



RURAL ELECTRIFICATION AGENCY
ENERGY – EMPOWERMENT – EFFICIENCY
NIGERIA ELECTRIFICATION PROJECT (NEP)



THE WORLD BANK

Terms of Reference (TOR)

For

Specialized Consultancy Services for Holistic Data Architecture Development, Unified Geospatial Solutions, Advanced Management Systems Integration, including Strategic Data Optimization and Enterprise Resource Management Solutions Deployment for the DARES

REA-NEP/C/QCBS/182/2024

November, 2024

1. Project Background

In 2018, the Federal Government of Nigeria secured a low-cost loan of US\$ 550 million (US \$350 million from the World Bank and US\$ 200 million from the African Development Bank) for the implementation of the Nigeria Electrification Project (NEP, P161885). The NEP, being the FGN's flagship off-grid access program was launched in 2018 with of aim of connecting more than 3.5 million people, 90,000 MSMEs, and public institutions (15 universities, two teaching hospitals, and 100 COVID-19 isolation centers). The NEP has been successful in delivering clean, reliable electricity to more than seven million people and had created an ecosystem for private sector led electrification in Nigeria supported by catalytic public sector subsidies administered as results-based financing (RBF).

Although the NEP has laid credible foundation to help Nigeria reach universal access by 2030 and achieve its Nationally Determined Contribution (NDC) commitments under Paris Agreement, a lot still has to be done towards achieving these ambitions.

In recognition of the need to further accelerate access to clean, reliable and sustainable power towards bringing to realization Nigeria's Energy Transition ambitions, the FGN in partnership with the World Bank have embarked on the implementation of the Nigeria Distributed Access Through Renewable Energy Scale-Up (DARES) Project with the aim of scaling-up on the existing impact of the NEP.

The DARES was launched by the World Bank in 2022 at COP 27 in Egypt. The Nigeria DARES ("DARES") project is the first World Bank initiative globally and seeks to accelerate electricity access to over 13 million Nigerians in rural, unserved and underserved peri-urban areas through the deployment of mini-grids (Isolated and Interconnected) and stand-alone solar solutions using innovative financial and de-risking instruments to triple the pace of electrification.

The DARES project which is a US\$750 million loan facility is funded by the IFC (debt facility) in collaboration with World Bank (IDA financing), to create the platform for scaling up private sector- led electricity access solutions.

Given the success of the NEP and mandate of the REA to further increase the deployment of sustainable energy access solutions to unserved and underserved parts of Nigeria, the DARES just like the NEP will be implemented by the REA through the existing Project Management Unit (PMU), and the REA has signed a subsidiary agreement with the Federal Ministry of Finance to initiate implementation of the DARES.

The DARES project has three components, all of which will be implemented by the REA:

1. Component 1: Solar Hybrid Mini Grids for Rural Economic Development (the total IDA commitment for Component 1 is USD410 million)
2. Component 2: Stand-alone Solar Systems for Homes and MSMEs (the total IDA commitment for Component 2 is US\$300 million)
3. Component 3: Technical Assistance (The total IDA commitment for component (US\$40 million)

The success of digital solutions like Odyssey, implemented in the Nigeria Electrification Project (NEP), has demonstrated the potential of leveraging digital platforms for monitoring and managing mini-grid projects. Building on this, REA aims to expand these proven solutions to drive key transformation initiatives across the programs in the agency. By adopting these advanced digital tools, REA will enhance project transparency, improve data-driven decision-making, and scale its operations effectively, ensuring alignment with its electrification goals. This transformation will also enable REA to better coordinate with stakeholders, ensure transparency and streamline its processes.

With the advent of Industry 5.0 automation and Web 3.0 engineering, manufacturers and developers (grantees) are also deploying advanced technology infrastructure in the execution of off-grid renewable energy and solar home system projects. These advancements have enabled capabilities such as remote monitoring, smart metering, and customer management systems, while also generating vast amounts of real-time data. The influx of these data sets has raised compliance concerns, particularly with respect to Nigeria's data protection and regulatory policies, which assigns REA a critical role as the primary data controller, ensuring that all data handling aligns with national standards and safeguards.

2. Objectives

The objective of the assignment is to drive the digital transformation of the Rural Electrification Agency (REA). This initiative aims to centralize and modernize the agency's operations, improve transparency, and enhance collaboration among stakeholders by leveraging cutting-edge digital solutions in line with the nation's renewable energy goals, evolving technological trends, and global standards.

Key objectives of the project include:

- I. Establish a Unified Organized Data Space (UODS) that ensures the centralization, accuracy, and consistency of data across all REA operations. This will serve as a foundation for advanced data management, enabling efficient decision-making and enhanced data-driven insights.
- II. Develop secure communication channels and collaborative platforms that promote efficient interactions between internal teams, external stakeholders, and development partners. These platforms will streamline the workflow for procurement, vendor management, and project monitoring, improving the overall productivity and operational efficiency of REA.
- III. Leverage advanced technologies such as Web 3.0, and Industry 5.0, to enhance remote monitoring capabilities, automate workflows, and integrate smart metering,

customer management systems, and geospatial tools. This transformation will optimize internal processes, allowing REA to manage complex energy projects with greater transparency and accountability.

- IV. Develop compliance frameworks that adhere to the Nigerian Data Protection Regulatory (NDPR) Act. The platform will provide robust data governance mechanisms to ensure compliance with local and international standards, safeguarding data integrity and security across all REA activities.
- V. the vendor registration and certification processes, track project milestones, and ensure timely payment processing. This will create a transparent and standardized procurement system that facilitates broader participation and competition among vendors, while reducing delays and inefficiencies.

3. Scope of Work

S/N	DESCRIPTION	TASKS
i	Implementation of Project Information and Feedback Unit (Call Center)	Establish an Online Chat Engine/ Whatsapp automation for Realtime stakeholder engagement on the REA website with automated responses for frequently asked questions.
		Implement and manage Toll Free Lines for users to access REA programs without paying for call credit.
		Deploy Call Assist Service with Voice Prompts using IVR systems for users to receive information or interact in preferred languages.
		Develop a digital feedback platform to manage stakeholders' engagement, provide smart office experience, and enhance efficiency.
		Provide biweekly/monthly reports and analytics on user engagements, including transcripts, call volumes, patterns, and trends.
		Maintain and scale up the Stakeholder Contact Database through regular call for subscription for strategic messaging and updates.

ii	Development of the Energy Information Dataspace, Data Protection & Retention	Implement a Unified Data Space (UODS) to interact with all relevant Data Processing entity for collating and warehousing datasets, customize visualization, and a mirrored repository of all REA datasets. This would create a "single" source of truth dataset ensuring data accuracy, consistency.
		Develop a Responsible Data Sharing Framework and smart contracts to define coordination roles, collaboration methods, and establish remote connections with Data Processors using standardized communication protocols.
		Establish standardized Application Programming Interfaces (APIs), documentation, and integration methods
		Ensure compliance with the Nigerian Data Processing Regulation (NDPR) by adopting appropriate technical and organizational measures for data security and integrity.
		Conduct Cybersecurity Awareness Training on data vulnerabilities, privacy policies, and secure document handling.
		Create a comprehensive data protection policy framework, and conduct data impact assessments
		Create Backup and Recovery Strategies to safeguard critical project data and ensure business continuity.
		Implement Data Impact Assessment, Data Sharing Lifecycle Management Agreement and Consent Mechanism for responsible data usage and sharing.
iii	Development of Dedicated Web Services and Online Application Portals	Cloud Migration of REA Webserver, Upgrade of the REA Website and redesign of the NEP subdomain to enhance user experience and showcase programs.
		Development of Data Collection Portal for REA projects.
		Redesign of the NEMSA application fast track.
		Redesign a Minigrid NERC Permit Portal for fast tracking applications for the Solar Hybrid Mini Grid Component for All REA projects
		Redesign a Minigrid Environmental Impact Assessment (EIA) Permit Portal for All REA projects for streamlined permit applications.
		Develop Digital Visitors Roaster
iv	Development of REA Procurement and Portfolio	Implement E-Procurement and Bidding Management system for digitalizing procurement activities, from tender advertisements to bid evaluations, ensuring transparency and efficiency.

	Management Platform	Establish a structured Vendor Management system for onboarding, evaluating, and maintaining vendor profiles. This is a Centralized Vendor Registration Portal allowing vendors to submit documents, update profiles, and participate in multiple tenders.
		Develop a Contract Management module for handling the complete contract lifecycle from creation, seamless approval to execution.
		Create a Collaboration and Communication platform for effective interactions between REA designated staff and external stakeholders.
V	Development of the REA Project Monitoring and Performance Hub (MPH)	Implement a advanced Business Intelligence (BI) dashboards for providing a single reference towards global program overview, visualizing impacts, tracking KPI's and program achievement.
		Integrate Geo Spatial Visualization for Live monitoring of project status, project performance and data collection
		Implement IoT enabled monitoring of renewable energy assets for real-time operational health tracking and financial performance monitoring with automated alerts.
		Build an Automated Reporting and Analytics component for real-time trend analysis on project performance and impact metrics.
		Develop a Post Implementation Monitoring Module for tracking the operational and financial sustainability of SPV projects.
vi	Development of the Modern Digital Workspace	Migrate from Google Workspace to Microsoft 365, providing REA with a unified communication and collaboration platform, including Business intelligence platform, AI based automation and IoT integration.
		Head Office and Zonal Office Connectivity: Establish a resilient network infrastructure for REA's offices using secure configurations, Network Monitoring, high-speed connectivity solutions, and optimized bandwidth management to support seamless collaboration.
		Develop Custom Document Processes to digitize forms, capture data, and automate document workflows, reporting and approval including e-signature integrations
		Implement Optical Character Recognition (OCR) and Document Archival Technology and other relevant technologies for converting paper documents into searchable and structured digital formats to digitize all achieve documents.

		Implement an Enterprise Document Management system (EDMS)
		Develop Workflow Automation using Power Automate for eliminating manual document handling and streamlining operations.
		Establish Access Control and Compliance Management using RBAC and Microsoft Compliance Manager for security and data governance.
		Implement Data Loss Prevention (DLP) policies to protect sensitive information across Exchange, SharePoint, and OneDrive.
		Establish Advanced Threat Protection (ATP) to defend against sophisticated threats like phishing, malware, and ransomware.
		Track document access and generate compliance reports using Microsoft Compliance Manager for adherence to industry standards.
		Implement Role-Based Access Control (RBAC) to ensure permissions are assigned based on the principle of least privilege, securing sensitive data.
		Utilize Advanced Data Governance tools for classifying, labelling, and protecting sensitive information.
vii	Comprehensive end-2-end Training for REA and NEP Staff	<p>Training on Project Information and Feedback Unit (Call Center): REA staff will learn to manage online chat engines, IVR systems, whatsapp automation and toll-free lines. Training will also cover generating analytics reports, maintaining stakeholder databases, and troubleshooting digital feedback platforms to ensure smooth operations.</p> <p>- Training on Energy Information Database, mapping, backup and archiving, Data Protection & Retention: Staff will receive hands-on training on UODS implementation, API management, NDPR compliance, data governance frameworks, cybersecurity policies, and performing data impact assessments. Backup strategies and disaster recovery planning will also be emphasized.</p> <p>- Training on Cloud server technology, full stack deployment and Online Portals: REA staff will be trained to manage the cloud server deployment and migration of the REA web services and become proficient with hybrid environments such as Microsoft Azure. The training will include capacity building for IT staff to develop, maintain, and update cloud resources and empowered to create new digital platforms (e.g., NEMSA fast-track, Minigrad Permit portals) independently.</p>

		<p>- Training on Procurement and Portfolio Platform: Staff will gain expertise in operating the e-procurement platform, managing vendor profiles, and overseeing the contract management system throughout the contract lifecycle. Collaborative communication with internal and external stakeholders will be a focus.</p>
		<p>- Training on Project Monitoring and Performance Hub (MPH): Consultants will train staff on the use of advanced BI dashboards, IoT-enabled monitoring systems, automated reporting, and post-implementation tracking tools for continuous project performance evaluation.</p>
		<p>Training on Modern Digital Workspace: Staff will participate in hands-on sessions on Microsoft 365, network configuration, and workflow automation. They will also be trained on EDMS implementation, access control with RBAC, and applying security measures such as DLP policies and Advanced Threat Protection (ATP).</p>

4. Methodology

The methodology outlined for each initiative is guided by a systematic approach focusing on planning, execution, testing, and optimization. This ensures that the solutions are not only functional but also scalable and sustainable in the long run. The following methodologies are suggested to provide a structured pathway from conceptualization to deployment, ensuring that every component of the digital strategy contributes to the broader goals of REA's digital transformation. However, the Consultant may propose other alternative methodologies that will enhance achievement of the objectives of this assignment.

Here's a detailed methodology for each recommended scope of work:

4.1 Development of Project Information and Feedback Unit

Objective: To enhance real-time communication, provide efficient feedback management, and engage stakeholders through a multi-channel approach.

- a. Requirement Gathering:
 - Engage key stakeholders to define expectations and functional requirements for the call center.
 - Map out call flows, language preferences, and frequently asked questions (FAQs).
- b. System Design:
 - Develop a blueprint for an integrated Online Chat Engine and IVR system.
 - Design a digital feedback platform and implement user engagement metrics.
 - Create the stakeholder contact database structure, ensuring scalability for future expansions.
- c. Deployment:
 - Set up and configure the Online Chat Engine, integrating WhatsApp automated responses.
 - Implement the Toll-Free Lines with Call Assist Service and configure IVR for multilingual support.
 - Develop and deploy the feedback platform, integrating with the REA website.
- d. Testing and Quality Assurance:
 - Test system interactions, voice prompts, and chat functionalities to ensure they meet defined success criteria.
 - Conduct user acceptance testing (UAT) and modify based on feedback.
- e. Training and Support:
 - Train relevant staff on handling calls, using the feedback platform, and generating reports.
 - Provide guidelines for managing the Stakeholder Contact Database and subscription processes.
- f. Analytics and Continuous Improvement:
 - Implement analytics tools for tracking call volumes, patterns, and trends.
 - Review reports biweekly/monthly and refine engagement strategies based on analytics.

4.2. Development of the Energy Information Dataspace, Data Protection & Retention

Objective: To establish a unified data infrastructure for accurate data management, security, and compliance.

- a. Requirement Analysis:
 - Identify data sources, existing data processors, technology and define data collection points.
 - Develop a Data Retention Schedule based on regulatory requirements and business needs.

- b. System Design:
 - Design a Unified Organized Data Space (UODS) framework with scalable data models.
 - Establish a Responsible Data Sharing Framework that outlines roles, consent mechanisms, smart contracts, and data-sharing lifecycle management.
- c. Implementation:
 - Deploy the UODS and connect with relevant data processors using standardized communication protocols.
 - Implement data protection policies, create APIs for external integrations, and ensure compliance with NDPR.
 - Set up cybersecurity measures and backup strategies.
- d. Training and Awareness:
 - Conduct cybersecurity and data protection training for staff to promote secure data handling practices.
 - Establish guidelines for data impact assessment and responsible data usage.
- e. Monitoring and Reporting:
 - Develop automated tools for monitoring data integrity and usage.
 - Generate compliance reports regularly and ensure adherence to data governance policies.
- f. Continuous Compliance Review:
 - Update the data protection framework periodically to align with changing regulatory requirements.
 - Conduct regular data impact assessments and revise strategies accordingly.

4.3 Development of Dedicated Web Services and Online Application Portals

Objective: To enhance REA's online presence through dedicated sub-portals and streamlined permit application processes.

- a. User Requirements Gathering:
 - Engage stakeholders to understand specific needs for each sub-portal (e.g., DARES, Minigrad NERC Permit, EIA).
 - Define user personas and expected workflows for each application portal.
- b. System Design:
 - Design the website structure and subsite layouts, ensuring ease of navigation.
 - Develop wireframes for Minigrad permit application portals, incorporating all compliance steps.
- c. Development:
 - Implement the upgraded REA website using a modular approach to support future scalability.
 - Develop each portal based on standardized templates to ensure consistency in design and functionality.

- d. Testing and Quality Assurance:
 - Conduct functional and user testing for each sub-portal to validate the submission processes.
 - Optimize the portals for mobile responsiveness and accessibility.
- e. Maintenance and Updates:
 - Set up a content management plan for regular website updates.
 - Implement a feedback mechanism to track user experience and make iterative improvements.
- f. User Engagement and Analytics:
 - Track user interactions, analyze behavior patterns, and provide insights for optimizing portal performance.

4.4 Development of REA Procurement and Portfolio Management Platform

Objective: To create a comprehensive platform for procurement, vendor management, contract handling, and staff collaboration.

- a. Scoping and Requirement Gathering:
 - Identify and document all required modules, including E-Procurement, Vendor Management, Contract Management, and Communication Platform.
 - Engage users and stakeholders to define workflows and approval processes.
- b. Platform Design:
 - Develop a blueprint for each module, defining interdependencies and integration points.
 - Create user roles and permissions aligned with REA's procurement policies.
- c. Development and Integration:
 - Implement the E-Procurement system, including tender creation, bid evaluations, and vendor profile management.
 - Develop the Contract Management module with automated notifications and approval workflows.
- d. Testing and Validation:
 - Test each module independently and as a unified platform.
 - Ensure data consistency and seamless information flow across all modules.
- e. User Training and Change Management:
 - Conduct workshops for REA staff on using the platform, managing bids, and handling contracts.
 - Develop a training manual and helpdesk support system.
- f. Continuous Optimization:
 - Regularly update the platform based on user feedback and emerging needs.
 - Integrate additional functionalities as required.

4.5 Development of the REA Project Monitoring and Performance Hub (MPH)

Objective: To provide real-time insights and enhanced monitoring of REA projects using advanced BI tools and geospatial visualization.

- a. Needs Assessment:
 - Identify the KPIs and metrics to be tracked across different projects.
 - Map out data sources for live monitoring, geospatial analysis, and IoT integration.
- b. Solution Design:
 - Design a data architecture that supports real-time data ingestion, processing, and visualization.
 - Develop IoT-enabled systems for monitoring renewable energy assets.
- c. Implementation:
 - Build BI dashboards for visualizing program impacts, achievements, and KPI trends.
 - Implement Geo-Spatial Visualization and IoT solutions for real-time project performance monitoring.
- d. Testing and Calibration:
 - Test the data pipelines, dashboards, and IoT sensors for accuracy and reliability.
 - Conduct pilot runs to validate system performance.
- e. Deployment and Training:
 - Deploy the platform, ensuring secure access for authorized personnel.
 - Train staff on using the MPH for data-driven decision-making.
- f. Performance Review and Enhancement:
 - Implement automated reporting for trend analysis and continuous performance tracking.
 - Integrate predictive analytics for proactive decision-making.

4.6. Development of the Modern Digital Workspace

Objective: To transform REA's digital landscape by migrating to a unified Microsoft 365 environment, establishing secure and efficient collaboration systems.

- a. Assessment and Planning:
 - Review existing infrastructure (Google Workspace) and define migration paths for data, applications, and workflows.
 - Develop a detailed implementation plan covering Office 365, Azure AD, and collaboration tools.
- b. System Configuration:
 - Set up Microsoft 365 tenants, define roles, and configure compliance policies.
 - Implement Enterprise Document Management System (EDMS).
- c. Data Migration:
 - Migrate emails, documents, and settings from Google Workspace to Microsoft 365.

- Verify data integrity and implement data protection policies.
- d. Deployment and Training:
- Deploy Windows Autopilot for automated device management.
 - Train staff on using the new collaboration tools, document management, and security protocols.
- e. Security and Compliance:
- Implement Data Loss Prevention (DLP), Role-Based Access Control (RBAC), and Advanced Threat Protection (ATP).
 - Configure Microsoft Compliance Manager for adherence to NDPR and industry standards.
- f. Network Deployment in Head office and Zonal Offices:
- Establish a high-speed, secure, and scalable network across the head office and branches.
 - Provide redundancy and failover mechanisms to ensure network availability.
 - Implement network security measures to protect the infrastructure from cyber threats.

5 DELIVERABLES AND PAYMENT TERMS

SN	Deliverables/Reports	Description	Timelines/Duration from date of commencement	Payment Terms (% of Contract Sum)
i	Inception Report, internal operations and Data Assessment, Scoping and mapping requirements	<ul style="list-style-type: none"> • Report on stakeholder engagement, assessment of current feedback mechanisms, and call center architecture. • Report covering internal work processing, data quality assessment, data sources, and recommendations for data retention and protection. • Assessment of current web infrastructure and requirements gathering for new web service and portals. • Detailed report on platform requirements, stakeholder engagement, and technical architecture for procurement process 	2 months	5%

		<ul style="list-style-type: none"> • Report on monitoring requirements, data sources, technology, and KPIs for real-time tracking • Comprehensive plan covering infrastructure assessment for the Enterprise resource management system and effective migration of Google Workspace to Microsoft 365 		
ii	<ul style="list-style-type: none"> • Implementation of Project Information and Feedback Unit (Call Center) • Design of Sitemaps, Architectural Frameworks, UI/UX for Web Services and data application services 	<ul style="list-style-type: none"> • Development and deployment of an Online Chat Engine with automated responses. • Configuration and deployment of Toll-Free Lines and IVR systems for multilingual support. • Design, develop, and deploy a digital feedback platform for efficient stakeholder management. • Implementation of the reporting dashboard for biweekly/monthly user engagement analytics. • Design of sitemaps, wireframes, data models, dashboards for the REA website, DARES subsite, permit fast-track portals, Data Collection Portal E-Procurement, Vendor and Contract Management Module, UODS, MPH, visitors' roster, including user journeys, integration points, and compliance measures • Design of BI dashboards models for KPI tracking and program overview 	5months	10%
iii	<ul style="list-style-type: none"> • Development and Deployment of Dedicated Webpages and Permit Application Portals, 	<ul style="list-style-type: none"> • Migration to cloud services, redesign and deployment of the REA and NEP webservice • Redesign and deployment of Minigrid NERC, NEMSA and EIA permit portals. • Development and Deployment of Digital Visitors' roster • Development of Reporting and Approval Portal for the DARES 	10months	15%

		<ul style="list-style-type: none"> • Development of Mobile Data Collection app • Testing and optimization of website and portals for responsiveness and accessibility. 		
iv	Development and Deployment of Unified Organized Data Space and geospatial and analytical tools	<ul style="list-style-type: none"> • Implementation of UODS with data security measures in compliance with NDPR • Development and deployment of standardized APIs documentation, smart contracts, for data sharing and interoperability • Development and deploying of geospatial tools for REA achievements • Implementation of data protection policies and backup strategies. 	15months	15%
v	Development and Deployment of the REA e-procurement and portfolio management system	<ul style="list-style-type: none"> • Development and deployment of the E-Procurement and Bidding Management system. • Development and deployment of the Vendor Management system for vendor onboarding and evaluations. • Development and deployment of the Contract Management module for lifecycle management. • Implementation of a Collaboration Platform for internal and external communication. 	19 months	10%
vi	Development and Deployment of the REA Project Monitoring and Performance Hub (MPH)	<ul style="list-style-type: none"> • Development and deployment of IoT-enabled monitoring and geospatial visualization tools. • Implementation of automated reporting and analytics tools for trend analysis. • Development of a post-implementation module for financial and operational sustainability tracking. 	23months	10%
vii	Development of the Modern Digital Workspace	<ul style="list-style-type: none"> • Setup of M365 tenants, role configurations, and compliance policies. 	30months	20%

		<ul style="list-style-type: none"> • Development and deployment of SharePoint-based EDMS. • Establishment of secure network infrastructure for head and zonal offices. • Implementation of Power Automate for document workflows and automation. • Implementation of RBAC, DLP policies, and Advanced Threat Protection. 		
viii	Trainings, Handover & Documentations	<ul style="list-style-type: none"> • Conduct training sessions for staff on Cloud services, end-to-end ERP solutions, full stack deployment cybersecurity measures, smart contract, Microsoft 365 deployment and compliance policies as well as provide all their necessary documentations and manuals. 	34months	10%
ix	Final Report, Evaluation and Compliance Audit	<ul style="list-style-type: none"> • Final evaluation report covering performance, test results, user feedback, recommendations, project achievements, challenges, and recommendations for future scalability. • Compliance audit and detailed documentation for the data management framework with Compliance certificate from NDPC 	36months	5%

6 Qualifications and Experience Requirements

6.1 Qualification of Firm

- The consultancy firm with the following qualifications and requirements are invited to participate in this assignment:
 - i. The firm will be a consulting firm with a minimum of seven (7) years of operational existence as an organization;
 - ii. Must have executed/completed a minimum of Two (2) similar assignments in the last five (5) years that include at least 3 of these key tasks.

- a. Development of holistic data architectures, integrating multiple scalable data sources, with compliance to data quality and governance
- b. Development of unified geospatial solutions, including GIS, spatial data analysis, and system mapping
- c. Deployment of enterprise resource management solutions, dynamic web services, data collection applications, ERP, CRM including HR, finance, smart contract and supply chain management.
- d. Managing large-scalable programs, including project planning, risk management, stakeholder identification and engagement.
- e. Consultant must have built an interactive digital and dashboard center for real time data monitoring and evaluation.

III The consultant must have demonstrated experience in managing nationwide programs.

Documentary evidences such as letters of award, completion certificates, and evidence of payments, that demonstrate qualification must be provided.

6.2 Qualification and Experience of Personnel

The Consultant shall provide the following experienced key personnel to carry out the assignment with the following minimum qualification requirements:

i. Technical Project Manager: Bachelor's Degree in project management, computer/communication/electronics engineering, software development, or related field; Minimum of ten (10) years' experience in managing complex software projects; strong leadership and communication skills extensive experience in software system architecture design; conversant with web.30 engineering and industry 5.0. process of automation and experienced in managing technology projects using Agile methodologies. Understanding of business operations and processes and Ability to communicate technical concepts to non-technical stakeholders.

ii. UX/UI Engineer: Bachelor's Degree or its equivalent in graphical user design, human-computer interaction, computer science or related field; Minimum of five (5) years experience in user interface and user experience (UI/UX) design is required. Skilled in creating user-friendly interfaces and ensuring a positive user experience. Proficiency in creating user-centric designs for web applications, with experience in Web 3 engineering.

iii. Solutions Architect: Minimum of a Bachelor's Degree or its equivalent in Computer Science, Information Technology, or related field and certification in at least one cloud service provider (e.g., Google cloud, AWS, Azure). Must be proficient in programming languages (e.g., javascripts, Java, Python, C#), with Knowledge in software development life cycles (SDLCs) and agile methodologies. and familiarity with DevOps practices and tools (e.g., Docker, Kubernetes).

iv. Data protection/governance specialist: Must possess a minimum of Bachelor's Degree or its equivalent in Computer Science, Information Technology, Law, or related field. Should also have at least a certification in one of CIPP, CIPM, GDPR and knowledgeable in data protection regulations (e.g., NDPR, GDPR, CCPA, HIPAA), data governance frameworks and standards (e.g., COBIT, NIST), data warehousing, and data security measures (e.g., encryption, access controls) and experience with data mapping, classification, data subject rights and requests.

v. Quality Assurance Engineer: Must possess a minimum of a Bachelor's Degree or its equivalent in Computer Engineering, Computer Science, Information Technology, or related field. Should be proficient in using various database and operating system testing tools. with at least one certification in software testing, knowledge of DevOps engineering. Must have a minimum of seven (7) years in quality assurance practices.

vi GIS Expert: Must possess a minimum of a Bachelor's Degree or its equivalent in Geography, Computer Science, Environmental Science, or related field and certification in GIS is required. Must show Proficiency in the use of ArcGIS and other spatial databases and data formats like shapefiles and Geojson. Must be familiarity with industry-specific GIS applications (e.g., urban planning, natural resources). spatial analysis and modeling and knowledge of remote sensing and photogrammetry and web mapping technologies (e.g., Leaflet, json, JavaScript and Open Layers/map box).

vii. Frontend Software Developers: Must possess a minimum of a Bachelor's Degree in Computer/software Engineering, computer science Telecommunication and related discipline. Certifications in Internet webmaster certifications or its equivalent is required. Knowledgeable in at least 2 front end frame work, preferable REACT and angular.

viii Backend /API & Database Developers: Must possess a minimum of a Bachelor's Degree in design Computer Engineering, Telecommunication and/or related discipline. Experienced in creating and managing APIs, with expertise in integrating third-party APIs and ensuring seamless data exchange between systems.

7. Risk Assessment

7.1 Risk Identification

1. Data breach
2. Data loss
3. Failed NDPR Audit

7.2 Risk Mitigation Strategies

i. Implement Strong Access Controls:

- Use multi-factor authentication (MFA) to ensure that only authorized users can access sensitive data.
- Regularly review and update user access permissions based on the principle of least privilege.

ii. Encrypt Sensitive Data:

- Use strong encryption methods for data both at rest and in transit to protect it from unauthorized access.
- Ensure encryption keys are securely managed and regularly rotated.

iii. Conduct Regular Security Audits and Assessments:

- Perform regular security audits and vulnerability assessments to identify and address potential weaknesses.
- Use penetration testing to simulate attacks and evaluate the effectiveness of security measures.

iv. Implement Intrusion Detection and Prevention Systems (IDPS):

- Deploy IDPS to monitor network traffic for suspicious activity and potential threats.
- Ensure that these systems are regularly updated with the latest threat intelligence.

v. Establish Strong Password Policies:

- Enforce the use of strong, complex passwords that are regularly changed.
- Implement policies that prevent the reuse of passwords across multiple accounts.

vi. Implement Data Loss Prevention (DLP) Solutions:

- Use DLP tools to monitor and control the movement of sensitive data within and outside the organization.
- Set up policies to prevent unauthorized sharing or transfer of sensitive information.

vii. Develop and Test Incident Response Plans:

- Create a comprehensive incident response plan that outlines the steps to take in the event of a data breach.

- Regularly test and update the plan to ensure its effectiveness and that all team members are familiar with their roles.
- viii. **Use Secure Communication Channels:**
- Ensure that all communications involving sensitive data are conducted over secure channels, such as VPNs and encrypted email services.
- ix. **Monitor Third-Party Vendors:**
- Assess the security practices of third-party vendors and ensure they comply with your security standards.
- Include data protection clauses in contracts and regularly monitor vendor compliance.
- x. **Implement Physical Security Measures:**
- Ensure that physical access to systems and data centers is restricted and monitored.
 - Use security measures such as access badges, surveillance cameras, and secure locks.
- xi. **Regular Backups:**
- Perform regular backups of all critical data. Use automated backup solutions to ensure consistency.
 - Store backups in multiple locations, including offsite and cloud storage, to protect against physical damage or loss.
- xii. **Implement Redundant Systems:**
- Use redundant hardware and storage systems, such as RAID (Redundant Array of Independent Disks) configurations, to prevent data loss due to hardware failure.
 - Employ failover systems to ensure continuous operation in the event of a component failure.
- xiii. **Use Reliable and Secure Storage Solutions:**
- Invest in high-quality, reliable storage solutions with built-in data protection features.
 - Regularly monitor and maintain storage hardware to prevent failures.

8. Reporting

The consultant shall be reporting to the Head, Nigeria Electrification Project Payments to the Consultant will be made upon submission and approval of relevant reports towards achieving the deliverables listed above. Every report shall be submitted in one (1) soft and three (3) hard copies.

9. Duration of the Assignment

The duration of the assignment shall be for an initial period of thirty-six (36) months with the possibility of extension upon satisfactory performance.

10. Facilities to Be Provided by the Client

The REA will provide the Consultant with the relevant documents and information to enable the consultant meet deliverables.

11. Selection Method

Consultant will be selected in accordance with the Quality Cost Based Selection (QCBS) set out in the Procurement Regulations for IPF Borrowers dated September 2023, *Fifth edition*, available on www.rea.gov.ng/.