MINISTRY OF ICT & NATIONAL GUIDANCE

A Knowledge and Productive Society driven by ICT & National Ideology

TERMS OF REFERENCE

FOR

BASELINE STUDY ON DEVELOPMENT OF A NATIONAL ICT INFRASTRUCTURE SPATIAL DATASTORE (NISDS)

OCTOBER 2024

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1. INTRODUCTION

Uganda, in pursuit of its Vision 2040 and the National Development Plan III, aims to become a modern and prosperous nation. Recognizing the critical role of Information and Communication Technology (ICT) in this transformation, the government has made significant efforts in adopting ICTs. Ensuring equitable access to affordable and reliable broadband services remains a key focus, as broadband technology is vital for economic and social development. However, challenges such as restricted broadband reach, high costs, inadequate digital content, and inefficient infrastructure deployment persist.

2. PROJECT BACKGROUND

The Government of Uganda, through the Uganda Digital Acceleration Program (UDAP) funded by the International Development Association (IDA), is enhancing its digital infrastructure. The project focuses on expanding high-speed internet access, optimizing digital service delivery, and improving digital inclusion. The National Information Technology Authority of Uganda (NITA-U) will support and oversee the procurement process of the project, in collaboration with the Ministry of ICT and National Guidance (MoICT&NG) and other key partners. The establishment of the National ICT Infrastructure Spatial Data Store (NISDS) is crucial to achieving these objectives.

3. OBJECTIVE OF THE ASSIGNMENT

The primary objective of this assignment is to conduct a comprehensive study, design, and implement a National ICT Infrastructure Spatial Data Store. This data store will integrate and manage spatial data across various public and private utilities, support the planning and deployment of ICT infrastructure, and enhance cross-sector collaboration and resource optimization.

4. SCOPE OF WORK

The assignment will be undertaken by a Consultanting Firm which will work closely with the Ministry of ICT & National Guidance Project Implementation Team (PIT) including counterpart staff nominated from other partner institutions on the basis of providing specific input and any related support which may be required by the consultant from time to time. The consultant shall perform all tasks necessary as described in these Terms of Reference including all technical studies, field surveys, design and provision of technical support during identification of a competent firm to develop the system.

The consulting firm is expected to undertake the following scope of work:

Comprehensive Study

1. Surveys and User Analysis

i) **Current GIS Systems Assessment**: Conduct an in-depth assessment of existing GIS spatial data systems within public and private sectors. This includes identifying current capabilities, limitations, and gaps.

ii) **Stakeholder Engagement**: Organize workshops, interviews, and surveys with relevant stakeholders from government ministries, departments, agencies, and private sector entities to gather comprehensive user requirements.

iii) **Data Needs Assessment**: Determine specific data requirements for various stakeholders, including data types, formats, update frequencies, and security requirements.

iv) **Technical and Operational Challenges**: Identify technical and operational challenges faced by current systems and propose solutions to address these issues.

v) **Fibre Data Standards for Uganda**: The consultant will conduct a thorough review of existing fibre networks with a view of recommending appropriate Open Fibre Data Standards for Uganda. Recommendations should highlight how these standards can enhance data management, infrastructure development, and regulatory practices in Uganda, with consideration for integration at the development stage.

2. Technical Blueprint and Cost Evaluation

i) **Requirements Documentation**: Document detailed technical requirements for the development of the National ICT Infrastructure Spatial Data Store, including hardware, software, and networking specifications.

ii) **Cost Analysis**: Provide a detailed cost analysis covering the procurement, development, implementation, and maintenance phases. Include estimates for personnel, equipment, software licenses, and other relevant expenses.

iii) **Integration Strategy**: Develop a strategy for integrating existing GIS systems with the new spatial data store, ensuring compatibility and seamless data exchange.

iv) **Operational and Sharing Mechanisms**: Propose mechanisms for data collection, operational procedures, data sharing protocols, and maintenance schedules.

v) **Technical Concept Note**: The consultant shall develop a concept note outlining the objectives, methodology, and anticipated outcomes for the development stage of spatial data store and integration, ensuring it supports accurate, data-driven decision-making and enhances spatial analysis capabilities.

vi) Terms of Reference: The consultant is required to develop the Terms of Reference **(ToR)** for the development stage of the planned spatial data store.

3. Stakeholders Validation Workshop

i) **Presentation of Findings:** Conduct a stakeholders' validation workshop to present the findings from the study. The consulting firm's role will be to manage the workshop, present the findings, and record the deliberations.

ii) **Logistical Arrangements:** The Consulting firm shall organize all logistical requirements for the workshop, including procuring the venue, food and beverages, public address system, stationery, rapporteur, and managing invitations.

4. Supervision and Management of the System Developer.

i) **Supervision Plan for System Development:** Develop a plan for supervising the system development process, including key milestones, performance monitoring, and quality assurance measures.

NOTE:

The stated scope should not be considered as a complete and comprehensive description of all duties/services required for the assignment. The Consultant shall be required to critically verify the scope of services indicated, to make proposals for consideration and, in collaboration with the Ministry of ICT and National Guidance, extend, reduce, or amend those services wherever such is deemed necessary according to professional judgment and knowledge.

5. KEY DELIVERABLES

The key deliverables for this assignment include:

1. Surveys and User Analysis

i) **Current GIS Systems Assessment Report:** Detailed assessment of existing GIS spatial data systems within public and private sectors, highlighting capabilities, limitations, and gaps.

ii) **Stakeholder Engagement Report:** Documentation of workshops, interviews, and surveys with relevant stakeholders, including comprehensive user requirements.

iii) **Data Needs Assessment Report:** Analysis of specific data requirements for various stakeholders, detailing data types, formats, update frequencies, and security requirements.

iv) **Technical and Operational Challenges Report:** Identification and proposed solutions for technical and operational challenges faced by current systems.

v) **Fibre Data Standards for Uganda**: The consultant will conduct a thorough review of existing fibre networks with a view of recommending appropriate Open Fibre Data Standards for Uganda. Recommendations should highlight how these standards can enhance data management, infrastructure development, and regulatory practices in Uganda, with consideration for integration at the development stage.

2. Technical Blueprint and Cost Evaluation

i) **Technical Requirements Documentation:** Detailed documentation of technical requirements for the National ICT Infrastructure Spatial Data Store, including hardware, software, and networking specifications.

ii) **Cost Analysis Report:** Comprehensive cost analysis covering procurement, development, implementation, and maintenance phases, including estimates for personnel, equipment, software licenses, and other expenses.

iii) **Integration Strategy Document:** Strategy for integrating existing GIS systems with the new spatial data store, ensuring compatibility and seamless data exchange.

iv) **Operational and Sharing Mechanisms Report:** Proposed mechanisms for data collection, operational procedures, data-sharing protocols, and maintenance schedules.

v) **Concept Note**: The consultant shall develop a concept note outlining the objectives, methodology, and anticipated outcomes for the development stage of spatial data store and integration, ensuring it supports accurate, data-driven decision-making and enhances spatial analysis capabilities.

vi) **Terms of Reference:** The consultant is required to develop the Terms of Reference **(ToR)** for the development stage of the spatial data store study.

3. Stakeholders' Validation Workshop

i) **Workshop Presentation Materials:** Slides and materials used to present the findings from the study.

ii) **Workshop Report:** Documentation of the workshop proceeding, including deliberations and feedback from stakeholders.

iii) **Logistical Arrangements Report:** Details of all logistical arrangements made for the workshop, including venue, food and beverages, public address system, stationery, and invitations.

4. Technical Support during Identification of the System Developer

i) **Supervision Plan for System Development:** In addition to the aforementioned deliverables, develop and submit a comprehensive plan for supervising the system development process, including key milestones, performance monitoring, and quality assurance measures etc.

6. DURATION AND IMPLEMENTATION SCHEDULE

The assignment is expected to be completed within three (3) calendar months from the effective date of the contract and thereafter handover.

7. PURCHASER'S SUPERVISION AND ADMINISTRATIVE MATRIX

The assignment will be supervised by the Ministry of ICT and National Guidance, in collaboration with NITA-U.

The Ministry of ICT&NG shall:

i. Establish a task team to coordinate with the consulting firm. Provide necessary documentation and schedule stakeholder engagements.
ii. Oversee the approval process for all deliverables. Ensure timely feedback and decision-making.

NITA-U Shall

i. Manage the procurement process, ensure compliance with procurement regulations, and maintain accurate documentation;
ii. Facilitate the approved knowledge transfer plan and jointly supervise project activities.

PROJECT MANAGER shall:

Provide periodic reports that monitor and document the progress of the system development against the established milestones and compliance with technical specifications

8. QUALIFICATION REQUIREMENTS

The consulting firm must demonstrate substantial experience in the ICT sector, particularly in developing GIS systems. **The successful bidder shall be prohibited from participating or submitting bids for the system development phase, to prevent any conflict of interest where the supervisor could also undertake the development work.**

The consulting firm must meet the following qualification criteria:

8.1 Demonstrated Experience in the ICT Sector

The Consulting Firm must showcase a track record of substantial experience in the Geographic Information Systems and ICT sector, with a minimum of 10 years of well demonstrable expertise in the sector. This experience should encompass a diverse range of projects, implementation of Geographic Information Systems across various organizations, highlighting the firm's in-depth understanding of the intricacies of the Geographic Information Systems and Information and Communication Technology field and the integration of Geographic Information Systems with other ICT applications.

8.2 Previous Experience in Developing Countries

The Consulting Firm should provide evidence of successful involvement in similar activities of at least two (2) directly related assignment carried out in developing countries and at least 5 working Geographic Information Systems in organizations in the developing countries. This criterion underscores the firm's ability to navigate the challenges and nuances specific to developing country contexts, ensuring effective project delivery.

8.3 Key Experts Dedicated to the Assignment

1. Project Manager (Team Lead)

- Qualifications:
    - Master's degree in Management Science, or a related field.
    - B.Sc. in Engineering/Computer Science/Information Technology/Geographic information systems
    - Certification in PMP or Prince2.
- Experience:
    - Minimum of 10 years of experience managing large-scale IT or Telecom-Related projects.
    - Demonstrated experience in managing GIS-based projects.
    - Proven track record of successful project delivery within budget and on time.

2. GIS Specialist

- Qualifications:
    - Master’s degree in management science or related field.
    - Bachelor's degree in Geography, Land Surveying & Geomatics, Environmental Science, Geospatial Science, Engineering or a related field.
    - Certification in GIS from an accredited training center.
- Experience:
    - At least 7 years of experience in GIS systems development and implementation.
    - Experience with GIS data integration, spatial data management, and analysis.
    - Familiarity with GIS software such as ArcGIS, QGIS, and related tools.

3. IT Infrastructure Specialist

- Qualifications:
    - Bachelor's degree in Engineering, Computer Science, Information Technology, or a related field.
    - At least 1 relevant certification in each area of network and optical communication technologies (e.g., Cisco CCNP, Microsoft Certified: Azure Solutions Architect, Fiber Optic Association: Certified Fiber Optic Technician (CFOT), Corning Optical Communications Certification, Optical Technology Institute: Certified Optical Network Associate (CONA)).
- Experience:

- Minimum of 7 years of experience in IT & Communications infrastructure design, implementation, and management.
- Experience with network infrastructure, data centers, and cloud computing.
- Knowledge of GIS and spatial data requirements.

4. Data Analyst

- Qualifications:
  - Bachelor's degree in Data Science, Statistics, Computer Science, or a related field.
  - Certification in data analysis tools and techniques (e.g., Microsoft Certified: Data Analyst, SAS Certification).
- Experience:
  - At least 5 years of experience in data analysis, including data modeling, data mining, and data visualization.
  - Proficient in using data analysis tools such as Python, R, SQL, and visualization tools like Tableau or Power BI.
  - Experience in spatial data analysis is an added advantage.

5. Technical Writer/Documentation Specialist

- Qualifications:
  - Bachelor's degree in Technical Communication, English, or a related field.
  - Certification in technical writing (e.g., STC Certified Professional Technical Communicator).
- Experience:
  - Minimum of 5 years of experience in technical writing and documentation for IT projects.
  - Proven ability to produce clear, concise, and comprehensive technical documents.
  - Experience with documentation tools and software.

6. Legal Advisor

- Qualifications:
  - A Master’s degree in IT Law or a related field is an advantage.
  - Bachelor’s degree in Law.
  - Diploma in Legal Practice
  - Licensed to practice law in the relevant jurisdiction.
  - Must be a certified privacy and personal data protection practitioner.
- Experience:

- At least 7 years of experience in contract law, particularly in IT contracts.
- Experience in reviewing and drafting contracts, handling procurement legalities, and compliance with local and international regulations.

NOTE:

As part of demonstrating capacity to deliver, the aforementioned core individual consultants must provide an availability/commitment letter confirming their availability for the entire duration of the assignment.

9. CONSULTANT'S TIME INPUT

The Consultant's estimated time input is for the whole duration of the assignment, but the consultant may adjust the time inputs to suit their respective technical proposal.

9.1. Assumptions

- Working Days per Week: 5
- Working Hours per Day: 8
- Duration of Defects Liability Period (DLP): 6 months

10. PAYMENT SCHEDULE

The terms and conditions of payment shall be as follows:

Deliverable	Payment	Payable
Inception Report	5%	**100%**
Current GIS Systems Assessment Report	5%	
Stakeholder Engagement Report	5%	
Data Needs Assessment Report	10%	
Technical and Operational Challenges Report	5%	
Recommendations on Fibre Data Standards for Uganda	10%	
Technical Requirements Documentation	10%	
Cost Analysis Report	5%	
Integration Strategy Document	5%	
Operational and Sharing Mechanisms Report	10%	

Workshop Presentation Materials and Workshop Reports	5%	
Supervision Plan for System Development	5%	
Concept note	10%	
ToR for System Development	10%	

11. KNOWLEDGE TRANSFER

The consulting firm is required to submit a comprehensive knowledge transfer plan, detailing the methodology, administrative costs, capacity gained assessment, and collaboration with the Department of ICT Infrastructure Development. The plan should include:

i) **Approach to Knowledge Transfer**: Methodology and strategies for effective knowledge transfer.

ii) **Administrative Cost Details**: Breakdown of costs associated with knowledge transfer activities.

iii) **Capacity Gained Assessment**: Framework for assessing the capacity gained by stakeholders.

iv) **Collaboration**: Joint activities with the Department of ICT Infrastructure Development.

12. PROPOSAL SUBMISSION REQUIREMENTS

Prospective bidders are required to submit detailed proposals including:

i) **Understanding of the Assignment**: Demonstrate a clear understanding of the project objectives and scope.

ii) **Methodology and Work Plan**: Provide a detailed methodology and work plan for achieving the project objectives.

iii) **Experience in Similar Assignments**: Showcase previous experience in similar projects, including references and case studies.

iv) **Qualifications and Experience of Key Experts**: Provide detailed CVs and qualifications of key experts.

v) **Financial Proposal**: Outline costs and budget for the entire project, including a detailed cost breakdown.

13. EVALUATION CRITERIA

Proposals will be evaluated based on the following criteria:

i) **Understanding of the Assignment and Methodology**: Clarity and feasibility of the proposed methodology and work plan.

ii) **Experience and Track Record**: Demonstrate the firm's experience in successfully delivering similar projects by providing specific examples of related deliverables and emphasizing the outcomes achieved. Include references, project completion certificates, and case studies.

iii) **Experience of Key Experts**: Demonstrate with evidence the experience handling similar assignments. Include references, deliverables, and outcomes.

iv) **Qualifications of Key Experts**: Provide detailed CVs and documentation of qualifications achieved key experts.

v) **Financial Proposal**: Outline costs and budget for the entire project, including a detailed cost breakdown.

vi) **Capacity to Deliver**: Proven ability to deliver the project within the stipulated timeframe.

vii) **Local Content**: Marks will be awarded for the inclusion of nationals among the key resource personnel.

14. APPENDICES

Appendix 1: Reference Documentation

1. **Digital Uganda Transformation Roadmap**
2. **National Broadband Policy**
3. **National Broadband Baseline Survey and Infrastructure Blueprint**
4. **Uganda Communications Act**
5. **National Information Technology Authority Uganda Act**
6. **National Development Plan III**
7. **Vision 2040**