GUYANA:

Modernizing its National Spatial Data Infrastructure – Supporting National Growth

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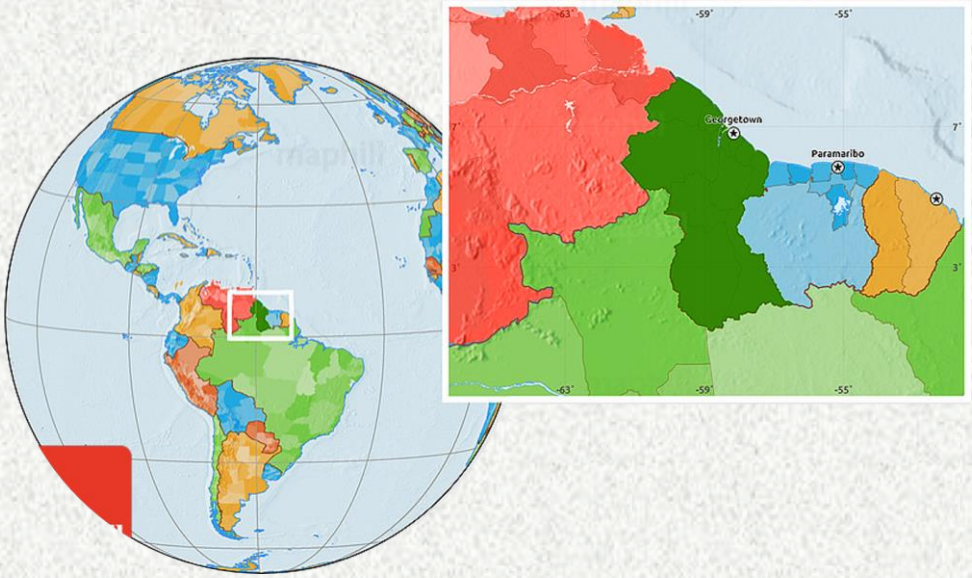
About Guyana

- Location:
  - Along Northern Coast of South America
  - Bordered by ***Venezuela*** to the West, ***Brazil*** to the South, ***Suriname*** to the East and the ***Atlantic Ocean*** to the North



- Total Area: 215,000 km²
- Population: 748,000

- Official Language: English
  - Only English speaking nation in South America

Acknowledgements

The success of Guyana's efforts could not have been possible without the sustained support of the:

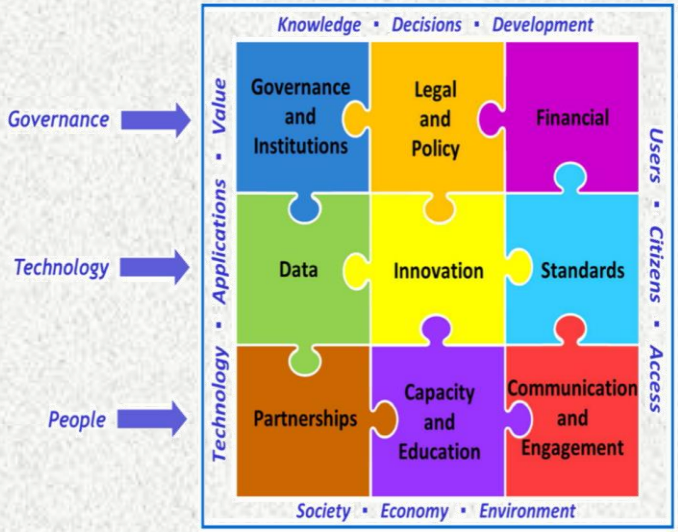
- *the United Nations Food & Agriculture Organisation* (UNFAO),
- *the United Nations Global Geospatial Information Management* (UN-GGIM),
- *the United Nations Economic Commission for Latin America and the Caribbean* (UNECLAC),
- the *World Bank Group*,
- the political directorate of Guyana, and
- the hard working staff of the *Guyana Lands and Surveys Commission* (GLSC).

Guyana:
NSDI and Geospatial Policy Context

- There have been several attempts to modernize the National Spatial Data Infrastructure;
- The most recent sustained effort, with the help of our partners, has resulted in the creation of a National Geospatial Policy and concrete plans towards the creation of a National Spatial Data Infrastructure;

Guyana:
NSDI and Geospatial Policy Context

- The NSDI and Geospatial Policy are aligned to initiatives, such as:
  - National Green State Development Strategy (GSDS),
  - Sustainable Land Development and Management (SLDM) Project,
  - National E-Government Policy,
  - **UN-GGIM Integrated Geospatial Information Framework (IGIF)**.



Methodology

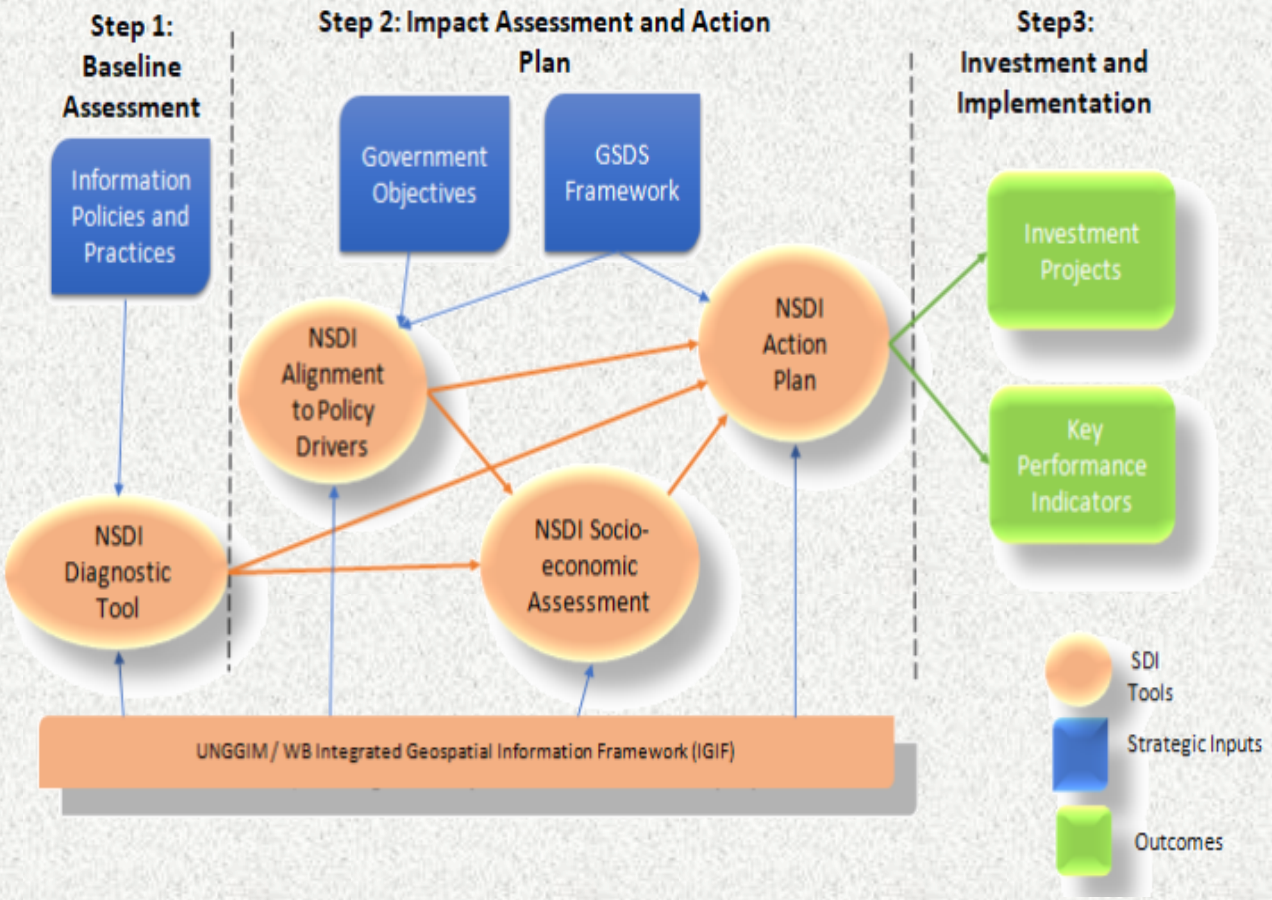
Step. 1: Diagnostic
- Initial Assessment
- Country Report

Step 2: Action Plan

2.1. Business case
- Geospatial Alignment to Business Drivers
- Socio-Econ Analysis

2.2. Action Plan

Step 3. Implementation
- Investment projects
- KPI
- Risks



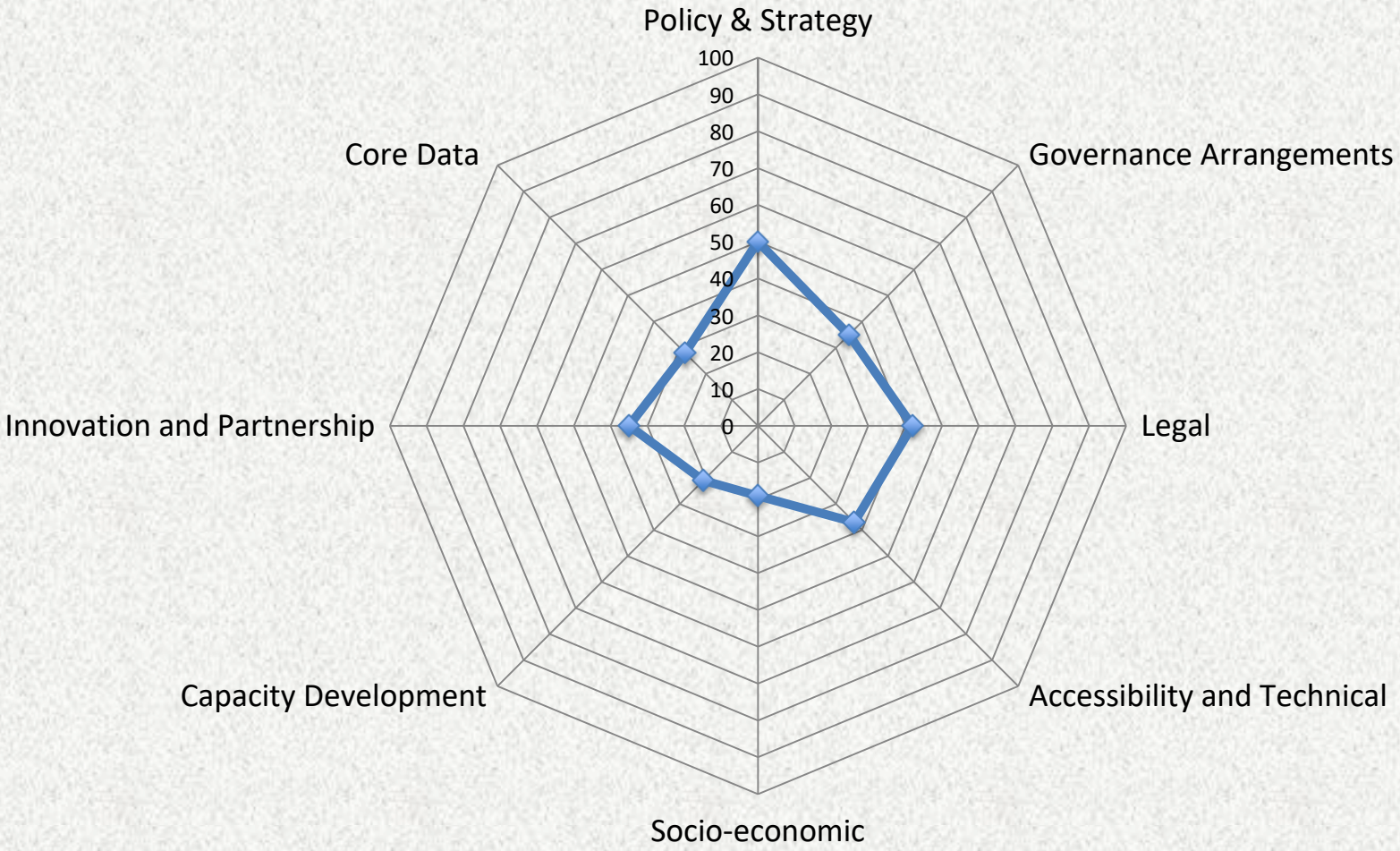
Basis of Analysis

- Assessments were undertaken over a 4 month period by an expert team of International and local consultants;
- National consultations were held with spatial data stakeholder organisations;
- One to one interviews were conducted with more than 40 organisations to establish current state and strategic drivers;
- Supplementary interviews were conducted with key stakeholders to identify socio-economic benefits;
- Analysis of current geospatial industry and future technology directions;
- Discussions with industry “opinion formers” at conferences in China, Washington and other recent events.

Results of Analysis

- Baseline Assessment
- Geospatial Alignment Review
- Socio-economic Assessment
- Action Plan

Baseline Assessment – Current Status of NSDI Readiness



Key Findings

- Lack of understanding of NSDI and engagement with decision makers;
- Insufficient justification of investment (socio-economic case not articulated);
- Duplication of efforts among stakeholders;
- Collaboration culture not inherently strong in Guyana;
- Insufficient staff capacity and skills for future needs;

Key Findings

- Lack of a complete coordinated cadastre;
- Cadastral survey plans are not all in digital form;
- Responsibilities for land registration and tenure are distributed among different Government entities;
- The procedures for property transactions are mostly complex and time consuming;
- Variable quality and availability of existing digital geospatial data

Overarching Principles

- NSDI focused on ***Collation*** and ***Collaboration***;
- Increase Institutional Interoperability;
- Strengthen role in coordination of development and deployment of industry standards and guidelines;
- Adoption of “Fit for Purpose” approach to data quality
- Increased automation and rationalisation of processes;
- Reduce duplication of effort / inconsistency in creation of NSDI component systems without seeking to stifle innovation;
- Creation of a virtual Centre of Excellence for “thought leadership” in Geospatial Information

Expected Benefits of an Improved Geospatial Infrastructure

Economic

- Increased rate of granting leases to state land, leading to higher Government rental income;
- Cost savings in transport, energy and coastal defenses design and construction;
- Improved billing rates for utilities;
- Land market growth – reduced threat of development of an unregulated market;
- Increase revenue from forestry and mining concessions;
- Improved agricultural production;
- Reduced data procurement costs;
- Enhanced support for Aviation Industry in drone management

Social

- Additional jobs and economic growth from new software products and services;
- Reduced numbers of land and property-related court cases
- Improved water services through better planning and lower costs of maintenance;
- Improved Sustainable Development Goal (SDG) monitoring and reporting;
- Enhanced preparedness and response for flood and other disaster risks;

Environmental

- Smarter and more sustainable Urban Development Planning and agricultural land use;
- Better support for Climate Change Adaption;
- Reduced rates of land degradation;
- Improved control of aquifer pollution from mining

Factors Aiding Current Geospatial Development in Guyana

- Substantial volumes of data already exists and shared across agencies;
- Large amounts of free high resolution satellite and other data (e.g. Open Street Map) are now available;
- Competition between acquisition options (drone/ GPS/ satellite) is globally forcing unit costs down;
- Global services allow developing countries to access rather than purchase data, so reducing software/ hardware costs;
- Increasing range of use cases means costs can be more widely shared.

NSDI Coordination

- Convene National Geospatial Advisory Council;
- Agreements with existing partners to reduce potential effort duplication and inconsistency;
- Create national data sharing agreement and recruit initial partners;
- Publish High-level Architecture Vision for NSDI
  - Distributed not centralized model
  - GLSC to offer option to publish datasets for smaller agencies
- Create Outreach Department
  - Focus on awareness raising, public events, media coverage

Guyana's NSDI Business Case

- Staged implementation over 5 years, then 7 years of operation
- Approved Geospatial Policy Implemented Data Sharing Agreements with main suppliers
- Distributed International Standards-based NSDI system
- Up to date national digital base map
- Fully coordinated cadastre (prioritised 5-year program)
- National Address Database
- Upgraded National Gazetteer (including Points of Interest)
- Integrated capacity building program
- Outreach to promote on-going collaboration between stakeholders

Lessons Learned through Assessments

- Build on what has already been done
- Set realistic expectations
- Importance of skills transfer and building local capacity
- Impact and importance of wide stakeholder engagement
- Need for executive level support
- Geospatial alignment to National policy drivers critical
- Socio-economic benefits – underpins the case for investment
- Importance of the drafting of an Action Plan

Next Steps: Priority Projects
- Short-term Initiatives (12 months)

- Ministerial approval of the Geospatial Policy
- Re-launch of NSDI Steering Group
- Bilateral agreements between Government Agencies to reduce effort duplication and inconsistency
- Create Outreach Department
- Create National Discovery Geoportal
- Evaluation and Monitoring Framework Agreement

Next Steps: Priority Projects
- Medium-term Initiatives (1-5 years)

- Draft National Land Policy
- Establish Land Management System
- Develop and Implement of a Strategic Business Plan
- Rationalise Land Administration Processes
- Complete building footprint layer
- 3D City Model for Georgetown (Capital of Guyana)
- Geostatistical Integration
- Marine and Terrestrial Data Integration
- Execute National Legislative Review

Next Steps: Capacity Development - Short-term Initiatives (12 months)

- NSDI Skills Transfer Workshops
  - Socio-economic benefits, influencing decision makers
  - Technical Development
- Establish employers' user needs study
- Regional and International Activities
  - Exchange visits (Netherlands, UK, Serbia and Australia)
  - Active involvement in UN GGIM

Next Steps: Capacity Development - Medium-term Initiatives (1-5 years)

- Establish Centre of Excellence
  - Source of knowledge on Geospatial technical Innovation (including earth observation satellite imagery), understanding a wide range of use cases.
- Increase the availability of highly trained personnel
- Upgrade GIS facilities/ courses at the University of Guyana
- Geospatial Data Management strengthened in school curriculum

Next Steps: Priority Projects
- Short-term Initiatives (12 months)

- Upgrade and densify the CORS Network
  - Upgraded 8 stations,
  - Expanding network by an additional 5 stations

Next Steps: Priority Projects
- Medium-term Initiatives (1-5 years)

- National Digital Base Map
  - Update all sources (including Orthoimagery, LiDAR surveys)
  - Fit for Purpose
- Higher Accuracy Digital Elevation Model
  - Integrate bathymetric chart data with terrestrial data
  - High accuracy using LiDAR where possible and canopy penetrating radar satellite imagery for rainforest
- Create a single National Street Address Database
  - Adapt best practice international guidelines to create street naming and numbering standard
  - Create initial national system by matching billing and other existing databases
  - Pilot approach in selected areas (urban, rural and hinterland)
  - Allocate a standard format address during land transfer or development control process

Next Steps: Priority Projects
- Medium-term Initiatives (1-5 years)

- Create National Discovery Geoportal
  - Adopt Latin American Metadata Profile (LAMPv2) standard
  - Complete Inventory of Geospatial Information across all agencies to this standard
  - Publish on a new or existing geoportal
  - Disseminate its purpose and value widely within public and private sectors
- Open Satellite Imagery
  - Negotiate a national agreement to access databases of free satellite imagery
  - Alternative platforms exist (OpenDataCube, SIPAL (FAO), Copernicus)
  - Evaluate each for suitability of resolution, coverage and ease of implementation

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Thank You

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