

A Data-Centric Digital Archive for Certificates of Occupancy

TRANSFORMING LAND ADMINISTRATION THROUGH INNOVATIVE SOLUTIONS FOR
NIGER STATE GEOGRAPHIC INFORMATION SYSTEM (NIGIS) AGENCY



October 11, 2023

TERMS OF REFERENCE (TOR) FOR THE UPGRADE OF NAVIGATOR 1.0 TO 2.0 WHICH WILL INCLUDE A DATA-CENTRIC DIGITAL ARCHIVE OF CERTIFICATES OF OCCUPANCY WITH SEARCHABLE INDEX FOR NIGER STATE GEOGRAPHIC INFORMATION SYSTEM (NIGIS) AGENCY.

Objective:

The objective of this TOR is to upgrade Navigator 1.0 to 2.0 to meet the requirements for a data-centric digital archive of Certificates of Occupancy (C of O) with a searchable index, aligning with international standards for the Niger State Geographic Information System (NIGIS) Agency. The initiative builds upon the in-house developed *Navigator 1.0* system, to showcase the agency's expertise in Land Administration, ICT, and GIS.

Navigator 2.0 Overview:

Navigator 2.0 will be developed by the NIGIS Agency. This platform will capitalize on the profound expertise of the agency's staff, offering a robust foundation for land administration, data management, and GIS functionalities.

Land Profile:

Navigator 2.0 will include a comprehensive land profile feature, providing detailed information on individual land parcels within the NIGIS registry. Users can access vital data such as land size, ownership history, and current land usage, fostering a holistic understanding of each registered property.

Billing:

The platform will seamlessly integrate a billing module for efficient financial transactions related to land services. Users can easily process payments for services such as land title applications, ensuring a streamlined and transparent billing process.

Subsequent Transactions:

Navigator 2.0 will facilitate subsequent transactions by offering a user-friendly interface for the modification of existing land records. This includes updates to ownership details, property boundaries, and other relevant information, ensuring accurate and up-to-date land profiles.

Seamless Legal Search:

The system will incorporate a powerful and seamless legal search functionality, allowing users to conduct thorough examinations of land titles and associated legal documents. This feature will streamline the process of verifying land ownership, reducing complexities in legal searches.

Document Management:

Navigator 2.0 will incorporate a robust document management system, allowing for the efficient storage, retrieval, and organization of critical documents related to land transactions. This feature ensures that all relevant paperwork, from land titles to legal documents, is securely managed within the platform.

Web GIS Component:

Navigator 2.0 will boast a sophisticated Web GIS component, enabling users to visualize and analyze geographic data. This GIS functionality enhances decision-making by providing spatial insights into land patterns, topography, and infrastructure, fostering a more informed approach to land administration.

This multifaceted platform will exemplify the NIGIS Agency's commitment to modernizing land management practices, offering a user-centric experience, and leveraging advanced technologies for the benefit of stakeholders involved in the intricate landscape of land administration.

The digital archiving platform will capture the key information related to properties and accompanying evidence such as;

- Certificate of Occupancy (C of O);
- Land parcel survey diagram / location map;
- Owner's ID;
- Allocation letter, if applicable.

The following minimum fields will be captured:

- Owner type (For example, corporate entity/private individual);
- Owner(s) name;
- Owner(s) gender;
- Ownership type (e.g., single owned; joint/co-owned between man and woman);
- Property unique ID;
- C of O issuance date;
- C of O registration date;
- C of O reference number (a certificate or document number that matches the number on the physical record);

All other documents (evidence) will be captured with a document type and document reference number and date.

The minimum requirements for the documents are the following: PDF/A format, scanning colour: gray scale 8-bit, Scanning DPI: 150DPI for good quality documents, 300DPI for poor quality documents, One multipage document (PDF) per physical document.

The archive will be organized under the property or the C of O unique number so that all the documents including C of O and additional evidence are grouped and recorded and linked (linking can be the C of O unique number).

The indexed information for each C of O will be linked to a scan of the respective paper documents (i.e., C of O certificate, maps, plans and other certificates associated with the property) and has to have a traceable reference to the physical records.

The archive will to be indexed and searchable through key alpha-numeric data. Minimum searchable field requirements are as per the data fields mentioned above.

The digital archive will allow for statistical reports on the overall number of C of Os, C of Os by gender, ownership type, and issuance and registration dates. The reports will allow generating the summary statistics and by periods (e.g., monthly, quarterly, and yearly).

The Navigator 2.0 digital archiving platform will be a multi user system,

accessible over the network and with different roles and permissions. The agency will possess all ownership rights to the system and avoid licenses fee.

Digitization Stages/Workflow

The digital archive system will be built with a MERN Stack application housed on an on-premise server with a failover repository on an online dedicated server. The server will be thoroughly encrypted, and the necessary Cisco (or equivalent) firewall will be implemented. The archive will be indexed and searchable through key alpha-numeric data and a unique identifier number. Detailed below are the stages, relevant tasks, and processes to be engaged in during the digitalization process and database maintenance.

Stages	Responsible Person (s)	Tasks	Deliverables	Timeline
Project Design/ Planning	General Manager (NIGIS), Project Manager, ICT Team Lead	<ul style="list-style-type: none"> • Review existing CofO process and document system to inform the design and business process for the proposed digital archive • Develop digitization plan in consultation with relevant stakeholders/MDAs. The plan will cover all requirements, including business process engineering, ICT Infrastructure, change management, maintenance, etc. Business assessment and system improvement report. 	Approved digitalization plan	One-month

Assignment of Operational Space	Consultant and Project Manager	Develop TOR and Procurement Plan · Cost plans and develop a budget for project execution. · Assignment of operational space for digitalization operation and data/server room	Assigned operational space Approved Budget	One Month
Deployment, configuration, and installation of the digitalization system	Land Officers in the Land Transaction Department (NIGIS)	· Procurement, deployment, and installation of all software and hardware are required for the digitalization systems. · Configuration of the system, including business process integration, access control definition, and data security Parameters	Digitalization system – digital archive application, hardware, etc.	Two months
Document sorting, arrangement, and preparation for scanning	General Manager (NIGIS)	· Document review and sorting, ensuring folders contain all relevant information, including Certificate of Occupancy (CofO), Land parcel survey diagram/location map, Owner’s ID, and Allocation letter (if applicable). This repair worn out/age-weakened documents/folders.	Reviewed and sorted CofO documents/folders by index checklist	2- 3 Months for clearing backlog while subsequent documentation is reviewed and sorted upon processing
Scanning And Digitization	Data entry operators, ICT technicians	- Arrange documents with index tags using processing. Indexing checklist. - High-resolution scanning of documents reviewed and sorted by index checklist. Scanning is based on the following requirements. - Format: PDF - scanning color: Grayscale 8-bit Documents scanned for data	Documents scanned for data entry.	2- 3 Months for clearing backlog while subsequent documentation is digitalize upon processing

		entry.		
Data Entry	Data Entry Operators, Land Record Managers	<ul style="list-style-type: none"> - Scanning DPI: 150DPI for good quality documents, 300DPI for poor quality documents, - One multipage document (PDF) per physical document. - Metadata assignment · Indexing, feeding metadata, and all other things needed for the document management system. <p>Searchable fields will include Owner type (For example, corporate entity/private individual); Owner(s) name; Owner(s) gender; Ownership type (e.g., single owned; joint/co-owned between man and woman); Property unique ID; CofO issuance date; CofO registration date; CofO reference number (a certificate or document number that matches the number on the physical record)</p> <ul style="list-style-type: none"> - Automated unique identifiers are assigned, ensuring the indexed information for each CofO will be linked to a scan of the respective paper documents <p>Digitalized CoF O records according to indexing and metadata checklist as well as unique identifiers upon processing.</p>	Digitalized CoF O records according to indexing and metadata checklist as well as unique identifiers	2- 3 Months for clearing backlog while subsequent documentation is digitalized upon processing.
Storage and Management	IT Specialist, Database Administrator,	<ul style="list-style-type: none"> · Implement backup and disaster recovery measures, including periodic system, 	Access controls and APIs assigned	Real-Time

	Data Center Manager	data and information security audits · Preservation and maintenance of physical archives · Configure access controls (including API) and permissions for document retrieval protocols to support data sharing.		
Document Management	Land Bureau Records Managers, IT Support, DB admin	-Day-to-day administration of EDMS application as well as periodic updates and monitoring of applications and records on the backend -Robust data storage and security	Optimal and updated EDMS	1 Month

Cost Allocation:

The proposed cost for the development and enhancement of the system is **THREE HUNDRED AND FIFTY MILLION NAIRA (NGN 350,000,000)**. This budget will be allocated to improve the quality of the system, encompassing software upgrades, hardware enhancements, and additional manpower for seamless operation.

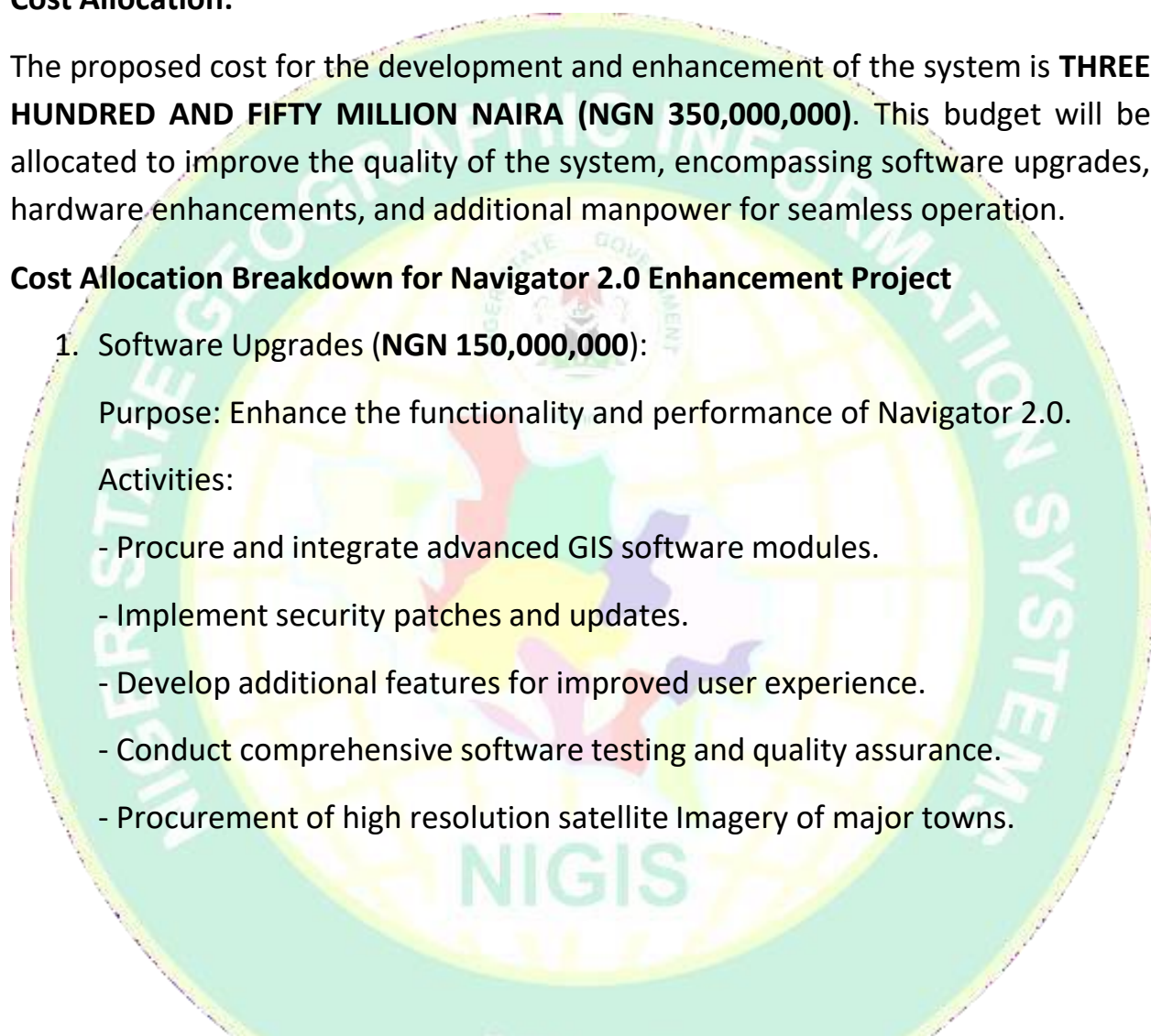
Cost Allocation Breakdown for Navigator 2.0 Enhancement Project

1. Software Upgrades (NGN 150,000,000):

Purpose: Enhance the functionality and performance of Navigator 2.0.

Activities:

- Procure and integrate advanced GIS software modules.
- Implement security patches and updates.
- Develop additional features for improved user experience.
- Conduct comprehensive software testing and quality assurance.
- Procurement of high resolution satellite Imagery of major towns.



2. Hardware Enhancements (**NGN 100,000,000**):

Purpose: Upgrade the infrastructure to support increased data storage and processing demands.

Activities:

- Acquire high-capacity servers and storage solutions.
- Implement cloud-based services for scalability.
- Enhance network infrastructure for seamless data transfer.
- Ensure redundancy and backup mechanisms to prevent data loss.

3. Manpower and Training (**NGN 70,000,000**):

Purpose: Strengthen the team and build capacity for effective system management.

Activities:

- Recruit additional IT professionals and GIS specialists.
- Conduct specialized training for staff on the upgraded system features.
- Establish a dedicated support team for system maintenance.
- Provide ongoing professional development opportunities.

4. Security Measures (**NGN 20,000,000**):

Purpose: Implement robust security measures to safeguard sensitive land data.

Activities:

- Deploy advanced cyber security tools and firewalls.
- Conduct regular security audits and vulnerability assessments.
- Establish protocols for data encryption and secure user access.
- Train staff on cyber security best practices.



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5. User Support and Outreach (**NGN 10,000,000**):

Purpose: Ensure user satisfaction, promote system adoption, and gather feedback.

Activities:

- Establish a dedicated user support center for query resolution.
- Develop user guides and documentation.
- Conduct outreach programs to train users and raise awareness.
- Implement a feedback mechanism for continuous improvement.

6. Contingency Reserve (**NGN 10,000,000**):

Purpose: Address unforeseen challenges or emerging needs during project implementation.

Activities:

- Maintain a reserve fund to address unexpected costs.
- Conduct risk assessments to identify potential issues.
- Implement measures to mitigate risks and ensure project success.

This detailed cost breakdown ensures transparent and efficient utilization of the allocated **THREE HUNDRED AND FIFTY MILLION NAIRA (NGN 350,000,000)** for the Navigator 2.0 Enhancement Project, fostering a comprehensive and sustainable upgrade to the NIGIS Agency's digital archive system.

System Analysis:

NIGIS Agency has received over 9,000 land title applications from 2012 to 2022. The newly developed Navigator 2.0 system will successfully archived of these applications. It's important to note that the NIGIS land registry comprises of over 40,000 records. This analysis highlights the need for a comprehensive digital archive system to efficiently manage the extensive volume of land records and streamline the application process.

In conclusion, the creation of a data-centric digital archive represents a significant leap towards improving and modernizing land administration in Niger State. The Navigator 2.0 platform, with its advanced capabilities, is poised to revolutionize how land records are managed, ensuring transparency, accessibility, and adherence to international standards.

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