

## **TERMS OF REFERENCE**

### **Data Asset and Management**

#### **Reference No: NG-DBN-277234-CS-CQS**

*Hiring of a consulting firm to aid in creating and implementing a data governance framework as we as build a DBN data asset for internal and external analytics and visualisation. The data generated from these automations will also be done to ensure effective Monitoring & Evaluation and advocacy exercises in line with our developmental objectives.*

### **I. Background**

The Development Bank of Nigeria (DBN) Plc. in line with the strategic objectives to promote sustainability and innovation has identified different processes that need to be digitalised. These initiatives are codified in the Bank's Digital Strategy and the implementation of the initiatives will ensure that interactions with the Participating Financial Institutions (PFIs), the Nigerian Micro, Small and Medium Scale Enterprises (MSMEs) and other stakeholders can be done digitally, and that information sharing is safe and secure while being used to meet business objectives.

### **2. Objective of Assignment & Scope of Work**

The objectives of this assignment are to help improve the maturity of our data capabilities by creating a data governance framework that will review data requirements and provide guidance on how data should be used and managed in the organisation. On the technical side, the assignment will also help build the DBN data asset using identified internal and external data source and building algorithms for different levels of data analytics capabilities for internal and external stakeholders.

The broad scope of work will include the following:

#### **a. Data Governance Program and DBN Data Asset**

##### **i. Creation of Data Governance Framework and Policy**

The expected output of this exercise is a detailed Data Governance Policy that will help standardise how data is collected, treated and stores within the Bank. This will also help in defining access control rights for different data types, security, and regulatory compliance requirements. The Data Asset architecture will be well defined, as well as a Data Governance framework that lays out controls around Data Risk, Data Compliance, Data Security and Data Privacy. The outcome of this exercise is to define the basis, create a clear and pragmatic view and set-up a Data Governance to:

- Become compliant with regulations.
- Provide a pragmatic, realizable and documented data governance approach to gain:
  - A common understanding of data management and roles & responsibilities
  - A common understanding of the data required and the level of quality.

- The ability to manage and improve the quality of data in a pragmatic manner.

This will be achieved by defining an organisational model which will define the structure for making data related decisions in DBN, rules for data definition, ownership, architecture, security, sources management, quality, provisioning, usage, and retention which will define the policy, standards, and processes guiding these.

## **ii. Creation of DBN Data Asset**

The DBN Data Asset which will be a data bank built and maintained by the automated collection of data from different stakeholders relevant to the Nigerian economy and the MSMEs. This will include the Central Bank of Nigeria (CBN), National Bureau of Statistics (NBS), SMEDAN, PFIs and external data sources that will be identified.

DBN recognizes the need to consolidate and integrate MSME and Participating Financial Institutions (PFI) data sources to make them searchable, analytics-ready, and available for use by other internal or 3rd party platforms. DBN is actively seeking such a system to be put in place to support its vision to be the leading source of MSME data as well as the preferred platform for MSME-related transactions. Facts are provided on the MSME Industry, DBN data models are defined for the different business units to highlight data requirements, their sources and integration pathways to arrive at a consolidated data asset. Details on the objective and scope of work for the different engagements are as follows:

The objectives of the project are consolidation of MSME / PFI data into a data asset, develop MSME facts, DBN data models and data integration schemes. We expect that the development will include an initial assessment of the current data architecture in the DBN, gap analysis and recommendation, and the development of the data asset. The expected output for the data asset is a native REST API which is exposed for document search. This means it will be available from any browser or web client, making use of existing technology and lowering the infrastructure requirement. Authentication must be required to secure access to the Data Asset and a User Privilege / Account Management system must be put in place to manage/control access to certain aspects of the platform. Also, 3rd parties requiring access to the platform will be profiled first and given access credentials. For commercial arrangements where DBN seeks to subscribe users to the platform, API rate-limiting measures will also be put in place and will be tied to the API key provided to the subscriber.

The Data Asset must have a Front End which can be used internally to query the data in the system, generate reports, view dashboards, and access other functionalities. This will be a cloud solution which has the functionality of being able to be embedded in internet publications and webpages will be implemented to eliminate requirement for servers and computing power.

The front end will also have access right control implemented and will be able to provide visualisation of key metrics aggregated under the MSME data asset. Tableau Online is the preferred solution as it has the functionality needed to produce visualisations of the data asset.

To communicate with other applications and platforms (internal and external) the Data Asset REST API can be used as a point of integration.

This should be achieved by the following implementation approach:

- Leverage the approved Data Models to build a Data Property Model (DPM) which is a JSON (JavaScript Object Notation) Key-Value data store for the Data Asset; also build a DPM Manager Interface to enable modification of the Data Property Model
- Build and deploy a Logical Data Integration pipeline based on Change Data Capture (CDC) technology with the following components: CDC client, Index Manager and ETL services (clean, validate, transform to JSON and merge to JSON document model). CDC client will plug into a Data Robot Platform and the Hosted Web Forms/Portals
- Build REST API Document Search Interface: Authentication/RBAC Layer, Credential Management (API Keys), Rate Limiting, Pub-Sub (publish/subscribe) Framework, Endpoint Management, Content Versioning System (CVS), Runtime and Deployment.
- Build and Deploy Data Robot Platform: a suite of managed data scripts and services that pull/push data from/to a variety of sources; add support for native applications, databases, websites, local or remote documents, and external APIs.
- Build and Deploy Hosted Web Forms e.g., End-borrower's template and other data-collection assets/web pages. Build and deploy Dashboards and portals.
- Integrate Data Asset with complimentary technology solutions e.g., Web Filtering, Workflow management, Backup & Restore, Policy Manager, etc., to enable controls around Data Risk, Data Compliance, Data Security and Data Privacy.

Tools and skills that will be required are:

- Backend: JavaScript, Node.js, Python, Flask, Apache, SSL, JSON Web Tokens, Git
- Frontend: React, Chart.js
- Software Development

Data sources should include data containing the following:

- Macroeconomic data
- Financial statements of financial institutions in Nigeria (PFI data)
- MSME data in Nigeria

### **3. Deliverables and Reporting**

As part of the Firm's response to the Request for Proposals, a draft workplan shall be submitted, proving details of job specific milestones in response to the scope of work presented above.

The consultant shall work with the IT and Strategy & Policy departments of DBN, and in addition to job specific milestones to be agreed upon, the consultant shall provide the following:

- Inception report
- Weekly progress reports.
- Project completion report.

The following tasks are expected to be carried in completing the different phases which will also serve as milestones in the reporting and payments.

**Milestone 1** - Requirements Analysis, Design, Build, Test, Train and Deploy the data governance program described in the scope.

**Milestone 2** - Requirements Analysis, Design, Build, Test, Train and Deploy the DBN Data Asset described in the scope.

Typical tasks and procedure for executing the milestones shall largely involve the following:

- Determination and design of solution architectures
- Design of conceptual and logical data models
- Implementation of the physical databases containing tables, views, procedures, functions, and constraints.
- Implementation of appropriate database security models
- Coding of MVC data models, view models and controllers
- Coding of the data access classes and methods.
- Internal testing of the web service operations
- Deployment of the Web API in test environment for consumption and integration with the external data sources
- Design and organization of the UI structure
- Design of the user interfaces for each use case
- Determination and design of appropriate UI authentication and authorization solution
- Development of the UI services
- Development of the UI modules and components

#### **4. Payment Schedule:**

The firm will be paid upon timely submission of agreed deliverables as stated below. The firm shall submit undisputed monthly progress reports and other deliverables, that will be reviewed by the Head, IT and Head, Strategy & Policy.

Payment of contract sum will be made with respect to each deliverable as follows:

## **Milestone 1: Completion of Data Governance program**

### **Timeline: 12 Weeks after contract**

1. Conclusion of Data Governance Consulting and Framework Sign off -20% of contract sum.
2. Go Live - 30% of contract sum.

## **Milestone 2: Completion of DBN's Data Assets**

### **Timeline: 48 Weeks after contract**

3. Submission Detailed Requirement Gathering - 20% of contract sum.
4. User Acceptance Test and Go Live - 30% of contract sum.

## **5. Timeframe**

The assignment will be over a period of **twelve (12) months** from the agreed commencement date.

## **6. Qualification and Experience:**

The Firm must be qualified to and have experience and proven track record of providing the proposed services. The Firm must moreover have the necessary team of experts and subject specialists required to deliver the services outlined in the Scope of Work and should show evidence of the following:

1. Minimum of 5-year software development experience
2. 5 years system integration experience within the Financial Industry.
3. 5 years data engineering and analytics experience within the Financial Industry.
4. 3 References from relevant customer with nationwide presence
5. Has an acknowledged partnership with a cloud service provider preferable AWS or Microsoft Azure
6. Has experience in developing API portals, data integration with references from companies operating in the Finance Industry.
7. Expertise with best practices regarding:
  - user experience and usability testing
  - information architecture
  - Extend reach on multiple platforms.
  - Data integration with current apps and platforms.

The consulting firm should have:

1. 1 Solution Architect with 10 years' experience
2. 1 Data Architect with 10 years' experience
3. 3 Software developers with minimum of 3 years' experience
4. 2 Data Engineers with minimum of 3 years' experience
5. 1 Data Analyst with 3 years' experience storytelling experience
6. 1 Project Manager and Scrum Master with 5 years' experience