Enable password recovery and account management options.
- 4. Content Management System (CMS) Development:**
- Provide a secure admin dashboard for managing all content, including videos, research papers, PDFs, and other resources.
 - Enable content uploading, editing, deletion, and categorization, with metadata input for each piece (e.g., title, author, publication date, tags).
 - Integrate a preview feature for reviewing content before it is published live.
 - Auto-generate video thumbnails and support multi-language captioning for video content.
 - Implement role-based access control to manage different levels of admin access.
- 5. Multimedia Support:**
- Implement video streaming functionality with resolution options ranging from 480p to 4K.
 - Include multi-language captions for videos to enhance accessibility.
 - Support PDF viewing for research papers and leaflets, with embedded metadata for easy navigation and search ability.
 - Ensure fast video streaming through adaptive bitrate streaming technology.
- 6. Search Engine Optimization (SEO):**
- Optimize all content with SEO-friendly URLs, meta descriptions, keywords, and structured data (Schema.org).
 - Implement a sitemap that allows search engines to easily index the content.
 - Optimize images and videos for fast load times, improving both performance and SEO rankings.
 - Regularly monitor SEO performance using tools like Google Analytics and Search Console.
- 7. Security Features:**
- Secure all data transmissions using **SSL encryption**.
 - Implement secure password storage using hashing algorithms for user credentials.
 - Enable role-based access control for admin users and implement multi-factor authentication (optional).
 - Perform regular security audits to identify and mitigate potential vulnerabilities.
 - Ensure secure file storage with controlled access to sensitive research materials.
- 8. Performance Optimization and Scalability:**
- Integrate caching mechanisms to improve load times.
 - Use a **Content Delivery Network (CDN)** to reduce latency and ensure fast access for global users.
 - Design the system for horizontal scalability, ensuring it can handle increased traffic and content uploads as needed.
 - Conduct regular performance tuning of the database and system components to maintain optimal performance.
- 9. Testing and Quality Assurance:**
- Perform thorough testing, including functional, performance, security, and cross-browser testing.
 - Conduct internal testing for one week, followed by beta testing with selected users for one week.
 - Ensure that all features, including user accounts, CMS, multimedia, and security, function as required before the final launch.
- 10. Deployment and Hosting:**
- Deploy the web application on a **Linux-based Nginx server** (RHEL or Ubuntu).
 - Ensure the platform is live and accessible within 3 months from the start of the project.
 - Provide ongoing maintenance and technical support post-launch.

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11. User Support and Documentation:

- Provide a detailed user manual for both general users and administrators on navigating the platform, managing content, and utilizing features.
- Offer email, phone, and remote support for technical issues.

12. Training:

- Conduct full-fledged formal training for 10 BARC personnel over 5 days, covering the platform's functionalities and content management.
- Provide a comprehensive training manual for ongoing reference.

13. Deliverables:

- Fully developed and tested application.
- Source code with sufficient technical documentation.
- Administrative and user manuals.
- Training for BARC staff.
- **Ongoing maintenance and support for post-launch issues.**

By delivering on these areas, the **e-Repository Web Application** will effectively meet the needs of **BARC** and its stakeholders, fostering greater collaboration and dissemination of agricultural research across the nation.

- **General Features:**

- **User-Friendly Interface:**

- Intuitive and easy-to-navigate interface for both general users and administrators.
 - Featured content sections, including videos, research papers, PDFs, and articles.
 - Categorized content with multi-layered subcategories for seamless navigation.
 - Search functionality to allow users to find content based on keywords, categories, and types.

- **Personalized User Accounts:**

- User registration and login via email or social media accounts.
 - Personalized dashboards displaying saved content, recommended resources, and recently viewed items.
 - Ability to save favorite videos, research papers, PDFs, and other educational content for quick access later.

- **Content Management System (CMS):**

- Secure and efficient system for administrators to upload, edit, categorize, and manage content.
 - Metadata management (e.g., title, author, publication date, keywords, tags) to enhance search ability.
 - Preview function for uploaded content before publishing.

- **Multimedia Support:**

- Video streaming with resolution options (480p, 720p, 1080p, and 4K).
 - Multi-language caption support for videos.
 - PDF viewer for research papers and leaflets, with interactive navigation.

- **SEO Optimization:**

- SEO-friendly URLs, meta descriptions, and structured data for enhanced search engine visibility.
 - Auto-generated sitemaps for easier indexing by search engines.
 - Content tagging and keyword optimization to improve discoverability.

- **Responsive Design:**

- Mobile-first, responsive design ensuring optimal viewing experiences across all devices (desktops, tablets, and smartphones).

- **Security Features:**

- SSL encryption for secure data transmission.
 - Role-based access control for administrators with multi-factor authentication options.
 - Secure file storage and management with restricted access for sensitive materials.

- **Performance and Scalability:**

- Caching mechanisms for faster load times.
 - Content Delivery Network (CDN) integration for global content delivery and reduced latency.
 - Horizontal scalability to handle increasing content and traffic seamlessly.



User Support and Helpdesk:

- User guides and comprehensive manuals for both general users and administrators.
- Online helpdesk or ticketing system to address user queries and technical issues.

• **Technical Features:**

Frontend Technology:

- **AngularJS:** For building a dynamic, single-page application with an engaging and interactive user interface.
- **HTML5 and CSS3 (Bootstrap/Tailwind):** For a responsive and visually appealing layout compatible with various screen sizes.
- **JavaScript (React.js or Vue.js):** Enhances front-end interaction, providing users with a smoother and more seamless experience.

Backend Technology:

- **Node.js:** Server-side logic for efficient handling of multiple requests and providing a robust backend infrastructure.
- **MySQL or MariaDB:** For database management, ensuring secure, structured, and efficient storage of content like videos, PDFs, and metadata.

Web Server:

- **Nginx:** A high-performance web server to handle static and dynamic content, providing scalability and efficient resource utilization.
- **Linux-based OS (RHEL/Ubuntu):** For reliable and secure hosting of the application.

Video Streaming:

- **Adaptive Bitrate Streaming:** Allows users to stream videos at different resolutions (480p, 720p, 1080p, 4K) based on their internet speed and device capabilities.
- **Video Hosting Optimization:** Minimizes buffering time with optimized video hosting solutions.

SEO Implementation:

- **Structured Data (Schema.org):** Allows search engines to index the platform's content more effectively.
- **Fast Loading Times:** Optimized content delivery through caching, CDN, and image compression for improved search engine ranking.

Security Mechanisms:

- **SSL Encryption:** Secures all communications between users and the server, ensuring data privacy.
- **Role-Based Access Control (RBAC):** Differentiates between different levels of admin access and user privileges.
- **Hashing Algorithms:** Ensures secure password storage.

Caching and CDN:

- **Content Delivery Network (CDN):** Distributes content globally, reducing latency and improving the speed of content access for users worldwide.
- **Caching:** Reduces server load by storing frequently accessed content temporarily for faster load times.

Database Design:

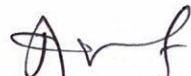
- **MySQL/MariaDB:** Relational database with indexed fields for fast retrieval of content.
- **Backup Systems:** Regular backup of data to ensure content safety and quick recovery in case of system failure.

Testing and Quality Assurance:

- Cross-browser and cross-device compatibility testing.
- Load testing to ensure the platform can handle high traffic volumes efficiently.
- Security audits to identify and address potential vulnerabilities.

Scalability:

- **Horizontal Scalability:** Ability to scale the platform by adding more servers to handle increased traffic and content upload.
- **Database Optimization:** Indexing and performance tuning to allow quick and efficient data retrieval.



These general and technical features ensure that the **BARC e-Repository** is equipped with the necessary functionalities, performance, security, and scalability to meet the needs of the agricultural research community.

- **Non-Functional Requirements:**

The **BARC e-Repository** must meet various non-functional requirements to ensure optimal performance, security, scalability, and usability. These requirements define the system's quality attributes and guide its design and development.

1. **Performance Requirements:**

- **Response Time:** The platform should respond to user requests (such as searching or loading content) within **2-3 seconds** under normal load conditions.
- **Throughput:** The system must handle up to **1000 concurrent users** without significant degradation in performance.
- **Load Time:** Content pages (e.g., videos, PDFs, articles) must load within **5 seconds**, including for users with moderate internet speeds.
- **Video Streaming:** Ensure smooth video playback with adaptive bitrate streaming, minimizing buffering time for various internet speeds.

2. **Scalability:**

- The platform should be designed for **horizontal scalability** to accommodate increasing content uploads and a growing user base.
- The database system must handle large volumes of data, with provisions for up to **10,000 new content uploads** (videos, PDFs, articles) annually, without impacting system performance.
- Use of **Content Delivery Network (CDN)** to ensure fast global content delivery and accommodate growth in traffic.

3. **Security Requirements:**

- **SSL Encryption:** All data communication between users and the platform must be encrypted using SSL, ensuring data privacy and integrity.
- **Role-Based Access Control (RBAC):** Admin and user roles must be clearly defined, with restricted access to sensitive data and functionalities based on roles.
- **Authentication:** Implement secure login mechanisms, including **hashed passwords** and optional **multi-factor authentication (MFA)** for administrators.
- **Data Protection:** The system must comply with **data protection standards** to ensure that user data is securely stored and protected against unauthorized access.
- **Security Audits:** Conduct regular security audits to identify and resolve vulnerabilities.

4. **Reliability and Availability:**

- **Uptime:** The system must be available **99.9% of the time**, excluding planned maintenance.
- **Fault Tolerance:** The platform should be resilient to server failures with a backup system in place to prevent data loss.
- **Data Backup:** Automatic data backup must occur daily to ensure that no research content or user data is lost in the event of system failure.
- **Error Handling:** The system must provide clear error messages and logs to identify issues quickly, while ensuring that failures do not compromise the user experience.

5. **Maintainability:**

- The platform should be built using modular, clean, and well-documented code, allowing for easy updates, bug fixes, and enhancements.
- **Version Control:** All source code must be managed using a version control system (e.g., Git), ensuring smooth updates and rollbacks when necessary.
- **Regular Updates:** The system must allow for regular updates, including security patches, feature additions, and performance improvements, with minimal downtime.

6. **Usability:**

- The platform's user interface must be intuitive and easy to navigate for both general users and administrators.
- **Mobile Accessibility:** Ensure the platform is fully accessible and user-friendly on mobile devices, tablets, and desktops.
- **User Documentation:** Provide detailed user guides and training materials to ensure users and administrators can effectively use the system.

- **Language Support:** The platform should support **multi-language capabilities** (for user interface and content) to reach a diverse user base.
- 7. Accessibility:**
- The platform must adhere to **WCAG (Web Content Accessibility Guidelines)** to ensure that users with disabilities can access and navigate the site.
 - Features like **text-to-speech, high-contrast modes, and keyboard navigation** should be implemented to enhance accessibility.
 - Videos must include **multi-language captions** and transcripts to improve accessibility for users with hearing impairments.
- 8. Compatibility:**
- The platform must be compatible with all modern browsers (e.g., Chrome, Firefox, Safari, Edge), ensuring that it functions smoothly across different systems.
 - **Cross-Platform Support:** The system must perform consistently on different operating systems, including Windows, macOS, Linux, iOS, and Android.
 - **API Integration:** The platform should be designed to support **API integration** for future interoperability with external systems (such as research portals or external data providers).
- 9. SEO Optimization:**
- Implement features for **search engine optimization (SEO)**, ensuring the platform is discoverable on search engines like Google, including SEO-friendly URLs, meta tags, and structured data (Schema.org).
 - Ensure **fast page load times**, which are critical for SEO rankings and user retention, through optimized caching and CDN use.
- 10. Compliance:**
- The system must adhere to all relevant **data protection laws and privacy regulations** in Bangladesh and internationally (e.g., GDPR, if applicable).
 - Compliance with **intellectual property rights (IPR)** for content hosted on the platform, ensuring that all uploaded materials are authorized for distribution.
- 11. Internationalization:**
- The platform must support **multi-language content** and interfaces, ensuring users from different regions and language backgrounds can access and navigate the platform easily.
 - Support for **local date, time, and number formats**, catering to different regions.
- 12. Disaster Recovery:**
- A comprehensive disaster recovery plan must be in place, ensuring that the system can recover from unexpected failures (such as server crashes or security breaches) with minimal data loss and downtime.

Backup and Restore Mechanism: Regular backups must be stored offsite or in a separate data center, with a plan to restore data within 24 hours in case of system failure.

By adhering to these non-functional requirements, the **BARC e-Repository** will meet the standards for performance, security, reliability, and user experience, ensuring it serves the needs of its diverse user base effectively and efficiently.

GENERAL TERMS AND CONDITION:

1. The consulting firm is to submit their company profile mentioning their number of software engineer/developer/programmer and ICT professional's/system analyst along with their available office facilities and details.
2. The consulting firm is to submit experience certificate of the projects completed on software development. The consulting firm is to also submit list of clients along with their address. It is essential to submit the list of URLs of their active software.
3. The consulting firm is to submit full specification and relevant documents along with the offer. The information in the technical document needs to be self-explanatory and must support and validate the information mentioned in the specification. Deviation or variation of information between the provided documents and formally offered documents would be treated as non-compliance.

4. Consulting firm must provide the project management methodology of the work and software development method as per SDLC. The developer will have to follow coding conventions and maintain standard.
5. Consulting firm must provide a wireframes/mockup/prototype after pre-bid survey and system requirement analysis.
6. Consulting firm must submit unencrypted source code, database and all types of technical documents of the software to BARC. The consulting firm is responsible to make the software's flow control, database structure and admin control understandable to the users and ICT personnel of BARC. There will have nothing hidden script to control the system.

Risk Analysis and Mitigation:

The consulting firm must do risk management analysis intensely to avoid/mitigate any kinds of risks of the system and must propose suitable mechanism and implement accordingly.

Software Engineering Process and SRS:

- a. The consulting firm will follow Software Development Life Cycle (SDLC) to produce high quality of software. There are many software engineering process viz. Waterfall, Agile, Iterative, Spiral, V, Big Bang, RAD, and Prototyping models etc. You will identify and follow the appropriate model (s) and describe the reasons for choosing it to develop the software.
- b. Software Requirement Specification (SRS): A software requirements specification (SRS) is a description of a software system to be developed. It is modeled after business requirements specification (Concept of Operation (CONOPS)), also known as a stake holder requirements specification (StRS). The software requirements specification lays out functional and non-functional requirements and it may include a set of use cases that describe user interactions that the software must provide to the user for perfect interaction.
- c. During SRS, the consulting firm must identify the list of appropriate devices required for the system and submit it to BARC along with the inception report.

Operating System Platform and Compatibility:

The system must be responsive and compatible with any web browser on any devices and any Operating system.

Data Accuracy:

Implementation of device driven automation so far possible to ensure data accuracy.

Database Migration:

The consulting firm must mention specific data migration procedure.

Availability & Reliability:

- a. The software system must provide automatically generated backup (on external hard drives) and manual backup containing all the stored information as and when it is necessary by super admin/local admin.
- b. The system shall allow authorized users to restore the data from an existing backup.

Summarized Project Proposal:

The consultant firm must study and assess the overall requirements of the system, and analyze The current system therefore submit a summarized project proposal mentioning workflow. The consulting firm needs to communicate with BARC before doing requirement analysis.

Knowledge Transfer:

During the whole development process, 02 × BARC ICT Personnel would assist the consulting firm development team. Frameworks, codes and other related knowledge must be transferred to BARC's ICT Personnel on site while the operational software is handed over.

Security, Warranty and Maintenance Support:

- a. After completion and handing over the software, the consulting firm will provide free of charge security, warranty, update and maintenance support for the **software for one (1) year**.
- b. Any module or function that is not functioning for more than 24 hours at a go will be added to the warranty period.



- c. During the warranty period, 04 × Technical Experts (01x Front End + 01x Back End + 01x Security Expert + 01x Database Administrator) are to be deployed by the consulting firm for all necessary support for 24X7.
- d. After finishing the warranty period, the consulting firm will provide on-call support for software maintenance, update and security. For on-call support, the consulting firm will have to troubleshoot by the appropriate developer or troubleshooter as required without any delay.

Software Code, Development Place, Legacy Data and Technical Administration:

- i. All unencrypted software codes, configuration files and database must be handed over to BARC. The whole system along with the codes & development documents will be BARC's property only. Consulting firm is not allowed to re-use to take the system/ documentation in full or partially without prior authorization by BARC.
- ii. Software development place must be in BARC premises/consulting firm office.
- iii. Legacy/ existing data of the existing system may be used as far as possible.
- iv. Technical administration of all activities must be informed formally to BARC and done in presence of ICT Personnel of BARC.

Testing and Trial

- Testing and trial will be performed by the consulting firm's technical personnel and BARC technical personnel simultaneously. Any changes needed, must be done at once by consulting firm's developer team.

Acceptance

- i. Acceptance test will include the specific tests like functional test, robustness test, integration test, load balancing test, capacity and response time test, security testing, review of all documentation and installation test. **All tests may be done by BARC Team.**
- ii. After acceptance testing if the software fails to meet the acceptance criteria the BARC authority may reject the software. Therefore, the paid installment must be returned to BARC immediately.
- iii. Consulting firm has to take acceptance certificate from BARC after completion of the project.

Other Conditions:

- i. User Manuals (soft and hard copy) is to be submitted by consulting firm.
- ii. Technical Documentation must be submitted by consulting firm.
- iii. The consulting firm is to submit video tutorial for all users for all functions along with voice.
- iv. All modules must have video tutorial button so that anyone authorized with password will be able to view respective video tutorial only.
- v. Consulting firm is to certify that the software will not infringe on any copyright, trademark, trade secret patent or other intellectual property interest of any third party.
- vi. Consulting firm is to certify that the software will perform according to the functional specifications. Software must be stable, scalable, updatable, upgradable and compatible with newer version of used technologies at any time.
- vii. The contract will be automatically terminated without any notice if the consulting firm reuses/resells the whole or any portion of the software outside of BARC or if their System Analyst/Software Programmer/Database Programmer/UI-UX designer/ Hardware technician/network technician is found guilty of fraud in respect of the software development and deployment or BARC finds any unusual activity for operating the system. If anything is unusual, the consulting firm must provide technical solution as soon as possible in terms of software and configuration of the system. If the system needs hardware/accessories, BARC will provide it.
- viii. BARC reserves all rights to void the contract with consulting firm without explaining any reasons.
- ix. The technical focal point of consulting firm must responses for 24X7X365 when BARC urges for technical help or want to know about the system.
- x. If anything is found essential for successful completion of the whole task but not included in the offer, then the consulting firm has to provide the same without any extra charge. If anything (except hardware) is required to fulfill the requirements of sustained development, the consulting firm must provide those things without any cost even if it is not quoted.




xi. QCBS method procurement rule will be used to select a consulting firm.

2. Disqualification

- i. BARC may disqualify a consulting firm who has previous record of poor performance, such as abandoning the works, not properly completing the contract, excessive delay to supply/deliverables the contracted items, litigation history of financial failures.
- ii. Offers with inappropriate/ incomplete project proposal mentioned in above clause will be considered as technically disqualified.
- iii. BARC may disqualify any offered equipment/item which model of equipment/item has previous record of dissatisfactory performance during operation/functional check in BARC.

3. Miscellaneous Terms and Conditions

- i. Consultancy firms are to submit their RFP in closed envelope containing technical and financial offer separately closed by another envelope.
- ii. Consultancy firms mention the full address including Telephone number, Fax number and e-mail address in the offer.
- iii. Request for Proposal (RFP) must remain valid for 120 days after the submission date.
- iv. Any other terms and conditions not covered here will be added as per PPR rules 2008.

SPECIFIC DELIVERABLES OF THE ASSIGNMENT:

Combined Deliverables for All Components

SN	Name of the Deliverables	Duration
1.	<ul style="list-style-type: none"> • Inception report including finalized methodology/engineering process, detail work plan, Gantt Chart etc. 	Within 15 days from signing of the contract agreement. 01 (One) hard copy and one soft copy in DVD and pen drive.
2.	<ul style="list-style-type: none"> • Software requirement specifications (SRS) report with proposed SRS for web-based software. • UI/UX Design report with proposed UI/UX (for both web-based software and mobile application). • Database architecture design report (for web-based software). • Design and develop security plan. 	Within 01 month 15 days from signing of the contract agreement. 02 (Two) hard copies along with one soft copy in DVD and pen drive.
3.	<ul style="list-style-type: none"> • Beta version of the software according to the approved specifications (SRS). (if anything, missing, will be added during SRS). 	Within 02 months 15 days from signing of the contract agreement. 02 (Two) hard copy and one soft copy in DVD and pen drive.
4.	<ul style="list-style-type: none"> • Fully functional web-based software according to the approved specifications IoT devices etc. (if anything missing, will be added during SRS). • Install, configure systems and technology integration to the provided server under specific domain/IP. Main domain/ IP and hosting will be at BCC • BARC will provide at live server and integration with administration support for complete the task. 	Within 04 months from signing of the contract agreement. 01 (One) final software installation
5	<ul style="list-style-type: none"> • Digital user manual (Help manual). 	Within 04 months 15 days from signing of the contract agreement. 02 (Two) hard copies and one soft copy in DVD and pen drive.

SN	Name of the Deliverables	Duration
6.	<ul style="list-style-type: none"> Final report/ Project completion report including all technical documentation with source code should be provided in DVD and pen drive. 	Within 05 months from signing of the contract agreement. 02 (Two) hard copies and one soft copy in DVD and pen drive.

Reporting Arrangement

The consulting firm will report to the BARC and will work closely with relevant BARC officials as well as with the technical team of the BARC. The assigned officials of the work will assume the responsibility to communicate the progress to the involved parties and the BARC will provide all assistance to the consulting firm in terms of:

- Review of the subsequent drafts to be developed by the consulting firm;
- Meeting regularly with the consulting to follow up the progress of activities;
- Receiving all deliverables and give written approval on deliverables provided by the consulting firm.

Client Input

Following input will be given/ provided by the BARC:

- BARC will provide necessary information and project related documents & files to the consulting firm which are relevant with project implementation.
- BARC will provide necessary administrative, management and reasonable logistics support during the project implementation.

Institutional Arrangement of the Services

The consulting firm would be expected to commence of service as soon as possible, but no later than One (01) week after signing of contract, and would report to BARC, who will be responsible for coordinating and supervising the consulting firm. BARC will also make available to the consulting all information, files and documents relevant to their tasks.

QUALIFICATIONS/EXPERIENCES OF THE CONSULTING FIRM:

The firms must meet the following minimum eligibility criteria:

- Legally established professional consulting firms or entity with minimum 10 (ten) years of working experiences in ICT business as a registered Company/ Entity with Register of joint stock & companies (RJSC) in Bangladesh;
- Must submit valid (updated) Trade License, TIN, VAT, Incorporation & updated income tax Certificate, BASIS Membership, CMMI Level 3 or higher.
- Must have ISO 27001 Certificate.
- BACCO, BCS Membership are also preferable.
- Must be a local company of having minimum 10(ten) years of experience in Software development business in Bangladesh or overseas.
- The firm must have experience of managing at least two (02) web-based applications with GOB/Donor or with large scale corporate sector. Experience in Government sector will be given preference. *URL of live applications needs to be provided.*
- Firm must demonstrate its management capacity (website link or 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).
- Firm should demonstrate its' logistical capability (well-equipped office space at Dhaka with necessary facilities etc.).
- Must submit completion certificates of the services completed within the last 5(five) years with details of issuing authorities;
- The firm should have yearly turnover minimum 2.0 Crore. Must submit last 3 (Three) year's financial audit report.
- List (Name, designation, Number, years or experience, number or projects, expertise) of personnels (Project Manager, System Analyst, Business Analyst, Database Administrator, Information Security

Expert, Interoperability Expert, Sr. Software Engineer, Software Engineer, Quality Assurance Engineer, System Administrator, Network Engineer, Trainer, Technical Documentation Expert, Support & Maintenance Engineer) who can be engaged and performed the assigned task. **Key Experts will not be evaluated at the shortlisting stage.**

12. Experience developing bi-lingual (English, Bangla) software accessible across multiple devices like mobile, desktop PC, laptop.
13. Must have proven experience in mobile app development & should have apps published in any global online marketplace (e. g. App Store, google play, etc.)
14. Firm should have at least one web application/ software testing certificate, SQTC given by BCC.

List Of Key Professional Positions Who's Cvs and Experiences Would Be Evaluated

The consulting firm will have to deploy the following key staff, whose CVs will be Evaluated for the purpose of Evaluation of the Technical proposal:

Qualification and Experiences of the Key experts:

SN	Designation	Quantity in Person	Minimum Educational Qualification	Experience, Skill & Other Qualification
01	Project Manager	1	<ul style="list-style-type: none"> o MSc in Computer Science and Engineering/MSc. In Computer Science or any other ICT/IT related discipline from any reputed university. o Must have PMP Certification. 	<ul style="list-style-type: none"> o At least 10 (Ten) years of work experience in the ICT field. o Minimum 05 (Five) years ICT related project management experience. o Must have national and international professional membership of any professional body like Bangladesh Computer Society (BCS) or Asia Research Forum (ARF), etc. o IOT/Block chain/Big Data/ AI/ Machine Learning (4IR) related R&D publications at reputed journal will be highly preferable.
02	System Analyst/Business Analyst	1	<ul style="list-style-type: none"> o BSc or MSc in Computer Science and Engineering/ BSc or MSc In Computer Science or any other ICT/IT related discipline from any reputed university. 	<ul style="list-style-type: none"> o Minimum 8 (Ten) years of professional experience in ICT field including Software Requirement Specification, UML and Information Management. o Experience in Government and Donor Funded project like The World Bank, UN, GIZ, Danida, USAID etc. will be preferable.
03	System Architect	1	<ul style="list-style-type: none"> o BSc or MSc in Computer Science and Engineering/ BSc or MSc In Computer Science or any other ICT/IT related discipline from any reputed university. 	<ul style="list-style-type: none"> o Minimum 7 (Seven) years' experience in Software Development & programming field having experience in team management, project management, and operation.
04	Database Administrator	1	<ul style="list-style-type: none"> o BSc or MSc in Computer Science and Engineering/ BSc or MSc In Computer Science or any other 	<ul style="list-style-type: none"> o Minimum 10 (Ten) years of professional experience in ICT field including Database Design.

SN	Designation	Quantity in Person	Minimum Educational Qualification	Experience, Skill & Other Qualification
			ICT/IT related discipline from any reputed university.	○ Experience in RDBMS is mandatory.
05	Sr. Software Engineer & Software Engineer	4	○ BSc or MSc in Computer Science and Engineering/ BSc or MSc In Computer Science or any other ICT/IT related discipline from any reputed university.	○ Minimum 04 (Four) years' experience in Software development and programming related field.
06	Information Security Expert	1	○ BSc or MSc in Computer Science and Engineering/ BSc or MSc In Computer Science or any other ICT/IT related discipline from any reputed university.	○ Minimum 02 (Two) Years' experience in Information Security related job.
07	SQA	2	○ BSc or MSc in Computer Science and Engineering/ BSc or MSc In Computer Science or any other ICT/IT related discipline from any reputed university.	○ Minimum 02 (Two) years' experience in Software QA & QC related field.
08	System Administrator/Network Engineer	1	○ BSc or MSc in Computer Science and Engineering/ BSc or MSc In Computer Science or any other ICT/IT related discipline from any reputed university.	○ Minimum 02 (Two) years' experience in System Administration or related field.
09	Interoperability Expert	1	○ BSc or MSc in Computer Science and Engineering/ BSc or MSc In Computer Science or any other ICT/IT related discipline from any reputed university.	○ Minimum 02 (Two) years' experience in System Administration or related field.
10	Technical Documentation Expert	1	○ BSc or MSc in Computer Science and Engineering/ BSc or MSc In Computer Science or any other ICT/IT related discipline from any reputed university.	○ Minimum 02 (Two) years' experience in Technical Documentation or related field.



Duration of the Assignment

The duration of the consultancy services shall be 05(five) months from the date of contract agreement signing and make it fully operational. It is expected that the consulting firms will provide the timeline breakdown with the Gantt chart during the RFP stage.

Note: Expressions of interest (EOI) containing one original and one copy of the original with a soft copy in CD/pen drive must be delivered in written form duly signed, to the PE address and clearly marking on the envelope Selection of Consulting Firm for Repository Management Software under Package No.: SD/PARTNER/BARC-12.

