Terms of Reference

For

Development of Additional Software Modules and Integration with Eazybank AX™ Core Banking Software

Prepared by:
Development Bank of Nigeria Plc
The Clan Place, Plot 1386A,
Tigris Crescent, Maitama, Abuja

This Terms of Reference (ToR) describes the upgrade and enhancements of the Core Banking software (Eazybank AX™) required by the Development Bank of Nigeria Plc (DBN) to automate more critical business processes and improve their efficiency.

The upgrade and enhancements required to meet DBN's requirements are to be done by the owners of the software, Datalinks Finance and Systems Consulting Limited (Consultant).

1. Project Objectives

The development and provision of additional software solutions detailed in clause 2 below, and their integration with the existing installation of Eazybank AX™ core banking software.

2. Project Scope

The Consultant shall design, build, test, train and deploy the following software solutions and services:

a. Loans and End-borrowers MIS
b. IFRS9 Automation based on a model provided by DBN
c. Risk Management and ALCO Reports based models provided by DBN
d. Budget and Performance Management System
e. Remita Integration
f. Enterprise MIS and Data Analytics System

3. Software Deliverables

The Consultant shall provide the following:

- Use case diagrams and narratives
- Relational (logical) data models
- Web API specifications
- Software application files
- End-user training manuals
- Training of administrators and end-users

The following are the expected software features and functionalities to be provided under each of the six categories:

Loans and End-borrowers MIS

Loans New Features

1. Decoupling of the end-borrowers data upload from loan booking
2. Creation of new loan product for booking of work-in-progress loans
3. Flexibility in setting repayment date (uniform or non-uniform) for loans
4. Provision for viewing and reporting on upcoming repayments (collections)
5. Provision for viewing and reporting imminent loan maturities
6. Interest accrual to be carried out during end-of-day (EOD) processing
7. Loan simulations
8. Prepayments and rescheduling of loans without termination
9. Provision of secure Application Programming Interface (API) for loan application and collections

End-borrowers Information System (EBIS)

1. Bulk upload of end-borrowers data from Excel documents
2. Capture of end-borrowers data via direct data entry screens
3. Retrieval and editing of existing end-borrower's record
4. Deleting/dropping of undesired bulk upload
5. Deleting/dropping of a single undesired end-borrower's record
6. Ability to classify end-borrowers into loan buckets based on tenor, moratorium and repayment patterns
7. Ability to substitute/swap end-borrowers list
8. Ability to detect end-borrowers that have previously taken loans using their names and BVN
9. Ability to flag end-borrowers that have declined loans before, especially names that were swapped

10. API for the direct upload of end-borrowers data from third party applications
11. Robust end-borrowers data enquiry system with provision of extensive search features
12. Provision of data models with friendly column names for data extraction in read-only by end-users using analytical tools like Excel and other similar tools
13. Loan simulations with end-borrowers data
14. Generation of foreign partners quarterly reports
15. Provision of maker-checker entry and approval pattern
16. Redesign of the Power BI Service reports and dashboards
17. Power BI Mobile reports and dashboards.
18. Refinement of existing PowerBI portal

IFRS 9 Automation

1. Automation of the IFRS 9 model into the bank's core banking application (Eazybank AX™)
2. Generating the appropriate probability of default (PD-12 months and life-time), Loss Given Default (LGD), and the Exposure at Default based on the IFRS model account by account in the determination of the expected credit losses to the bank
3. Aligning with the model to adjust for macro-economic variables in the determination of "Significant Risk in Credit Risk" (SICR) since inception for the different PFI customers
4. Generation of the expected cash flow in the determination of the expected credit losses account by account
5. Generation of the expected credit losses (ECL) account by account and ability to stage the credit losses account by account
6. Classification of loans into three different buckets of stage 1, stage 2 and stage 3 based on the bank's model
7. Generating the impairment charge on the income statement and the impairment liability on the balance sheet of the bank
8. Generating impairment schedules account by account based on the parameter variables applicable in the determination of the expected credit losses

Risk Management and ALCO Reports

1. Generating the stress test reports and scenarios with the input sheets containing the following:
    a. The balance sheet components at any point in time, the qualifying capital (adjusted tier 1 and tier 2 capital), and total risk weighted assets (credit risks, market risk and operational risk);
    b. Generating the capital adequacy ratios based on the information in "a";
    c. The input sheets should have the information on the bank's largest exposures in terms credit disbursements and top providers of funds;
    d. Impairment categories into the different stages (1, 2 & 3);
    e. NPLs scenarios of 5%, 10% and 15%
2. Generating stress test reports with the assumption sheets captured in the system
3. Generating the stress test reports by applying information in the assumption sheet on the "credit risk sheet" to determine the different effects on the probability of default of the bank and by extension on the bank's impairment and expected credit losses
4. Stress testing the impact of interest rate on the bank's net interest margin, risk weighted assets, capital adequacy, return on assets and return on equity
5. Stress testing the bank's liquidity ratio on the following events:
    a. Systemic crisis affecting repayments given different repayments period;
    b. Increase in the bank's NPLs and its impact on the bank's liquidity;
    c. Recall of funding by providers of funds and the impact on the bank's liquidity;
    d. Suspension of funding by partners and the impact on creation of risk assets and liquidity; and
    e. Utilization of credit lines and the effect on the bank's liquid assets
6. Stress test the effect of increase in operational expenses on the bank's profitability based on the following:
    a. Increase in operating expenses to manage cyber-attacks;

   b. Loss of income due to crisis in Abuja & its environs due to the inability of the bank to operate;
   c. Effect of Hyperinflation on OPEX;
   d. Effect of fire in the Abuja offices & laptops burnt;
   e. Resignation of a key staff & the impact on the operations of the bank; and
   f. Effect of compliance fine by regulatory agencies due to breach in regulations
7. Generation of the output results based on the following:
   a. Shocks/impact on the pre-shock CAR, on the pre-shock LR, on the pre-shock ROA, on the pre-shock ROE and on the pre-shock NPL;
   b. Credit risk-impact of asset quality/impairment on CAR based on notch downgrades, migration of assets to later stages in the impairment category, exposures that is past dues to largest obligors & indirect exposures to Trade & Commerce;
   c. NPL results based on impact of past due on NPL premised on systematic crisis affecting repayment and exposure to Trade & Commerce migrating to loss;
   d. Impact of concentration risk on CAR;
   e. Impact of parallel shift in yield curve shocks on CAR;
   f. Impact of parallel shift in yield curve shocks on ROA;
   g. Impact of parallel shift in yield curve shocks on ROE;
   h. Impact of runs & concentration on liquidity;
   i. Impact of operational risk issues on CAR;
   j. Impact of operational issues on ROA; and
   k. Impact of operational issues on ROE
8. Generation of stress test result summary on for different scenarios (Base line, Best case, Most likely and Worst case) based on the following:
   a. Capital Adequacy (%);
   b. Non-Performing Loans;
   c. Liquidity Ratio;
   d. Return on Assets (ROA); and
   e. Return on Equity
9. Generation of Liquidity-Gap Analysis report based on maturity buckets and the GAP ratio

10. Generation of re-pricing "Liquidity-Gap" analysis report-based changes in the effective annual rate (EAR) between 100 basis points and 300 basis points. Effective of changes in the Asset net position based on changes in the interest rate and also changes in the net asset position
11. Generation of risk metric ratios as provided by the bank
12. Generation of risk appetite ratios as provided by the bank
13. Generation of exposure limit position by customers of the bank and net exposure limit position by customers
14. Definition and management of DBN liquidity metrics
15. Definition and management of DBN's ICAAP reporting requirements.

Performance & Budgeting

1. Uploading completed budget templates by units in each department and by departments. This is inclusive of the total global bank budget. The system should also be able to alternate by allowing direct input into the budget module in Eazybank AX
2. Ability of the system to compare actual performance against budget at the unit level, department level and at the global level. The budget is prepared based on the bank's chart of account. However, the system should be able to map the respective accounts in order to generate the comparison with the bank's financial statement. This process of comparing actual against budget would lead to the generation of variance analysis report
3. Creation of unit codes and department codes as advised by the bank to enable the system identify transactions (revenue, operating expenses and capital expenditures by units and by departments)
4. Capture performance at unit level and at departmental level based on the unique codes
5. Budget monitoring against actual unit by unit, while consolidating into the departmental and global level respectively
6. Ability to edit the yearly budget based on changes in business expectations

7. Expense analysis report to be generated at the unit and departmental level
8. Revenue reports to be generated at the different profit centre units
9. Ability of the system to apply different sharing formula on common expenses based on the basis of sharing advised by the bank
10. Other reports specified by the bank as it relates to the budget and actual performance can be generated
11. Creation of Power BI Service reports and dashboards
12. Creation of Power BI Mobile reports and dashboards

Remita Integration

The functionalities under this category will comprise of the regular outward payments and transfers on the Remita platform and other specialized services to be determined during the detailed requirements
analysis stage of the project.

Enterprise MIS and Data Analytics

1. Conceptual design of enterprise data warehouse (EDW)
2. Logical design of enterprise data warehouse (EDW)
3. Physical design of the enterprise data warehouse EDW
4. Development of tabular in-memory (Vertipaq) SSAS data models for independent data exploration by users
5. Development of SSIS packages for loading and integration of data from several departments into the EDW
6. Configuration of MS Data Quality Service (DQS)
7. Enhancement of the existing SSRS reports
8. Development of several Power BI reports and dashboards
9. Deployment of reports and dashboards for access via Power BI mobile platform
10. Technical training of DBN support team

11. End-users training on data exploration and creation of ad-hoc reports and dashboards

4. Tasks that support the Deliverables

First Milestone - Requirements Analysis, Design, Build, Test, Train and Deploy the following solutions and services:

1. Loan & End-borrowers MIS
2. IFRS9 Automation
3. Remita Integration

Second Milestone - Requirements Analysis, Design, Build, Test, Train and Deploy the following solutions and services:

1. Risk Mgt. & ALCO Reports
2. Budget & Performance Management
3. Enterprise MIS & Data Analytics

Typical tasks and procedure of execution of each of the two milestones shall largely involve the following:

1. Determination and design of solution architectures
2. Design of conceptual and logical data models
3. Implementation of the physical databases containing tables, views, procedures, functions and constraints
4. Implementation of appropriate database security models
5. Coding of MVC data models, view models and controllers
6. Coding of the data access classes and methods
7. Internal testing of the web service operations using Postman tool
8. Deployment of the Web API in test environment for consumption and integration with the third-party BPM solution
9. Design and organization of the UI structure
10. Design of the user interfaces for each use case
11. Determination and design of appropriate UI authentication and authorization solution
12. Development of the UI services
13. Development of the UI modules and components
14. Development of the UI routers
15. Internal acceptance testing by the Datalinks team

16. Deployment of application in a test environment
17. User acceptance testing (UAT) by the DBN team
18. End-users training
19. Deployment of application in a production environment

5. Timeline for completion of work

The following table is the high-level project plan showing the timelines for all the deliverables.

The Implementation period for the project is 6 months.

Post implement support will be for 1 year.

		Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
1	Requirements Analysis	2 weeks					
2	**Milestone 1:** Design, build, test, train & deploy the following: • Loan & End-borrowers MIS • IFRS9 Automation • Remita Integration		2 months and 2 weeks				
3	**Milestone 2:** Design, build, test, train & deploy the following: • Risk Mgt. & ALCO Reports • Budget & Performance Management				3 months		

	• Enterprise MIS & Data Analytics					

6. Location of work and resources, equipment, and facilities needed

All design and build activities shall be carried out in Consultant's Lagos and Abuja offices, while testing and deployment activities shall be carried out in DBN's head office in Abuja. Consultant shall be responsible for the provision of all development tools, while DBN shall be responsible for the provision of project management and requirements analysis and specification service, in addition to the provision of all hardware and network infrastructure, very fast internet access, meeting rooms, training room and conducive working environment during the testing and deployment phases of the project.

7. Criteria used to determine whether deliverables are acceptable and how they will be accepted

DBN shall be responsible for the generation of user acceptance testing (UAT) scripts and baseline acceptance criteria. Acceptance of the deliverables shall be determined by the level of success of the user acceptance testing.

8. Qualification and experience of key personnel required for the project

Personnel	**Educational Qualifications**	**Minimum Professional Experience**
Lead Software Developer	BSc. Computer Science/Computer Engineering, relevant IT certifications MSc, MBA (Preferred)	Over 15 years experience in banking systems development and management
Software Developer	BSc. Computer Science/Computer Engineering, relevant IT certifications	10 years experience –

		coding and development
Software Architect	BSc. Computer Science/Computer Engineering, relevant IT certifications	8 years experience – coding and development
Business Analyst	BSc. Computer Science/Computer Engineering/Maths/Statistics, relevant IT certifications	8 years experience – requirements gathering and development
Database Manager	BSc. Computer Science/Computer Engineering/Maths/Statistics, relevant IT certifications Oracle Suite.	5 years experience – Database management
Software Tester	BSc. Computer Science/Computer Engineering/Maths/Statistics, relevant IT certifications	5 years experience – UAT
Data Analyst	BSc. Computer Science/Computer Engineering/Business/Maths/Statistics, relevant IT certifications	5 years experience – Data Analytics and BI
Project Manager	BSc., MBA, PMP	10 years project management experience