

MINISTRY OF INFORMATION AND COMMUNICATIONS



REPUBLIC OF SIERRA LEONE

**SIERRA LEONE DIGITAL TRANSFORMATION PROJECT
IDA- E1130-SL**

**Draft
Terms of Reference
for**

Conduct a comprehensive National Digital Infrastructure and Technology Access Gap Survey and the development of a scalable and robust Digital Infrastructure, Technology and Services Database

SL-MoFED-439577-CS-QCBS

November 2024

Terms of Reference

National Digital Infrastructure and Technology Access Gap Survey and Development of a scalable and robust Digital Infrastructure, Technology, and Services Database

I. Introduction

The UADF was established by the National Telecommunications Act, 2006, as revised by the National Telecommunications Authority Act, 2022 to promote the provision and expansion of universal access to telecommunications infrastructure and services, and the utilization of basic ICT and broadband services in underserved and unserved communities, especially in remote and rural areas, in Sierra Leone.

The Fund was established due to the deliberate efforts of the Government of Sierra Leone to drive connectivity and to build the capacity of remote and rural communities, to leverage the digital technological opportunities essentially to close the digital divide and to foster inclusive economic growth and diversification, in line with the Government’s National Digital Development Policy and the Sierra Leone Medium-term National Development Plan (2024-2030).

II. Project Description

The World Bank in 2022 awarded a grant to the Government of Sierra Leone in support of its digital transformation aspirations as established in the Sierra Leone Digital Transformation Project – SLDTP (P177077) objectives. The goal of the project is to expand access to broadband internet, increase digital skills and improve the government's capacity to deliver public services digitally. Component 1 of the P177077, “Expanding Digital Access and Increasing Resilience of the Digital Environment”, Sub-component 1.3, “Inclusive Access for Underserved and Marginalized Communities”, aligns very strongly with the mandate of the UADF to promote the delivery of affordable access to digital services in underserved and unserved communities. As a result of their shared objectives, the UADF in collaboration with the World Bank is therefore seeking to recruit a technical consultant to carry out a comprehensive National Digital Infrastructure and Technology Access Gap Study in conjunction with the development of a scalable and robust Digital Infrastructure, Technology and Services Database.

The TOR establishes the terms of reference for the recruitment of a reputable, experienced and qualified consulting firm with the requisite requirements to carry out the exercise as stated in this document.

In compliance with the objective of this TOR, completion of the assignment shall mean:

1. Submission of final report for the comprehensive National Digital Infrastructure and Technology Access Gap study.
 - The report outlines the methods used to identify and categorize, as well as provide the analysis for the underserved or unserved communities. It shall give a clear definition of underserved and unserved communities.
 - The report shall be in accordance with the objectives, scope, and requirements as established by this TOR.
2. Validated and approved by UADF, Ministry of Communications, Technology and Innovation (MoCTI), National Communications Authority (NatCA), SLDTP-PCU and other Stakeholders, a scalable and robust National Digital Infrastructure, Technology and Service Database, that meets the requirements as outlined by this TOR.

III. PROBLEM STATEMENT

The Universal Access Development Fund (UADF) is mandated to promote access to affordable digital technology and services in underserved and unserved communities in Sierra Leone. However, it is necessary to conduct a comprehensive study assessing the broadband access gaps in the country and the absence of a comprehensive database on digital infrastructure, technology, and services has significantly constrained UADF's ability to fulfill this mandate effectively. Therefore, UADF seeks to contract a reputable firm to develop a relational database that will encompass a wide array of data sets, including population, housing, energy, roads, health centers, schools, amusement parks, touristic places, and farming communities.

IV. Objective of Study

The **primary objective** of this consultancy is to conduct a comprehensive National Digital Infrastructure and Technology Access Gap Study in conjunction with the development of a scalable and robust Digital Infrastructure, Technology and Services Database (DITSD). This process shall include digital infrastructure, technology and services mapping, data gathering, storage and management. The assignment is divided into two (2) components:

- a. Conduct National Digital Infrastructure and Technology Access Gap Study
- b. Development of a scalable and robust National Digital Infrastructure, Technology and Services Database

The **specific objectives** of the assignment include but not limited to:

- a. Conduct National Digital Infrastructure and Technology Access Gap Study
 1. Conduct a stakeholders' analysis involving all stakeholders in the ICT ecosystem. The purpose of this process is to identify, map and analyze all relevant stakeholders.
 2. Conduct desk reviews of existing literature (including reports and data) on digital technology, infrastructure and services deployment, usage and status.
 3. Assess and collect data on existing availability of digital infrastructure and broadband connectivity, and their geospatial arrangement across all 16 administrative districts in Sierra Leone, which will feed into the database development (deliverable b).
 4. Analyze population and geographic parameters, technology and service gaps, including internet access, mobile and fixed connectivity, and ICT infrastructure.
 5. Analyze existing entities and network service providers, both licensed and unlicensed, including their innovation, sustainability, and operating models in the identified un- and under-served communities
 6. Identify and define underserved and unserved communities.
 7. Recommend support areas for UADF to consider to bridge the identified connectivity access and usage gaps
- b. Development of a scalable and robust National Digital Infrastructure, Technology and Services Database
 8. Develop a scalable and robust database system, with GIS capabilities, to store and manage data related to digital infrastructure, connectivity, and service coverage based on the aforementioned access gap study
 9. Provide data-driven insights for the development of regulatory, policy and programmatic frameworks for informed decision-making.

V. Scope of Assignment and Technical Assessment

The scope of assignment for the consulting firm comprises the following key tasks and responsibilities:

1. **Comprehensive Access Gap Study:** The consulting firm shall conduct a thorough and extensive access gap study within Sierra Leone, which includes, but is not limited to:
 - ✓ Examination of existing and planned digital infrastructure, connectivity, and technology distribution across urban and rural areas.
 - ✓ Benchmarking Sierra Leone's digital landscape against regional and global standards and best practices.
 - ✓ Identification and categorization of underserved and unserved communities and regions.
 - ✓ Analysis of technology and service gaps, encompassing factors such as internet accessibility, mobile and fixed connectivity, and ICT infrastructure.
 - ✓ Evaluation of digital literacy and digital service adoption rates.
2. **Data Collection and Analysis:** The firm shall employ rigorous data collection methodologies, including surveys, interviews, focus group discussions, and data analytics, to acquire accurate and up-to-date information on digital access gaps and services utilization. The data collected shall be analyzed systematically to provide valuable insights.
3. **Database Development:** The consulting firm shall design, test and develop a scalable and robust database infrastructure for infrastructure, service mapping, and feature data collection and storage.
4. **Stakeholder Engagement:** The consulting firm shall actively engage with relevant stakeholders, including government agencies, local communities, telecommunications providers, and international organizations. This engagement will facilitate information gathering, knowledge sharing, and collaboration throughout the study.
5. **Technical Expertise:** The firm shall demonstrate a high level of technical expertise in access gap analysis, data management, and statistical analysis. It shall leverage modern tools and methodologies to ensure data accuracy and reliability.
6. **Technical Assistance and Training:** As part of the project, the consulting firm shall provide technical assistance and training to UADF officials and relevant stakeholders. This will empower them to interpret and utilize the study's findings effectively for policy and regulatory purposes.
7. **Reporting and Documentation:** The firm shall submit regular progress reports detailing the status of the access gap study. Additionally, a comprehensive final report shall be provided, encompassing all findings, recommendations, and relevant data sets. All reports shall adhere to high standards of clarity, accuracy, and professionalism.
8. **Data Security and Privacy:** The consulting firm shall ensure the strict adherence to data security and privacy measures throughout the data collection and analysis processes, especially when dealing with sensitive information.
9. **Quality Assurance:** Quality control mechanisms shall be put in place to validate the accuracy and integrity of the data collected, analyzed, and reported on.
10. **Project Timeline:** The firm shall adhere to the project timeline, meeting all milestones and deliverables as stipulated in the agreement with the UADF.

11. **Flexibility and Adaptability:** The consulting firm should be adaptable to evolving project requirements and be prepared to adjust methodologies and strategies as necessary to achieve the project's objectives.
12. **Regular Evaluation:** The firm shall participate in regular project evaluation sessions with the UADF and its stakeholders to assess progress, address challenges, and ensure alignment with project goals.

By adhering to this comprehensive scope of assignment, the consulting firm will play a vital role in generating accurate and actionable data to support the UADF's efforts to bridge the digital divide and improve connectivity and digital services for underserved and unserved communities.

VI. Database Development and System Requirements

Scope of Work:

1. Database Design and Architecture:

- a. Design a relational database schema that supports the integration of diverse data sets.
- b. Ensure scalability, security, and ease of data retrieval and management.
- c. Develop a user-friendly interface for data input, query, and reporting.

2. Data Sets: The datasets required for this exercise shall include coordinates of points, polygons and lines, and their attributes datasets, preferably in GIS file formats (e.g. .shp, .json, .gdb, .tif, .csv etc.). they include:

a. Digital Infrastructure and Technology:

- Existing telecommunications towers and networks, including fibre optic cables, wireless networks (location, capacity, coverage and ownership information)
- MNOs and ISPs (location, coverage, services offered and ownership information)
- Digital service centers (location, services, capacity and ownership information)
- Terrestrial Broadcasting Towers and similar infrastructure (location, capacity and ownership information)
- Utility Poles and Conduits (location, capacity and ownership information)

b. Demographics and Socioeconomics:

- Demographic data (population size, density, age distribution, location)
- Housing data (types, distribution, occupancy rates, location)
- Business/trade (types, density, location)

c. Geography and Environment:

- Topography and Elevation: Detailed topographic maps with elevation data to understand potential challenges and costs associated with infrastructure deployment in different terrains.
- Land Use and Land Cover: Information on urban, rural, agricultural, forested, and industrial areas to identify suitable locations for infrastructure and potential environmental considerations.
- Water Bodies and Wetlands: Locations of rivers, lakes, wetlands, and other water bodies that might impact infrastructure placement due to environmental restrictions or construction challenges.

- Farming Communities (location, type, production data)

d. Boundary Administration and Regulation:

- Administrative Boundaries: Clear demarcation of national, regional, and local administrative boundaries for effective planning and permitting processes.
- Zoning Regulations and Land-Use Policies: Information on local zoning regulations and land-use policies that might affect broadband infrastructure deployment, including permitting requirements and restrictions.

e. Utilities and Services:

- Electricity Grids and Mini Grids infrastructure (location, capacity, coverage, ownership)
- Renewable energy infrastructure (solar, wind, hydro etc., location, capacity, coverage, ownership)

f. Transportation Infrastructure:

- Roads (types, condition, connectivity, location)
- Seaports (location, connections)
- Airports (locations)

g. Social Infrastructure:

- Health facilities (type, location, capacity, services offered)
- Educational institutions (type, location, level, capacity)
- Amusement Parks, Touristic Places and other Recreational areas (location, type)
- Police Stations and other Public Facilities (location, type)

3. Data Integration:

- Establish procedures for data collection, validation, and integration from various sources.
- Collaborate with relevant agencies including the National Telecommunications Authority (NatCA), Mobile Network Operators (MNOs), Internet Service Providers (ISPs), Network Infrastructure Providers, Statistics Sierra Leone and other relevant MDAs to obtain and incorporate their data sets into the database.

4. Database Implementation:

- Deployment of the database on a secure and reliable platform, ensuring database encryption at rest and in transit.
- Ensure compatibility with existing systems and ease of future integration.
- Provide data migration services for existing data sets, ensuring that data security and authentication features are integrated in the database system.

5. Training and Capacity Building:

- Conduct training sessions for UADF staff and other relevant stakeholders on the use of the database.
- Develop comprehensive user manuals and training materials.

6. Maintenance and Support:

- Offer post-implementation support and maintenance services.
- Provide periodic updates and enhancements as needed.

Database System Requirements

The database system for digital infrastructure, technology, and services in Sierra Leone should be designed to meet high standards of performance, scalability, security, and reliability. Below are the detailed system requirements:

1.0 Functional Requirements

1.1 Database Schema and Design

- **Relational Structure:** The database should follow a relational model, with well-defined tables, relationships, and constraints.
- **Data Integrity:** Ensure referential integrity with primary and foreign key constraints.
- **Normalization:** The database should be normalized to at least the third normal form (3NF) to reduce redundancy and ensure data integrity.

1.2 Continuous Functionality

- **Offline Capabilities:**
 - The system should allow data entry, editing, and basic GIS functions without internet access.
 - Local data storage solutions should be implemented to ensure data is saved and can be synchronized with the online database once connectivity is restored.
 - The offline mode should include mechanisms for data conflict resolution during synchronization.
- **Online Capabilities:**
 - The system should support real-time data updates and synchronization when connected to the internet.
 - Cloud hosting solutions should be utilized to ensure high availability, scalability, and data security.
 - Web-based interface accessible from various devices (desktops, tablets, mobile phones) to enable stakeholders to interact with the database seamlessly.
- **Hybrid Functionality:**
 - The system must seamlessly switch between offline and online modes based on connectivity status.
 - Ensure that all data entered offline is automatically synchronized with the online database once an internet connection is available.
 - Implement robust data synchronization protocols to handle conflicts and ensure data integrity.

1.3 Data Types and Storage

- **Support for Various Data Types:** The database must support a wide range of data types including integers, floats, text, date/time, and spatial data types for geographic information.
- **Efficient Storage:** Utilize efficient, and least cost storage mechanisms to handle large volumes of data, particularly for geographic and demographic data.

1.4 Data Input and Management

- **Data Entry Interface:** Develop a user-friendly interface for data entry and updates, supporting bulk uploads and manual entry.

- **Data Validation:** Implement robust data validation rules to ensure data accuracy and consistency during entry and updates.
- **Data Import/Export:** Provide mechanisms for importing and exporting data in various formats (CSV, XML, JSON).

1.5 Data Querying and Reporting

- **Query Optimization:** Optimize the database for fast and efficient querying, supporting complex queries and large data sets.
- **Reporting Tools:** Integrate with reporting tools to generate custom reports and visualizations.
- **Search Functionality:** Implement advanced search functionalities to allow users to easily locate specific data.

1.6 User Management and Security

- **User Authentication:** Implement secure user authentication mechanisms (e.g., multi-factor authentication).
- **Role-Based Access Control (RBAC):** Define roles and permissions to control access to different parts of the database.
- **Data Encryption:** Encrypt sensitive data both at rest and in transit to ensure security and confidentiality.

1.7 Integration and Interoperability

- **API Support:** Provide APIs for integration with other systems and data sources, ensuring interoperability.
- **Data Synchronization:** Implement data synchronization mechanisms to ensure the database stays up-to-date with external data sources.

2.0 Non-Functional Requirements

2.1 Performance

- **High Availability:** Ensure the database is available 24/7 with minimal downtime.
- **Scalability:** The database should be able to scale horizontally and vertically to handle increasing data volumes and user load.
- **Performance Metrics:** Establish performance metrics and monitoring tools to track database performance and identify bottlenecks.

2.2 Reliability

- **Backup and Recovery:** Implement robust backup and recovery procedures to prevent data loss.
- **Fault Tolerance:** Ensure the database can withstand hardware and software failures without data loss or significant downtime.

2.3 Security

- **Data Security:** Implement measures to protect against unauthorized access, SQL injection, and other security threats.
- **Compliance:** Ensure the database complies with relevant data protection regulations and standards.

2.4 Usability

- **User Interface:** Design an intuitive and user-friendly interface for administrators and end-users.

- Documentation: Provide comprehensive documentation for database schema, APIs, user manuals, and training materials.

2.5 Maintainability

- Modular Design: Use a modular design to facilitate easy maintenance and updates.
- Automated Maintenance: Implement automated maintenance tasks such as indexing, vacuuming, and regular health checks.

3.0 Technical Specifications

3.1 Hardware Requirements

- Server Specifications: Minimum 8-core CPU, 32GB RAM, and 1TB SSD storage.
- Network: High-speed network connectivity with redundancy.

3.2 Software Requirements

- Database Management System (DBMS): Preferably a robust and widely-used RDBMS such as PostgreSQL, MySQL, or Microsoft SQL Server.
- Operating System: Linux-based operating system for servers (e.g., Ubuntu, CentOS) or Windows Server, depending on the chosen RDBMS.
- Backup Software: Reliable backup solution compatible with the chosen RDBMS.
- Monitoring Tools: Tools for monitoring database performance and security (e.g., Prometheus, Grafana).
- GIS Platform: Preferably a cost-effective GIS Software Solution, provided security and safety is guaranteed. Notwithstanding, a licensed GIS Software Solution may be an alternative.

3.3 Development Tools

- Development Environment: Use of version control systems (e.g., Git), continuous integration/continuous deployment (CI/CD) tools, and integrated development environments (IDEs).
- APIs and Middleware: Development of RESTful APIs for integration and data exchange.

VII. Reporting, Time Schedules, and Payment Schedule

The assignment is estimated to be completed in 24 Weeks and the Consulting Firm shall submit work components incrementally in the manner as outlined below:

1. Inception Report

- ✓ Submission Date: (End of Week 2)
- ✓ Content: Outlining the consulting firm's understanding of the assignment, proposed methodologies, work plan, and any adjustments to the scope if necessary. It should also include a timeline for key project milestones.

2. Monthly Progress Reports

- ✓ Submission Dates: (End of every month in the project cycle)
- ✓ Content: Provide updates on firm's activities during the month under review. Reports should include a summary of data collection and analysis progress, database development milestones, stakeholder engagement activities, and any challenges.

3. First Draft Access Gap Study Report

- ✓ Submission Date: (End of Week 8)

- ✓ Content: This report should provide an interim summary of the access gap study's findings, including initial insights on infrastructure, technology, and service deployments. Also outlines the methodology used for data collection and analysis.

4. Database System Architecture

- ✓ Submission Date: (End of Week 10)
- ✓ Content: This report should detail initial work in the Digital Infrastructure, Technology and Services Database development process. It should include requirement gathering, database design, functionalities, and initial data collection measures implemented.

5. Second Draft Access Gap Study Report

- ✓ Submission Date: (End of Week 12)
- ✓ Content: This report should outline the progress made in the Study. It should include geographic coverage of digital services, definition of served, underserved and unserved communities. Also, should include maps, graphs, tables, data collection and analysis.

6. Database Development and Testing Presentation

- ✓ Submission Date: (End of Week 14)
- ✓ Content: This report should detail the database development system, server, schema, data modeling, and integration of initial datasets. Produce a test plan and schedule to perform rigorous functional, performance, security and usability testing to ensure it is secured and user-friendly.

7. Technical Assistance and Training Reports (As required)

- ✓ Submission Dates: (At end of every Technical Assistance and/or Training)
- ✓ Content: These reports should document the provision of technical assistance and training to UADF officials and stakeholders. They should describe the topics covered, the number of participants, and the impact of the training on capacity building.

8. Validation Workshop for Access Gap Study Report and Database Development

- ✓ Submission Date: (End of Week 17)
- ✓ Content: At this workshop the firm shall present two products to stakeholders for the purpose of validation.
 - The draft report for validation, and
 - The Database for User Acceptance Testing. This is to give stakeholders the opportunity to validate the data, functionality and overall performance of the database before final deployment. Stakeholders will also validate the database documentation and user manual at this meeting.

9. Final National Access Gap Study Report

- ✓ Submission Date: (End of Week 19)
- ✓ Content: This comprehensive report should present the final findings and recommendations of the study. It should include detailed analysis of digital infrastructure, technology, and service gaps, along with a comparison to international standards. It should also clearly define underserved and unserved communities based on a set of parameters. The report should also highlight key insights from the study.

10. Database Deployment and Documentation

- ✓ Submission Date: (End of Week 20)
- ✓ Content: This report should provide a detailed overview of the completed database system for infrastructure, technology, services and other relevant datasets. It should include information on the database's architecture, functionalities, scalability, and security measures. Documentation, maintenance of the database, and user training guide should also be included.

11. Project Summary Report

- ✓ Submission Date: (End of Week 24)
- ✓ Content: This final report should serve as a summary of the entire project. It should include an executive summary, key findings, recommendations, and an overview of the database's significance. The report should also outline the impact of the consultancy on closing the digital divide in Sierra Leone.

The Consulting firm is expected to complete the assignment in full within the Twenty-four (24) weeks as outlined above. The Consulting firm shall report periodically, as outlined by this agreement, to the Deputy CEO, UADF Sierra Leone or staff designated, on all aspects of the agreed activities, and should always keep the SLDTP Project Coordinator's office in copy.

Assignment Deliverables, Timelines and Payment schedule:

No.	Deliverables	Timelines	Indicative payment schedule (%)
1	Inception Report	Commencement + 2 Weeks	10
2	Monthly Progress Reports	Commencement + Every End of Month	-
3	First Draft of Access Gap Study Report	Inception Report + 12 Weeks	30
4	Database System Architecture	First Draft Access Gap Report + 2 Weeks	-
5	Second Draft of Access Gap Study Report	Database Architecture + 4 Weeks	-
6	Database Development and Testing Presentation	Second Draft Report + 4 Weeks	20
7	Technical Assistance and Training Reports	Inception Report + end of every Assistance/Training	-
8	Validation Workshop	Database Devt. & Test + 3 Weeks	
9	Final National Access Gap Study Report	Validation W/Shop + 4 Weeks	20
10	Database Deployment and Documentation	Final Access Gap + 1 week	-
11	Project Summary Report	Database Deployment and Documentation + 4 Week	20
TOTAL =			100

VIII. Qualifications and Experience

The consulting firm shall meet the following qualification and experience requirements:

1. Proven expertise with similar assignments.
2. Knowledge of telecommunication regulations and policies in Sierra Leone, and best practices.
3. Experience in conducting stakeholder consultations and capacity-building activities.
4. Be in partnership with a local research and development institution or department, preferably a local technology and innovation institution.
5. Reputation and Excellent Standing: Provide reviews, testimonials, or references from previous clients in the execution of at least one (1) similar assignment in the last three (5) years, to gauge the consulting firm’s professionalism, quality of work, and ability to deliver results.
6. Must have relevant experience working in Africa with at least one (1) similar assignment in the past five (5) years.

This assignment requires a firm with diverse skillset, knowledge and experience in research, telecommunications engineering, stakeholder engagements and database development. The would-be firm shall have a team of at least 3 knowledgeable and experienced professionals with matching qualifications, expertise and competence levels as outlined in the table below:

No	Key Skill	Experience	Qualifications
1	Team Lead (Project Manager)	<ul style="list-style-type: none"> ○ Proven skills and capabilities to manage complex projects, preferentially, in the telecoms or technology industry. This includes the ability to create and execute comprehensive project plans, manage resources, and track progress. ○ Must be familiar with the telecoms industry, technologies, trends and regulatory frameworks. Understands digital infrastructure, technology and services deployment strategies, challenges and opportunities. ○ Has an excellent communication skills and ability to build stakeholder Collaboration. ○ Additionally, must have demonstrated experience in managing at least one (1) project of similar nature in the past five (5) years, within Africa. 	<ul style="list-style-type: none"> ○ Bachelor's or Master's degree in Project Management, Business Administration, Engineering, or a related field. ○ Professional project management certification (e.g., PMP, PRINCE2) is required.
2	Expert-1 Telecommunications and Infrastructure Engineer	<ul style="list-style-type: none"> ○ Proven experience in the design, implementation, and maintenance of telecommunications systems and networks. ○ Strong understanding of telecommunications technologies, including wireless, fiber optics, satellite communications, and VoIP. ○ Experience with network design and optimization, including knowledge of LTE, 5G, and broadband technologies. 	<ul style="list-style-type: none"> ○ Bachelor’s degree in Telecommunications Engineering, Network or Electrical Engineering, or a related field (a master’s degree is preferred). ○ Professional certifications in

		<ul style="list-style-type: none"> ○ Proficiency in using telecoms testing tools and software. <p>Must have minimum of five (5) years of experience in Telecommunications and Infrastructure engineering.</p>	<ul style="list-style-type: none"> telecoms (e.g., Cisco, IEEE) are a plus. ○ The expert must have demonstrated experience working on at least one (1) similar assignment in the last five (5) years.
3	Expert-2 Policy and Planning Expert	<ul style="list-style-type: none"> ○ Demonstrated experience in developing and implementing policy strategies and plans. ○ Proven track record of working with government agencies, regulatory bodies, and industry stakeholders, preferably in S/Leone. ○ Experience in conducting policy research and analysis, including economic impact assessments. ○ Knowledge of international best practices in telecommunications policy and regulation. ○ Experience in stakeholder engagement and consultation processes. ○ In-depth understanding of telecommunications laws, regulations, and policy frameworks in Sierra Leone. 	<ul style="list-style-type: none"> ○ Bachelor’s degree in Public Policy, Economics, Telecoms, or a related field (a master’s degree is preferred). ○ Advanced knowledge of telecommunications policy and regulatory frameworks. ○ Professional certification in policy and planning would be an added advantage.
4	Expert-3 Training & Capacity Building Expert	<ul style="list-style-type: none"> ○ Proven experience in designing, developing, and delivering training programs, particularly in the ICT or telecommunications sectors. ○ Experience with training needs assessment and curriculum development. ○ Demonstrated ability to train and mentor diverse groups of stakeholders, including technical and non-technical audiences. ○ Experience in developing e-learning and blended learning programs. 	<ul style="list-style-type: none"> ○ Bachelor’s degree in Education, Human Resources, Organizational Development, or a related field. A Master’s degree or relevant certifications (e.g., Certified Professional in Learning and Performance - CPLP) is preferred.
5	Expert-4 Database Development and Management Expert	<ul style="list-style-type: none"> ○ Proven experience with relational database management systems (RDBMS) such as PostgreSQL, MySQL, Microsoft SQL Server, or Oracle. ○ Strong background in data modeling, database schema design, and SQL programming. 	<ul style="list-style-type: none"> ○ Bachelor’s degree in Computer Science, Information Technology, or a related field. Advanced certifications in database management

		<ul style="list-style-type: none"> ○ Experience with data integration, ETL processes, and database performance optimization. ○ Familiarity with data security best practices and compliance requirements. ○ Demonstrated expertise in data integration, data quality assurance, and data migration. ○ Experience in developing and implementing database security measures. ○ The expert experience in executing at least one (1) similar assignment in the last five (5) years, preferably in Sierra Leone. 	<p>(e.g., Oracle Certified Professional, Microsoft Certified Database Administrator) are a plus. A master's degree is preferred.</p>
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IX. Submission Requirements: Interested firms should submit the following:

1. A detailed proposal outlining their approach to the assignment, including methodology, timeline, and deliverables.
2. Functional Prototype: The consulting firm shall submit a functional prototype of the Digital Infrastructure, Technology and Services Database system, displaying its GIS and other capabilities that supports real-time updating and trouble-free user interface and experience. The prototype must demonstrate the core functionalities of the final system and provide a practical example of how stakeholders will interact with the database. This requirement is critical to assessing the understanding of the would-be firm. Hence, prospective bidders are urged to prepare a prototype to showcase their understanding of the assignment in this TOR.
3. Company profile, highlighting relevant experience and qualifications.
4. Detailed CVs of the proposed team members.
5. Financial proposal including a detailed budget breakdown.
6. Partnership with a local Technology University.

X. UADF's Support

The Universal Access Development Fund (UADF) is committed to create a supportive environment that enables the consulting firm to successfully carry out the assignment as outlined in this TOR, thereby enhancing UADF's capacity to promote access to affordable digital technology and services in underserved and unserved communities in Sierra Leone. The UADF's commitment shall include:

1. Facilitation:

UADF will facilitate the smooth execution of the project by:

 - ✓ Ensuring timely access to relevant data and resources.
 - ✓ Providing necessary logistical support, including access to office space and work tools.
 - ✓ Assisting in the coordination of meetings, workshops, and training sessions.
2. Collaboration:

UADF will foster a collaborative working environment by:

- ✓ Establishing a dedicated project team to work closely with the consulting firm.
- ✓ Encouraging open communication and regular updates to ensure alignment on project objectives and progress.
- ✓ Sharing insights and expertise to help address challenges and optimize project outcomes.

3. Stakeholder Engagement:

UADF will actively support stakeholders engagements by:

- ✓ Identifying and introducing key stakeholders from government agencies, NGOs, and other relevant organizations.
- ✓ Facilitating stakeholder meetings and consultations to gather input and ensure their needs and concerns are addressed.
- ✓ Maintaining transparent communication with stakeholders to keep them informed about project developments and outcomes.

4. Monitoring:

UADF will ensure effective monitoring of the project by:

- ✓ Establishing a project oversight committee to regularly review progress and provide guidance.
- ✓ Implementing a robust monitoring framework to track key performance indicators (KPIs) and milestones.
- ✓ Conduct periodic assessments to evaluate project performance and ensure it remains on track.

5. Supervision:

UADF and SLDTF PCU will provide diligent supervision throughout the project by:

- ✓ Assigning experienced project staff to oversee the consulting firm's activities and ensure adherence to the project plan.
- ✓ Conducting regular progress meetings to review deliverables, address issues, and facilitate timely decision-making.
- ✓ Ensuring compliance with UADF's standards, policies, and procedures.