

# **Software Development Proposal (Technical & Financial)**

**Software Project: Annual/Interim Report Submission Portal for** 

**Public Interest Entities (PIE)** 

**Project Owner:** Financial Reporting Council (FRC)

**Finance Division, Ministry of Finance, GoB.** 

**Project Facilitator: Future AI Software and Solutions Limited** 

Date: November 26, 2023 | Dhaka



# Financial Reporting Council (FRC)

# **Annual/Interim Report Submission Portal for Public Interest Entities (PIE)**

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# ANNUAL/INTERIM REPORT SUBMISSION PORTAL PART-I FUNCTIONAL PROPOSAL

#### 1. CONTEXT

Financial Reporting Council (FCR) is an independent oversight body to bring transparency, accountability and trustworthiness in Financial Reporting and Auditing among the stakeholders. The accounting and auditing practices in Bangladesh suffer from institutional weaknesses in regulation, compliance, and enforcement of standards and rules. The preparation of financial statements and conduct of audits, in many cases, are not consistent with internationally acceptable standards and practices. The World Bank and the International Monetary Fund (IMF) jointly performed a systematic assessment of the strengths and weaknesses of accounting and auditing practices in Bangladesh and provided a report titled ROSC (Reports on the Observance of Standards and Codes). The Bangladesh Parliament enacted Financial Reporting ACT (FRA), 2015 on September 9, 2015, under this Act FRC was established. The main purpose of the FRC will be to regulate the financial reporting process followed by public interest entities and regulate the auditing profession of the country.

#### 2. OBJECTIVES

**Bangladesh Financial Reporting Council (FRC)** has started its journey to develop a digitalized system integrating all functional and operational activities to serve the stakeholders and the nation as a whole in a smooth and convenient manner. Digitalization of the Annual Report /Interim Reports submission process for **Public Interest Entities (PIE)** will be another milestone achievement; it will facilitate all entities under PIE criteria to submit their business data and reports in an easy and hassle-free manner. This system will enable the Council to monitor the financial reporting activities rendered by the PIE entities. This system will improve the regulatory capacity of the Council for monitoring the financial reporting of entities.

# 3. SCOPES

The Annual/Interim Report Submission Portal will be a publicly available web application having fully dynamic and flexible features, so that each module could be accessible uniformly using internet-enabled devices from any geographical location. The proposed application will be interactive & device responsive, so that mass people can have access and gather relevant information as required and as permitted by rules & regulations of the Council.

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Project Design and development include but are not limited to the following elements:

- 1. Project discovery, scooping, strategic advice and documentation
- 2. Identifying the Priorities
- 3. Site mapping, UI and UX designing and subsequent revisions
- 4. Ware framing and prototyping
- 5. Development and Testing

The project will be developed and implemented following the **Agile Method** i.e. structured series of stages that a process moves from beginning to end containing phases: **concept, inception, iteration, release, maintenance, and retirement.** 

#### 4. FUNCTIONAL FEATURES

The proposed **Annual/Interim Report Submission Portal** will be a publicly available web portal; stakeholders can access the portal using internet-enabled devices from any geographical location. Generally, the system will be operated in three common modes:

- i) Public Interest Entities (PIEs) are the core users of the proposed system having a wide range of operational activities like signup, basic information entry, business nature and areas, financial data and report uploading features through a validation process.
- ii) FRC is the owner of the proposed system having some controlling authority like giving access to a specific user or the public, data validation and rectification, acceptance of reports, giving feedback on the submitted reports to the entity etc.
- iii) Regulators, Govt. Office and stakeholders can get the updated information regarding Auditors and Audit Firms enlisted by the **Financial Reporting Council (FRC)**

Beyond the above-mentioned three modes, there would be another mode i.e. **System Admin** mode to manage the overall system i.e. bit technical operation.

#### 4.1 USER TYPES:

#### i) Super Admin (Global Role)

Managing the global settings of the application like session timeout, OTP validity period, UCT, Validation Processes like single authentication/ two-factor authentication, Data backup, etc.

#### ii) Admin User (FRC Admin)

Responsible for approving the entities for registration and Master Users creation for respective entity assigning appropriate role.

- Company/ Entity Registration
- Company CFO / Accounts Head/ Company Secretary
- Master User creation for respective company/entity

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- Granting access to other regulates like BSEC, Bangladesh Bank, IDRA, NGO Affairs Bureau, ICAB and ICMAB etc. as per rules defined by the Council.
- > Reporting and generating various analytical information and data

# iii) Company / Entity In charge

- Maintain the updated information of the company /entity.
- ➤ Upload Interim / Annual reports and financial information in a prescribed format.
- > Interact with FRC on behalf of the respective company/entity.

# iv) Authorized Visitors (Regulators, Banks, NBFIs and Govt. Agencies):

➤ Authorized users have some access on submitted as per rules and regulations of the Council.

## v) Public

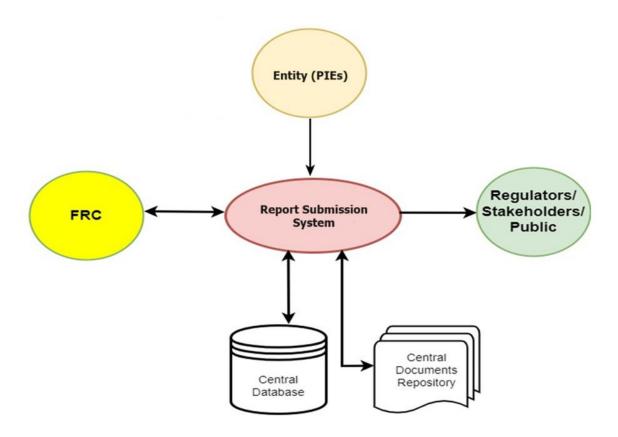
They are unanimous people can view publicly available information only.

#### 4.2 HI-LEVEL DELIVERABLES OF THE PROJECT FUNCTIONALITY

- Online Registration for Companies / Entities
- User login option for individual Company or Entity.
- User Dashboard for user activity chart
- Download Annual Reports / Interim Reports
- User notification with email and SMS
- FRC Dashboard
- Back office operation
- Prepare different committee
- Report Acceptance / Rejection feedback
- > Review comments on submitted reports
- Generating different analysis as required by the Council.
- > Administration and monitoring individual company / entity.



#### 4.3 HIGH LEVEL ARCHITECTURE OF THE SOFTWARE APPLICATION



High-Level Architecture: Annual/Interim Report Submission Portal for Public Interest Entities (PIE)

#### **4.4 COMMON MENUS:**

#### Home:

- About FRC
- Report Submission Procedure
- User Manual/Guideline
- FAQ on Annual Report / Interim Report Submission
- Support

#### **User Account Creation:**

- Registering each company/entity with the Enlistment Portal through two-factor authentication i.e. email and cellphone.
- Password setting while registration is successful.

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Newly registered information will appear in Master Users' Dashboard and will be notified through mail/SMS.

# Login:

- Login requires two factor authentication i.e password and OTP sent to cellphone.
- Password can be changed, recovered & reset following an Authentication
   Process
- Users Login credentials will be encrypted.

# **Company/Entity Registration**

- Eligibility Criteria
- Basic Information
- Address
- Professional Qualifications
- Payment
- Documents Attachment
- Final Submission

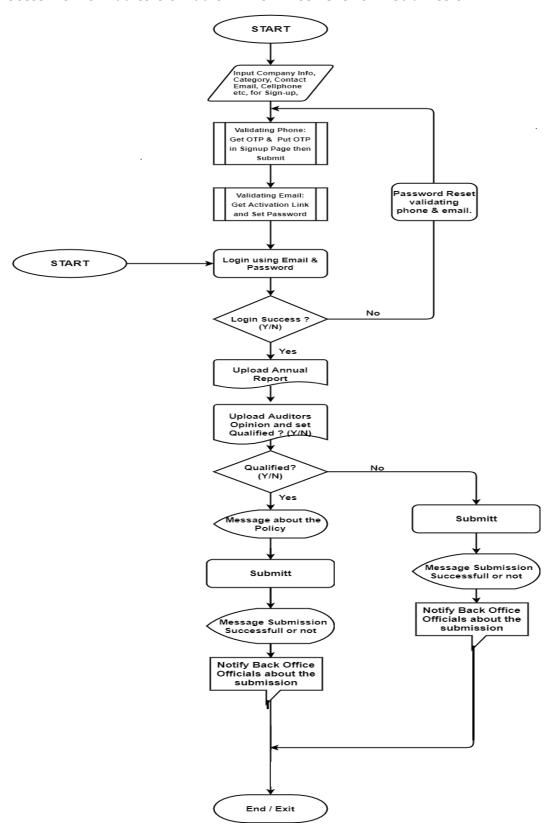
# **Report Uploading**

- Eligibility Criteria
- Basic Information
- Branch Information
- Auditors & Role
- Document Attachment
- Detail about the manpower other than Auditors
- Final Submission

Features & functionality of the proposed system will be defined more precisely during the documentation of System Requirements Specification (SRS)



## 5. Process Flow of Auditors & Audit Firm's Enlistment Form Submission



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# 6. Sample User Interface (UI) Pages for Proposed System

# 1. Home Page

ANNUAL REPORT/INTEL SUBMISSION POL	RIM REPORT RTAL
User Type  Someone@example.com/EnRl.No  Password  Q  Captcha  Captcha  Captcha	SIGN UP Create an account for your company / organization to  Subscribe Submit Annual Report Remain Connected and Get Updates
Login Forgot Your Password?	Sign Up



# 2. Sign UP Page

	Jan Line	ISSION PORTAL	
		Sign Up	
Email: *	₩.	user@example.com	Note: A valid e-mail address. The e-mail address will be your login ID to the system. All e-mails from the system will be sent to this address. The e-mail address is not made public and will only be used if you wish to receive a new password or wish to receive certain news or notifications by e-mail.
Name: *	1	Name	
Cell Phone: *	6	01xxxxxxxxx	
Designation: *	15	Designation	
Company/ Organization: *	0	Company Organization	
Company/ Organization Category: *	■	Select Organization Category	
Website:	B	xyz.com	
Head Office: *	B	Head Office	
MD/ED/CEO; *	1	Mr./Ms.	Note: This information will be preserved for the purpose of further correspondence. The email address and cellphone are not made public and will be used only for certain communication.
Cell Phone: *	c	01*******	
E-mail: *	×	someone@example.com	
CFO:*	j	Mr./Ms.	
Cell Phone: *		01*******	
E-Mail: *	×	someone@example.com	
	Thank profile corres	agree to the processing of my companies ve information.  Tyou for agreeing to allow us to process your data for the purposes of future pondence. We look forward to our continued inship with you.	

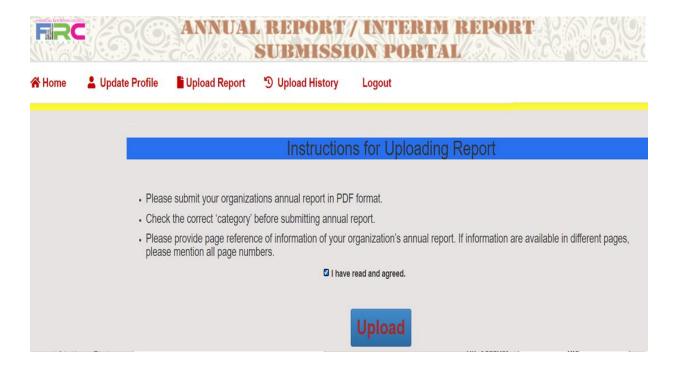
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# 3. Entity / Company Information Entry Form



# 4. Annual/ Interim Report Uploading Page



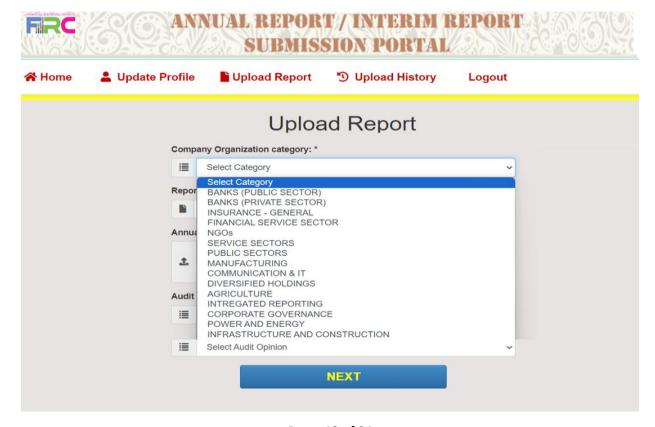
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# 5. Annual/ Interim Report Uploading Page

Home	Update Profile	Upload Report	Upload History	Logout
		Uploa	nd Report	
	Compa	ny Organization category: *		
	i≣	Select Category		~
	Report 1	Year		
	Annual	Report File		
	± =	Choose Files No file choser	1	
	Audit O	pinion		
		Select Audit Opinion		~

# 6. Entity / Company Category Selection



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# 7. Report Submission List



# 7. Report Submission Summary



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# 8.Category-wise Report List



Category Assign 🚨 All Annual Report 🚨 Category Wise 🖺 Panel 🔟 Report 🔟 Top Sheet 🔟 Breakup of Ev. 🕩 Logout 🚨 User Info 🏖 Ev. Control Sheet

# Annual Reports 2020.

# Category Wise Annual report Details

SI.No.	Report Id	Company Name	Report Year	Categoty	Upload Time	Rep Status	Process Status	Action	Action	Action	Action	Action	Action
1	1061	Dipped Products PLC	2022	MANUFACTURING	19/09/2023	INCOMPLETE	YET TO PROCESS	Delete	View Page Ref.	View File	Assign Evaluator	Assign Reviewer	Report Summary
2	1062	Royal Ceramics Lanka PLC	2022	MANUFACTURING	19/09/2023	INCOMPLETE	YET TO PROCESS	Delete	View Page Ref.	View File	Assign Evaluator	Assign Reviewer	Report Summary
3	1063	Haycarb PLC	2022	MANUFACTURING	19/09/2023	INCOMPLETE	YET TO PROCESS	Delete	View Page Ref.	View File	Assign Evaluator	Assign Reviewer	Report Summary
4	1092	Fauji Fertilizer Company Ltd	2022	MANUFACTURING	20/09/2023	INCOMPLETE	YET TO PROCESS	Delete	View Page	View	Assign Evaluator	Assign Reviewer	Report Summary

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#### **PART-II**

#### **TECHNICAL PROPOSAL**

#### 7. SYSTEM DEVELOPMENT METHODOLOGY

Methodology is a system of practices, techniques, procedures, and rules used by those who work in a discipline. The proposed project will be developed and implemented following the below steps over the project period:

#### 7.1 Requirement Capture

Requirement capture is the process of harvesting the raw requirements for the stakeholders and turning those into useful forms. The requirement capture may be performed in an effective manner that would be followed by:

- 1. Understanding day to day work of relevant desks
- 2. Questionnaires
- 3. Interviews
- 4. User observations & expectations
- 5. Segregate conflicting requirements

#### 7.2 SRS Documentation

After capturing requirements, we will make module-wise System Requirement Specifications (SRS), the steps will be follows:

- 1. Description of the subsystem
- 2. List the activities in the subsystem
- 3. Draw the process flow of individual activities
- 4. List out the required information with individual process
- 5. List out the additional user requirements if any
- 6. Re-engineer the process flow if required
- 7. Prepare the system concept tree
- 8. List out the final checklist of document
- 9. Extract the attributes from individual documents
- 10. Complete System Requirement Specification (SRS) for an individual module.

#### 7.3 SDD Documentation

After completing SRS Document for individual modules, the **Software Design Document (SDD)** will be developed; the steps are as follows:

1. Draw Entity Relation Diagram (ERD) of the database tables

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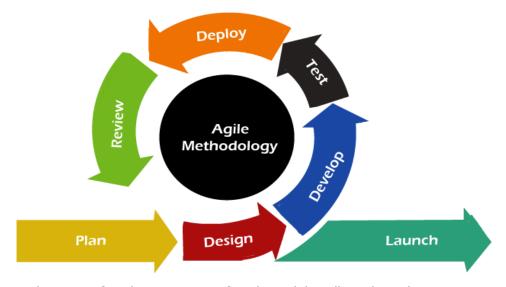
- Define relationship statement for individual modules ERD
- 3. Develop physical database tables from individual URS attributes
- 4. Develop data dictionary
- 5. Develop **Data-Flow Diagram**
- 6. Define the **Integration Points** between inter-modules.
- 7. Develop **Prototype Screen** for individual module
- 8. Complete System Requirement Specification (SRS) for the proposed system

# 7.4 Finalizing SRS

After completing SRS we shall present the system prototype to FRC; if any further changes are required, we will incorporate those accordingly and get signed the SRS documents.

## **7.5 Application Development**

Proposed application will be developed adopting **Agile Methodology** setting priorities, faster delivery and incorporating changes during the development cycle. Agile is an iterative approach to project management and software development. Requirements, plans, and results are being evaluated continuously so the teams have a natural mechanism for responding to change quickly.



Development of each component of each module will go through a testing process and will be delivered to users as a beta release for User Acceptance Test (UAT). If any change comes from user end will be incorporated those for further development/customization.

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# **7.6** Coding Convention

Industry Standard coding conventions will be maintained for the development of this project. Below are some guidelines but not limited to:

- Using naming conventions for variables and parameters for each level of scopes and different data types.
- Using naming conventions for functions and procedures and source code files
- Use the developer's comments for each procedure /method /routine /sub-routine and variable.
- Maximum length of routines (Line of Codes)
- Maximum number of routines in a class
- Source Code directory structure will be maintained in standard practice and be documented
- Avoid dead codes which will reduce load over memory
- Using exception handling: All business logic will be covered with exception and error handling.
- Usage of Dates and Null values: Date formatting, date variable types and date value conversion and comparison will be maintained with standard guideline
- Conversion/Casting of variables to different types will be avoided or maintained by standardguideline

# 7.7 Software Quality Assurance

**Software quality assurance (SQA)** is a process that assures that all software engineering processes, methods, activities, and work items are monitored and comply with the defined standards. There are some essential elements of SQA as mentioned below:

- Software engineering Standards
- Technical reviews and audits
- Software Testing for quality control
- Error collection and analysis
- Change Request (CR) management
- Educational programs
- Software Documentation
- Data Flow Diagram
- Security Checking & Vulnerability management

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In Annual Report / Interim Report Submission Portal project, all above-mentioned points will be maintained and working documents will be provided along with deliverables.

## 7.8 Data Security

The proposed web application will host PIE's business-sensitive information and be publicly accessible through the Internet. So that security is very critical for this application, the following security features will be adopted and maintained for this project:

# **Application Layer Security**

- a. Access level security through Authentication & Authorization
- b. Domain/Server level Session security.
- b. Session-level security.
- c. Secure Coding Concepts should provide.
  - ◆ SQL Injection protected
  - ♦ Cross-site Scripting Prevention
  - Memory Corruption Detection
  - ♦ Remote Code Execution Prevention
- a. CAPTCHA type security where applicable
- b. Error & Exceptions handling
- c. Input Validation
- d. Path Disclosure Prevention

#### **Database Layer Security**

- a. SQL injection proof data access codes to be written.
- b. Data Recovery Plan
- c. Confidential data is to be tagged by MD5/Sha1 integrity.
- d. Data Recovery Plan.
- e. Data Loss Protection

#### **Network & Server Level Security**

- a. Denial of Services (DDoS)
- b. Man in the Middle Attack
- c. Network Sniffing
- d. Port Scanning
- e. SQL Injection Attack

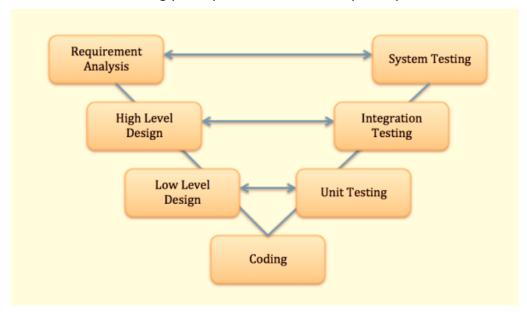
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- f. Cross Site Scripting
- g. Deployment of SSL Certificates

# **7.9** Testing Phase

**Software Testing** is a series of specific sequential tasks to be performed to ensure that software quality goals are met. **Software Testing Life Cycles (STLC)** involve both verification and validation activities. **V Model** is a highly disciplined **STLC** model that has a testing phase parallel to each development phase.



There are following six major tasks are in every Software Testing Life Cycle (STLC) Model:

- Study Requirement / SRS Documentation
- Test Planning
- Test case development
- Test Environment setup
- Test Execution (Unit Test, Integration Test, System Test)
- Test Cycle closure

#### 8. ARCHITECTURE & TECHNOLOGY

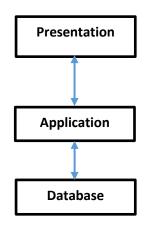
Proposed RVS is a web application to be developed adopting 3-Tier Architecture.

- Presentation Layer
- Application Layer
- Database Layer

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# **Graphical Presentation of 3-Tier Architecture**



Presentation Layer is the User Interface Software: NGNIX/ Apache/IIS etc. Language: HTML, CSS, Angular/ React etc.

Application Layer process Business Logics Software: NGNIX/Tomcat/WebLogic etc. Language: Java / .Net/Python etc.

Data Layer provides access to Application Data Software: Oracle/MSSQL/MySQL/PostgreSQL etc. Type: RDBMS/NoSQL/ Java / .Net/Python etc.

## **Technology:**

Front End: Angular, HTML & CSS, Bootstrap
Middle Tier: Java (Spring Boot)/ .Net Core

Database: Oracle Enterprise Edition / PostgreSQL

Webserver: NGNIX

# INFRASTRUCTURE & LOGISTICS (All logistics will be arranged by the client i.e. FRC)

The Annual / Interim Report Submission portal will be hosted in Cloud Platform with the automatic backup and recovery features.

#### Servers:

UI Server: Processor 4 Cores/ 8GB RAM/ 100GB SSD Storage
Application Server: Processor 8 Cores/ 8GB RAM/ 100GB SSD Storage

Database Server: Oracle RDS / Local Server

#### File Storage/Repositories:

S3 Bucket: Initially 500 GB (Scalable) for documents, images, files repository

**SMS Service** for OTP/ two-factor authentication feature.

**Domain/Subdomain:** Any suitable domain name

**SSL Certification:** GeoTrust Basic Plan (or any other preferred plan)

\*\*\* Above mentioned all infrastructure / logistics shall be arranged and maintained by the client i.e. **Financial Reporting Council (FRC).** This proposal does not include the cost for arranging the infrastructure /logistics.

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## 10. Special Technical Features

As per our understanding, about 5,000 entities and stakeholders will be the users of this web application and they will upload their Annual Reports and Interim Reports every year as prescribed by the council (FRC) from time to time. A huge number of documents will be uploaded, stored and managed through this software application. Therefore; **Scalability and Performance** as well as **Data Access and Retrieval** will be the prime concern of the software application.

# **Scalability and Performance:**

- **Distributed Architecture:** Design a distributed system that can scale horizontally by adding more storage nodes or servers as the storage requirements grow.
- **Load Balancing:** Implement load-balancing mechanisms to evenly distribute file access requests across storage nodes, ensuring optimal performance.
- **Caching Mechanisms:** Employ caching strategies to improve read/write speeds by storing frequently accessed files or metadata in memory.

#### **Data Access and Retrieval:**

- **Metadata Management:** Efficiently manage metadata associated with files for faster search and retrieval operations.
- **Indexing and Search:** Implement indexing and search capabilities to quickly locate and access files based on attributes or content.
- **Streaming and Chunking:** Use streaming techniques and file chunking to facilitate smooth and efficient transfer of large files over networks.

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# 11. Resource Engagement & Project Execution Plan

A lead Project Manager will be engaged to oversee the project and serve as a single point of communication. Similarly, another Project Lead from the counterpart (FRC) should be engaged for coordinating between developer team and business owner team. System Analysts, Analyst Programmers, UI/UX designers, SQA Engineers/Testers, DevOps engineers, System Engineers, and other IT experts will be engaged as the requirements and needs dictate. Here tentative resource engagement matrix illustrated below:

Sl.	Task Description	Resource Engagment	Timeline in Weeks												
		Position	No.	1	2	3	4	5	6	7		8	9	10	Man- Months
1	Project Inception Report	Project Manager	1												2.5
2	Requirement Analysis	System Analyst	1												0.5
3	SRS Document Preparation	System Anatyst	'												0.5
4	Prototyping	UI-UX Designer	1												0.5
5	Database Design	Database Developer/DBA	1												0.5
6	UI for Public Users	Angular JS Developer	1												0.75
7	UI for Backoffice Users	Angular JS Developer	1								ive				0.75
8	Middle Tire /API Development	Java Developer	2								1-0				1.5
9	CMS and Authority Matrix	Java & Agnular Developer	1								ct G				0.5
10	Testing	Soft. Quality Tester	1								Projec				0.5
11	Bug Fixing and re-Testing	Tester & Agnular Developer	1								Pr				0.25
12	UAT, Issue Resolving & Training	Full Team	2												0.5
13	Deployment & Go-Live	Dev. Ops Engineer	1												0.25
14	Post Go-Live Feedback & Contingency	Soft. Quality Tester & Dev. Ops Engineer	2												0.5
15	Report Developing	HTML & CSS and Java Dev.													0.75
16	Tech. Documents & S. Code	Technical Report Writer													0.5
			Proje	ct Go	-Live	Timeli	ne (7	Week	s)	•					
	Closing the Project		Proje	ect Completion Time-Line (10 Weeks)								10.75			
														11 Ma	n-Months
		Project Duration:	10 W	eks (	2.5 Mc	onths)									
		Total Resource Engagement:	11 Ma	n-Moi	nths										

Time-Line for Go-Live: **07 Weeks** 

Project Completion: 10 Weeks/ 2.5 Months

Resource Engagement: 11 Man-Months

Tentative Project Start Date: 17 Dec 2023 (Subject to getting Work Order)



#### **PART-III**

#### **PROJECTS FINANCIALS**

#### **12. Development Cost**

Time-Line for Go-Live: **07 Weeks** 

Project Completion: 10 Weeks / 2.5 Months

Resource Engagement: 11 Man-Months

Considering project timeline and work force engagement of different skilled level, we are proposing very competitive price offer.

**Proposed Development Cost:** Tk. **12,00,000/- (In Words Twelve Lac)** only including Tax and excluding VAT.

**Payment Terms:** i) 60% of total amount along with Work Order

ii) 30% after Go-Live

ii) 10% (Balance amount) after final delivery of the project.

# 13. Warranty Period:

06 months Service Warranty will be provide by the **Future AI Software & Solutions Ltd.** including issue resolving and troubleshooting. Any new task /assignment/ Change request will not be covered under the warranty clause; that will be dealt separately with mutual respect and faith. **A Service Level Agreement (SLA)** would be signed between both parties for further continuation of support services.

## 14. Terms & Conditions:

- i) Software System will be developed and delivered step-by-step setting priorities.
- ii) **FRC** will arrange all infrastructure and logistics like Servers, Hosting, SMS and Email Services etc. as mentioned in Clause no.-9.
- iii) Any matter beyond this proposal will be addressed upon discussions mutual trust and faith.
- iv) **Future AI Software & Solutions Ltd.** will provide six (06) months service warranty from the date of final delivery. A Service Level Agreement will be effective for further support service upon expiry the warranty period.

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#### **PART - IV**

# LOOK FORWARD (2<sup>ND</sup> PHASE)

Upon completion of the report submission portal, a huge number of reports will be submitted to FRC. Then FRC would need to extract data from those reports and analysis those data for regular monitoring and various decision making process. Some latest data extraction and analytics tools may be used for this purpose as mentioned below:

- Data Extraction Tools
- XBRL standard for digital business reporting
- Data Analytics
- Business Intelligence (BI)
- Artificial Intelligence (AI)

## **Thank You**

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