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Date:05/Feb/2024

Request for Proposal for Development of a Three System Digital Platform
(Ref No. GNU/RFP/2024/04)

Please submit your proposal bid before **4:00pm on 16th February, 2024** in a sealed envelope and stating the above-mentioned reference number to:

gnuGrid CRB Limited
Plot 77, Buganda Road, Kimujo building-ground floor
P.O. Box 5326, Kampala
0393-194261
Email: procurement@gnugridcrb.com

In addition, please include your company name and phone number on the envelope.

Alternatively, hand in your bid on email to procurement@gnugridcrb.com with the subject clearly indicating the Category and reference number you are bidding for.

Please inform us if you decide not to submit tender. **Late submissions will not be accepted.**

PROCUREMENT FOCAL POINT



1. INTRODUCTION

gnuGrid CRB Limited is licensed by Bank of Uganda as a Credit Reference Bureau whose primary role is to collect credit and transactional data on individual and non-individual borrowers; validate and profile it into meaningful profiles that are disseminated in the form of credit reports, and credit scores that enable credit providers to make informed lending decisions.

gnuGrid CRB Limited is inviting responses to the Request for Proposal (RFP), reference number **GNU/RFP/2024/04**, to appoint a suitably qualified consultant to provide software development services.

2. SCOPE OF WORK

gnuGrid CRB is sourcing for a highly qualified consultant or consulting firm capable of undertaking the development of three distinct systems: a Digital Loan Market, an AI Predictive Response System, and a Ticketing and Dispute System. In addition to system development, the consultant will also be responsible for conducting rigorous System Stress Testing to ensure the robustness, scalability, and reliability of the deployed solutions.

i. Digital Loan Market

The digital loan platform aims to provide a seamless lending experience accessible through a website, USSD menu, and mobile applications for both iOS and Android. The platform facilitates the interaction between lenders and borrowers, allowing borrowers to view, apply for, and manage loans, while lenders can review and process loan applications.

The consultant/consulting firm is expected to:

- Understand the lending processes.
- Design and develop a user-friendly digital loan platform accessible through web, mobile (iOS, Android), and USSD channels.
- Implement robust security measures to protect user data and ensure compliance with relevant regulations.
- Integrate the platform with Credit Reference Bureaus (CRB) for accurate credit reporting.
- Develop an intuitive user interface for both lenders and borrowers.



- Implement features such as user profiling, loan listing, application processing, and real-time status updates.
- Provide documentation, training, and support for internal staff during and after the platform implementation.

Technical requirements

a) System Architecture

The system will adopt a microservices architecture for scalability and maintainability. Key components include:

- **User Management:** Manages user authentication, profiles, and roles.
- **Loan Management:** Handles loan listings, applications, approvals, and disbursements.
- **CRB Service:** Integrates with the gnuGrid CRB API for credit reports and scores.
- **USSD Service:** Integrate with a USSD Gateway for access of the services via USSD.
- **Notification Service:** Sends Email and SMS notifications to borrowers and lenders.

b) Access channels

The platform will be accessible through the following channels:

- **Website:** Browser-based interface for both lenders and borrowers.
- **USSD Menu:** A text-based menu accessible from feature phones.
- **Mobile Applications:** iOS and Android applications for enhanced user experience.

c) User Profiling

- **Lenders:** Register and create profiles, listing their credit products.
- **Borrowers:** Opt-in by accepting Terms & Conditions (T&Cs), view lender profiles, and access loan listings.

d) Loan Listing

- **Lender Profiling:** Lenders create and manage profiles, showcasing their credit products.
- **Loan Listing:** Borrowers view a list of lenders and their credit products.

e) Borrower Operations

- **Opt-In:** Borrowers accept T&Cs to participate.
- **Select Lender:** Choose a lender from the list.
- **Select Loan Product:** View credit products and select one from the chosen lender.
- **Submit Application:** Apply for the selected credit product, providing necessary details and CRB consent.
- **View Proposals:** Review offers and proposals from lenders.

f) Lender Operations

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- Review Applications: Lenders review loan applications submitted by borrowers.
- Generate Credit Report: Access the gnuGrid CRB API to obtain credit reports and scores.
- Approve/Reject Applications: Approve, reject, or propose a different offer to the borrower.
- Receive Loan Applications: Upon borrower's acceptance, lenders receive detailed loan applications.

g) CRB Integration

The system integrates with the gnuGrid CRB API to obtain accurate credit reports and scores for loan processing.

Notifications

- Borrower Notifications: SMS notifications for application status updates (approved, rejected).
- Lender Notifications: Receive notifications for new loan applications and updates on approved loans.

Loan Status Management

- Approved Loans: Borrowers notified via SMS; lenders update loan status (disbursed, servicing, paid off).
- Rejected Loans: Borrowers notified via SMS.
- Proposed Offers: Borrowers can view and accept proposed offers; lenders receive detailed loan applications upon acceptance.

Qualifications and Experience

The consultant/consulting firm should have:

- Proven experience in developing digital lending platforms.
- Expertise in web and mobile application development.
- Knowledge of security best practices and compliance requirements.
- Experience with CRB integrations.
- Strong project management and communication skills.

ii. A1 Predictive Response

The AI Predictive Response System is designed to predict and automate responses to user queries or actions based on historical data, machine learning models, and real-time inputs. This system aims to enhance user experience and efficiency by providing contextually relevant responses.



The consultant/consulting firm is expected to:

- Design and develop an AI Predictive Response system.
- Integrate machine learning models for natural language processing and predictive analytics.
- Implement a user-friendly interface with automated response mechanisms.
- Ensure scalability, performance, and security of the system.

Technical Requirements

a) System Architecture

The system adopts a microservices architecture for flexibility and scalability. Key components include:

- **User Interface Service:** Manages user interactions and interfaces.
- **Prediction Engine:** Houses machine learning models for predicting user responses.
- **Data Processing Service:** Processes and analyzes historical and real-time data.
- **Response Orchestrator:** Coordinates the generation and delivery of automated responses.

b) Data Sources and Integration

- **Historical Data:** Utilizes historical user interactions to train machine learning models.
- **Real-time Inputs:** Integrates with real-time data sources for up-to-date context.
- **Machine Learning Models**
- **Natural Language Processing (NLP):** Analyzes user queries for context and intent.
- **Predictive Analytics:** Models predict the most likely response based on historical patterns.
- **Reinforcement Learning:** Improves responses over time through user feedback.

c) Response Mechanism

- **Automated Responses:** System generates responses based on predictions.
- **User Feedback Loop:** Users can provide feedback to refine and improve response accuracy.



- Fallback Mechanism: Human intervention or predefined responses for scenarios with low confidence.

d) Scalability and Performance

- Containerization: Utilizes container orchestration for scalability.
- Load Balancing: Distributes user requests evenly across multiple instances.
- Caching: Optimizes response time through result caching.

e) Training and Model Updates

- Continuous Training: Regularly retrains machine learning models with new data.
- Automated Deployment: Automated deployment of model updates to ensure real-time improvements.
- Version Control: Tracks model versions for traceability.

f) Monitoring and Analytics

- Logging: Records user interactions, system events, and errors for auditing.
- Performance Metrics: Monitors response time, accuracy, and resource utilization.
- User Analytics: Gathers insights into user behavior and preferences.

Qualifications and Experience

The consultant should possess:

- Proven experience in developing AI Predictive Response Systems.
- Expertise in natural language processing, predictive analytics, and reinforcement learning.
- Demonstrated ability to design scalable and secure systems.

iii. Ticketing and Disputes System

The Ticketing and Dispute System will be designed to manage and resolve issues, disputes, or inquiries raised by users or customers. It provides a structured process for raising tickets, tracking their status, and facilitating efficient dispute resolution.

The consultant is expected to perform the following tasks:

- Conduct a thorough analysis of our requirements and provide recommendations.



- Design a scalable and modular architecture for the Ticketing and Dispute System.
- Develop and implement the system, ensuring it meets all specified functionalities.
- Provide documentation for system components, APIs, and workflows.
- Conduct testing and quality assurance to ensure the system's reliability.
- Collaborate with our internal team for knowledge transfer and training.

Technical Requirements

a) System Architecture

The system will adopt a modular architecture to facilitate scalability and maintainability. Key components include:

- **User Management:** Manages user authentication, roles, and permissions.
- **Ticketing Module:** Facilitates the creation, tracking, and resolution of tickets.
- **Dispute Resolution Module:** Manages the dispute resolution process.
- **Communication Module:** Handles communication between users and support staff.

b) Access Channels

The system will be accessible through various channels:

- **Web Interface:** Browser-based interface for users to submit tickets and view their status.
- **Email Integration:** Users can create tickets and communicate via email.
- **API:** Provides integration points for third-party systems.

c) User Roles and Permissions

- **User:** Can submit tickets and track their status.
- **Support Staff:** Manages and resolves tickets.
- **Admin:** Manages user roles, system configuration, and access control.

d) Ticketing System

- **Ticket Creation:** Users can create tickets, providing details about their inquiry or issue.
- **Ticket Assignment:** Support staff assigns tickets to appropriate personnel.
- **Status Tracking:** Users can track the status of their tickets in real-time.
- **Priority Levels:** Tickets are categorized based on priority levels for efficient handling.



- Attachments: Users can attach relevant files or screenshots to tickets.

e) Dispute Resolution

- Dispute Initiation: Users can escalate tickets to disputes if not satisfied with the resolution.
- Adjudication: Disputes are assigned to a designated adjudicator for resolution.
- Evidence Submission: Users and support staff can submit evidence to support their case.
- Resolution Decision: Adjudicator makes a decision based on the presented evidence.
- Appeals: Users have the option to appeal decisions if unsatisfied.

f) Communication

- Internal Communication: Support staff can communicate internally for ticket resolution.
- User Communication: Automated notifications and updates sent to users via email or in-system messaging.
- History Logs: All communication logs stored for audit and reference purposes.

g) Security Measures

- Data Encryption: Sensitive data, including user information and communication, is encrypted.
- Access Controls: Role-based access controls to ensure data integrity.
- Secure APIs: API endpoints secured with authentication and authorization mechanisms.

h) Audit Trail

- User Activities: Detailed logs of user activities, ticket status changes, and dispute resolutions.
- Timestamps: Timestamps for every action to track the sequence of events.

Qualifications and Experience

The consultant should possess the following qualifications and expertise:

- Proven experience in developing Ticketing and Dispute Systems.
- Strong knowledge of microservices architecture and modern development technologies.



- Proficiency in relevant programming languages and frameworks.
- Experience in system integration with external APIs.
- Excellent communication and collaboration skills.

iv. System Stress Testing

The purpose of this document is to outline the technical requirements and scope of work for sourcing a consultant to perform System Stress Testing on three critical systems: the Digital Loan Platform, the AI Predictive Response System, and the Ticketing and Disputes System.

The primary objectives of the System Stress Testing are as follows:

- Identify the maximum load capacity of each system.
- Evaluate system performance under stress conditions.
- Identify and address bottlenecks, scalability issues, and potential failures.
- Ensure the robustness and reliability of each system under heavy loads.

Systems Overview

- **Digital Loan Platform:** The Digital Loan Platform facilitates lending operations, including borrower interactions, lender processes, and credit application management.
- **AI Predictive Response System:** The AI Predictive Response System uses machine learning to predict and automate responses to user queries or actions.
- **Ticketing and Disputes System:** The Ticketing and Disputes System manages and resolves issues, disputes, and inquiries raised by users or customers.

The consultant will be responsible for the following:

- Analyzing system architecture and infrastructure.
- Designing and executing stress tests for each system individually.
- Identifying performance bottlenecks and areas for improvement.
- Providing recommendations for scalability enhancements.
- Generating detailed reports on test results, findings, and recommendations.

Technical Requirements

a) Digital Loan Platform



- Simulate high user loads during loan application and approval processes.
- Test concurrent user interactions and transactions.
- Evaluate response times and system stability under heavy loads.

b) AI Predictive Response System

- Test the system's ability to handle a large number of concurrent prediction requests.
- Evaluate the response time and accuracy of predictions under stress conditions.
- Assess the impact on system performance during continuous predictions.

c) Ticketing and Disputes System

- Simulate a high volume of ticket submissions, updates, and dispute resolutions.
- Evaluate the system's ability to handle simultaneous user interactions.
- Assess the impact of stress conditions on ticket resolution times.

Qualifications and Experience

Interested consultants should submit a proposal that includes the following:

- Overview of the consultant's experience in system stress testing.
- Detailed approach and methodology for testing each system.
- Proposed timeline for completing the stress testing for all three systems.
- Cost estimate, including a breakdown of expenses.

3. KEY DELIVERABLES

I. Digital Loan Market:

Develop a state-of-the-art digital platform that facilitates seamless interactions between lenders and borrowers, incorporating features such as user profiling, loan listings, application submissions, and real-time updates on loan statuses.

II. AI Predictive Response System:

Create an intelligent and responsive system capable of predicting and automating contextually relevant responses to user queries or actions.



This system should continuously learn and adapt through machine learning models, ensuring optimal user experience.

III. Ticketing and Dispute System:

Design and implement a robust Ticketing and Dispute System that streamlines the process of raising, tracking, and resolving user inquiries and disputes. The system should incorporate user-friendly interfaces, automated responses, and effective dispute resolution mechanisms.

IV. System Stress Testing:

Conduct thorough stress testing on each developed system to assess their performance under peak loads and identify potential bottlenecks. This phase is crucial to ensure the reliability and scalability of the systems in real-world scenarios.

4. COMPLIANCY REQUIREMENTS

The appointed software development firm or individual will be required to demonstrate the following minimum requirements:

- a) Company/Professional profile
- b) CVs of developers working on the project
- c) List of projects done of a similar nature and evidence that these projects were carried out by the consultant or firm.
- d) General approach or methodology which the consultant or firm proposes for carrying out each deliverable separately, including such detailed information as you deem relevant.
- e) Comments or suggestions, if any, on the Terms of Reference designed to improve performance of the systems, are welcome.
- f) Bank account details on headed paper, dated, stamped, and signed by authorized signatories.
- g) For firms, attach the additional technical eligibility documents below.
 - Certificate of incorporation, Certificate of registration, valid trading license.

5. Financial Proposal

- i. Financial proposals as submitted by a provider will be considered in evaluation and selection of consultants. However, each element of the financial proposal of the selected provider will be reviewed during contract negotiations to determine the final contract price.

END

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