

# Terms of Reference for

## Consultant to develop the policies for spatial data management, sharing and engage with stakeholders for NSDI - ICTA/GOSL/CON/IC/2016/64

### 1. Introduction;

National Spatial Data Infrastructure (NSDI) has emerged due to lack of a centralized platform for sharing government spatial data. A centralized Spatial Data Infrastructure makes the decision making process efficient with real-time evidence. Therefore, effective and efficient decision making is one of the key factors for a productive government service delivery process and to ensure the good governance.

Ministry of Lands as the main stakeholder for the national spatial data infrastructure. In addition, Department of Surveys, Land Commissioner General's Department, Registrar General's Department, Ministry of Environment, Ministry of Wildlife, Ministry of Agriculture and Ministry of Disaster Management have also been identified as key other stakeholder for this initiative.

### 2. Background;

The Government of Sri Lanka has spatial information collected by various government departments. Spatial information technology skills are highly developed in some of the government institutions and the systems used to collect this information are also advanced.

Usage of spatial information across government institutions in a collaborative manner is in significance with respect to the service provisioning and decision making process. Further, spatial information is not able to be easily shared between organizations at the present time; nor is it accessible to the broader community.

Spatial data sets are collected by a number of government organizations to facilitate conduct of an organization's business and not with other agencies needs in mind. These data are managed in closed systems and this has created a multitude of information silos. Currently, data collected by organizations is not accessible. It is difficult to know what information is available and where it is held. This has led to several organizations collecting the same information because they are unaware that the information already exists.

Organizations across the government sector recognize that current processes are inefficient and that more cooperation across the sector is required. However, existing data sharing policies are restricting collaboration due to inconsistencies in data semantics, data schemas and data syntactic. There is a significant paper trail of agreements that need to be processed before data sets can be transferred from one organization to another. Manual data sharing procedures contribute to delay in sharing, and the effort required to manually integrate updates from one agency to another is labour intensive and time consuming.

### 3. Concise statement of the objectives;

The objectives of this study are to develop,

- a) National Spatial Data Policy & Guidelines for NSDI
- b) Standards to be followed by NSDI
- c) Functionality, Processes and Governance Model of NSDI/NSDI office

### 4. Scope of Work;

4.1 Consultant to develop the policies for spatial data management, sharing and engage with stakeholders for NSDI

4.2 Consultant should study the outputs from the requirement study and the baseline survey in order to, extensively but not limited to develop the National Spatial Data Infrastructure guiding principles such as,

- Data from the multi-sector source are available and easily integrated to enhance and add value to other geospatial data.
- Data quality including the frequency of updating the data, data resolution, history of data lineage, completeness, logical and semantic consistency, coherence of the data.
- Protect the privacy and security of personal data and ensure the accuracy of demographic data or information about people either in raw form or in derived form.
- Ensure access to available geospatial data by all stakeholders including citizens without compromising the propriety and confidentiality of data, based on the classification and sensitivity of the data.
- Data liabilities such as types of data accuracies, fit for the purpose, disclaimers, infringement of copyrights, use of open data specifications, data modification and reproduction by users
- Comply with the government systems interoperability guidelines and standards to fully enable access to the multi-sector geospatial resources, adherence to a data dictionary.
- Enhance the accessibility, communication and use of geospatial data to support a wide variety of decisions at all levels of government and in society through an effective, efficient and widely accessible NSDI backbone or information highway.
- Protect proprietary interests related to licensed information and data.
- Specific policies on the use of open data
- Ensure that investment and policy decisions consider the expected return on investment and effective use of resources.

- Classification and pricing of data.
- Revenue sharing between NSDI and data providers.

4.3 The NSDI Policy should cover, but not limited to , the following areas:

- Data standards related policies
- Custodianship
- Spatial Data Management
- Organization of Information Security
- IPR, Disclaimers
- Pricing policies
- Information security policies
- Cryptography and Communications security
- Physical and Environmental Security
- Operations security
- Access Control
- System acquisition, development and maintenance
- Supplier relationships
- Information security incident management
- Information security aspects of business continuity management
- Compliance; with internal requirements, such as policies, and with external requirements, such as laws
- Meta-data handling policy

\*Refer SLSDI Framework for other areas.

4.4 Comprehensively detail the National Spatial Data Standards to be followed such as,

- **General information technology and Internet standards** on which geospatial standards may be dependent. While not all of these standards may be required for implementation, they may be required within an implementing community's operational environment. Eg: **ISO**
  - ISO 31000:2009, *Risk management – Principles and guidelines*
  - ISO/IEC 27001 - Information security management
- **Meta Data and Catalogue** searches also allow the user to determine if the geospatial information is fit for a particular use or purpose
  - ISO 19115, Geographic information – Metadata
  - OGC Catalogue Service 19115 Metadata
- **General Geospatial Standards** which include best practice standards regarding geospatial data definitions (data dictionary), representation, data styling and

presentation, data formats, data quality, data transformation techniques, general architecture and other aspects of geospatial information and technology. They collectively provide guidance on geospatial data collection, production, and maintenance. Eg: **OGC**

- OGC Web Map Service
- OGC Web Feature Service
- Web catalog Service
- Web Tiling Services
- Web Processing Service

4.5 In order to ensure the continuity of operations at NSDI, develop a Disaster Recovery Plan.

The plan should be preceded by an analysis of the vital functions dependent on computer processing. This analysis would determine the maximum amount of time the NSDI is capable of continuing its operations without computing resources. When this critical time period has been established a Disaster Recovery Plan should be able to provide adequate recovery within this period. An effective Disaster Recovery Plan should address, but not be limited to:

- Roles and responsibilities of data processing staff and users;
- All potential disasters to be addressed by the plan;
- Priority for critical processing;
- Procedures for testing, reviewing, and updating the plan;
- Backup of hardware and network configurations;
- Backup of systems software, program and data files and appropriate documentation;
- Off-site storage of all backups, including a copy of the plan;
- Power and air-conditioning requirements; and
- Emergency supplies of computer media.
- On-site and off-site troubleshooting.

4.6 Consultant should develop a Business Continuity Plan (BCP), in the event of a disaster the NSDI may not be in a position to recover and restore its critical business operations and related resources (such as people, location, infrastructure, vital documents, etc.) within an acceptable period of time and commence the operations. It should be noted that a BCP is the responsibility of NSDI as a whole, and not merely confined to the area of IT.

4.7 The functionalities and the processes of the NSDI, should be developed including the below listed facts,

- Determine the requirement of spatial data in the country and require the creation or collection of spatial data to fill such requirement.
- Formulate and position policies on all aspects related to the NSDI -including its establishment, access, pricing etc.
- Decide and arbiter on issues relating to spatial data generation and its availability in the country;
- Promote and enable investment in the spatial business sector and to create an environment that encourages competitive excellence;

- Promote the development of human resources in the spatial data sector by encouraging existing training institutes, universities, institutions offering specialized courses, etc to undertake human resources development activities for NSDI;
- Promote advanced research related to the NSDI activities and enable an ambience of R&D for NSDI in the country;
- Require any Member, persons, entities or organizations to provide access to any data at such costs as may be reasonable;
- Enter into appropriate arrangement with any third party to undertake any specific activity connected with or related to any of the activities of the NSDI, including marketing, data generation, data assimilation, access, consulting, commercial exploitation of any data, etc.

4.8 Consultant should develop a governance structure which should be responsible in managing and overseeing the implementation and operation of the NSDI including NSDI Office, NSDI Steering Committee, NSDI Council and subcommittees.

#### 4.9 Roles and Responsibilities of the Governance Model

4.10 Asset Management

4.11 Human Resources Security and capacity building

4.12 Implementation of change management plans

4.13 Consultant should cover the roles and responsibilities of people and partners as they relate to continue on development of NSDI such as,

- **Partner** - work together with State, regional, local, academic, and private sector partners to jointly fund and share geospatial data, services, and tools
- **Facilitator** - collaboration between and across all levels of government, academia, nonprofits, the private sector, and individuals for research and to create data and information services
- **Provider** - implementation of the Geospatial Platform as a primary mechanism for collaborative development and distribution of data content via standards-based services
- **Curator** - provide and maintain geospatial content, where appropriate, and focus on delivering services that provide data in standardized, accessible, open formats.
- **Enabler** - enabler role to make geospatial data and services more accessible to an expanded audience through tools such as the Geospatial Platform.

## 5. Final outputs, Reporting Requirements, Time Schedule for Deliverables;

Development of the policy during 10 weeks of time

Deliverables to be submitted are listed below:

No	Deliverables
5.1	Detail Report on,
	— National Spatial Data Policy
	— Guidelines for NSDI
	— Standards to be followed by NSDI
	— Data dictionary
	— Data classification and sensitivity analysis
	— Functionality & Processes of NSDI/NSDI office
	— Governance Model, Roles and Responsibilities for the NSDI office
	— Business Continuity Plan
	— Disaster Recovery Plan
5.2	Policy Register

## 6. Qualification Requirements for the Consultant

### Essential

The consultant will demonstrate a minimum of five (05) years of experience in Sri Lanka and/or a country of comparable social, economic and development conditions, where the consultant has worked with government and the private sector as the Business Consultant / Process Designer in government sector NSDI models and the primary implementer of NSDI projects, specifically in the areas of Spatial Information Policy study, standards and processes.

### Key Experience

The consultant should have extensive experience in the following areas.

- .SDI policies, standards, functions and technologies
- .Business Process Re-engineering and Mapping to Software Application system
- .Spatial/aspatial database concepts and management
- .Awareness of Network Infrastructure & basic Application and Communication Security Concepts
- .Change management

The consultant should also be able to demonstrate;

- a) A minimum of five (5) years of post academic/professional qualification experience in the relevant areas of ICT and SDI development projects
- b) Excellent writing and communication skills in English.

## **7. Services and Facilities Provided by ICTA**

- 7.1 Information and Service Classification Framework and Information Sharing Policy
- 7.2 Proposed NSDI strategy document, NSDI framework and Road Map document

## **8. References:**

- [1] eGovernment Policy Approved By Cabinet of Sri Lanka - <http://www.icta.lk/index.php/en/e-gouvernement-policy>
- [2] Lanka Interoperability Framework - <http://www.life.gov.lk/>

## **9. Review Committees and Review Procedures**

ICTA will appoint a review committee in collaboration with stakeholder organizations to review the documents prepared by the selected consultant.