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Relevance of the Global Fundamental Geospatial Data Themes to UN-GGIM: Africa

A Presentation to the International Workshop on Global Fundamental Geospatial Data Themes for Africa

By

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26 April 2018,

UNECA, Addis Abeba

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UN-GGIM: Africa – A Framework for Action

African Holistic Geospatial Information Vision

- Coordinated approach for cooperative management of geospatial information that adopts common regional standards, frameworks and tools
- Management of global geospatial information to address key global challenges including Sustainable development, climate change, disaster management, peace and security, and environmental stresses
- Intergovernmental Process where the Member States play the key role

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Objectives

- **UN-GGIM: Africa** was set up to address the issues of developing the capacities of African Nations in the generation and dissemination of authoritative, accurate and maintained geospatial information in the continent.

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Objectives…

- **The main objective of UN-GGIM: Africa is to leverage the enabling capabilities of geospatial information technology to meet the African development agenda and in support of the emerging global challenges. This will be mainly achieved through:**
  - **Promoting and supporting technical activities in the development of standards, interoperability and streamlined in such a way that the use of geospatial information resources is on the continent is ;**
  - **Strengthening and aligning the specific needs and interests of Africa with international mechanisms;**
  - **Encouraging and facilitating efforts to integrate statistics into geospatial information to attain viable and meaningful outcomes, analysis and visualization of data in supporting and tracking the progress made towards achieving the UN 2030 SDG Agenda and the AU Agenda 2063.**

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Key Pillars Highlights

- ARSDI: African Regional Spatial Data Infrastructure: Frameworks and Policies
- FDS: Fundamental Geospatial Datasets
- AFREF: African Geodetic Reference Frame
- SALB: Second Administrative Level Boundaries
- GeoNyms: Geographic Names
- Integration of Geospatial Information and Statistics:
- The 2030 Agenda for Sustainable Development and the AU Agenda 2063.

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Major Achievements To date

1. UN-GGIM: Africa Action Plan

The Continental action plan on UN-GGIM: Africa, **"African Action Plan on Geospatial Information for Sustainable Development (GI4SD)"**, was developed and aligned with global agendas and programmes (UN Agenda 2030 and AUC 2063 Vision). The Action Plan was formally endorsed by the **UN-GGIM: Africa** during its 2nd Session in Grand-Bassam, Côte d'Ivoire, and has been published and distributed to Member States and Development Partners during the 3rd Session of **UN-GGIM: Africa** held 22 -23 November here in Addis Abeba in parallel with the AfricaGis 2017 Conference.

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Major Achievements To date…

2. Identification of Fundamental Geospatial Datasets for SDG Indicators & AU Agenda 2063

- ***Fundamental data sets*** *are the minimum primary sets of data that cannot be derived from other data sets, and that are required to spatially represent phenomena, objects, or themes important for the realisation of economic, social, and environmental benefits consistently across Africa at the local, national, sub-regional and regional levels.*

(Geoinformation in Socio-Economic Development: Determination of Fundamental Datasets for Africa; Published by the - United Nations Economic Commission for Africa, 2007, Addis Abeba, *Ethiopia)*

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Major Achievements To date…

2. Identification of Fundamental Geospatial Datasets..

The collection, updating and management of **Fundamental Geospatial Datasets** should be be a key driver for Geospatial Information Management (GIM) in Africa, to fulfil the information required to measure the indicators of the SDGs and Agenda 2063 Aspirations/Objectives.

- Reliable and relevant **Fundamental Datasets** should be regarded by Governments as part of Africa's national and regional sustainable development infrastructure, with Geospatial Information Management considered and adopted as a full socio-economic development enabler in Africa.

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Major Achievements To date…

2. Identification of Fundamental Geospatial Datasets..

- Early compilation of the "Guidelines of Best Practice for the Acquisition, Storage, Maintenance and Dissemination of Fundamental Geospatial Datasets" was started by CODIST-Geo Working Group on FDS.
- The document was later published *under the title* "**Geoinformation in Socio-Econmic Development: Determination of Fundamental Datasets for Africa**"; by the United Nations Economic Commission for Africa, 2007.

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Major Achievements To date…

Table 7: Fundamental data sets for Africa

Level	Category	Data Theme	Data Set	Definition
0	Primary Reference	Geodetic Control Network	Geodetic control points	List of coordinates with information on the history of establishment of the network as well as network design in digital map/GIS format.
			Height datum	List of heights of primary height points in digital map/GIS form (vertical datum surface)
			Geoid model	Geoid-ellipsoid separations (heights at individual points) to convert from GPS observations to heights
I	Base geography	Rectified Imagery	Aerial photography	Aerial photography
			Satellite imagery	Satellite imagery
		Hypsography	Digital elevation model	Vertical distance from the earth's surface to a base defined by the adopted height datum
			Spot heights	Heights of peaks
			Bathymetry	Vertical distance of earth's surface from base defined by Lowest Astronomical Tide
		Hydrography	Coastline	The limit of land features usually at mean high water level.
			Natural water bodies	Location of watercourses, drainage network, and all inland water bodies (streams, rivers, canals, ponds, lakes, etc.)

II	Administration and spatial organisation	Boundaries	Governmental units	Limits of administrative and jurisdictional authority (International, national, sub-national boundaries, and local government areas)
			Populated places	Population centres including urban areas, towns, localities, and rural settlements
			Enumeration areas	Boundaries of areas delineated for the purpose of collecting demographic census information
		Geographic names	Place Names	Official and local names of places
			Feature Names	Official and local names of cultural and geographic features (including roads)
		[Land management units/areas]	Land Parcels/Cadastre	A consistent framework of land parcel/cadastre boundaries defined for land tenure purposes, referenced to a common datum
			Land Tenure	Current, proposed and historical details of all tenures, e.g., details of ownership, vesting, and including traditional forms of land holding.
			Street Address	Unique Street Address of parcels/properties
			Postal or zip code zones	Boundaries of post code areas
			Land use planning zones	Boundaries of areas of permitted/restricted land use defined by planning authorities (includes conservation areas, heritage sites, and restricted areas)
	Infrastructure	Transportation	Roads Road centrelines Railways Airports and ports	Network of physical roads and carriageways
				Centreline of roads and carriageways
				Network of railway lines
				Location of airports, sea ports, and navigation aids
		Structures	[Bridges and tunnels]	
		Utilities and services	Power	Locations of trunk or national grid power line networks and major assets/installations, and sources
			Telecommunications	Locations of trunk communication networks and major assets
III	Environmental Information	Natural environment	Land cover Soils Geology	Observed bio-physical cover over on the earth's surface1
				Boundaries and classifications of soil resources
				Boundaries and classification of geological units

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❑ Geospatial Information & Agenda 2030 Sustainable Development Goals

General Assembly Resolution A/RES/70/1
Para.76; Follow up and Review

We will promote transparent and accountable scaling-up of appropriate public-private cooperation to exploit the contribution to be made by a wide range of data, ***including earth observation and geospatial information, while ensuring national ownership*** in supporting and tracking progress.

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❑ Geospatial Information & Agenda 2030 Sustainable Development Goals

…The follow-up and review processes at all levels will be guided by a Series of principles, one of which is that–"They will be rigorous and based on evidence, informed by country-led evaluations and data which is high-quality, accessible, timely, reliable and disaggregated, including **by geographic locations, relevant in national contexts".**

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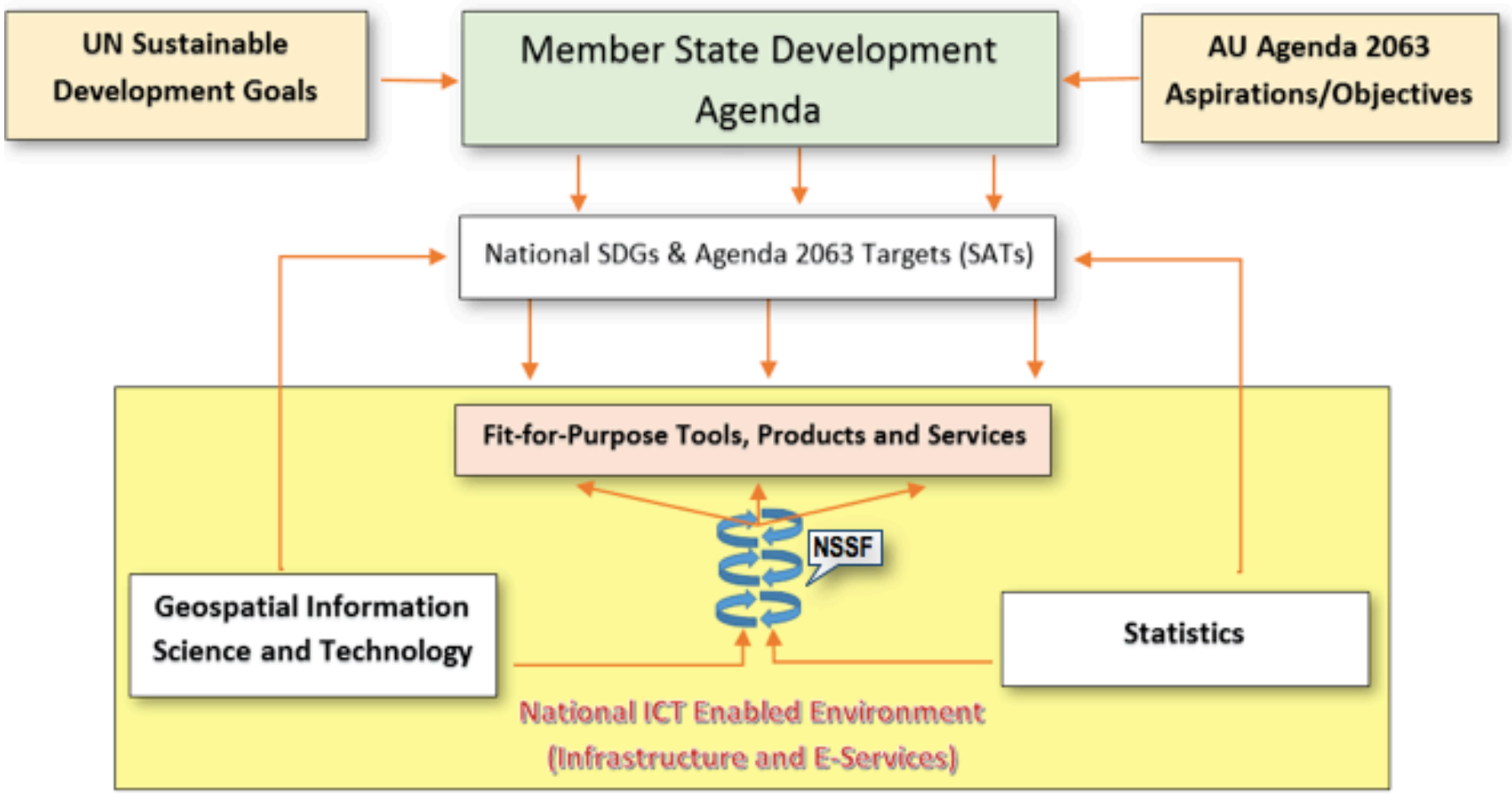

Summary of Minimum List of fundamental global geospatial data themes

Reference Frame	
Global Geodetic Reference Frame	The GGRF is the framework which allows users to precisely determine and express locations on the Earth, as well as to quantify changes of the Earth in space and time. It is not a data theme in the sense of the other themes, but it is a prerequisite for the accurate collection, integration and use of all other geospatial data.
Theme	**Brief Description**
Addresses	An address is a structured label, usually containing a property number, a street name and a locality name. It's used to identify a plot of land, a building or part of a building, or some other construction, together with coordinates indicating their geographic position. Addresses are often used as a proxy for other data themes such as Land Parcels.
Buildings and Settlements	A building refers to any roofed structure permanently constructed or erected on its site, for the protection of humans, animals, things, or the production of economic goods. Settlements are collections of buildings and associated features where a community carries out socio-economic activities.
Elevation and depth	This theme describes the surface of the earth both on land and under a body of water, relative to a vertical datum.

Functional Areas	Functional Areas are the geographical extent of administrative, legislative, regulatory, electoral, statistical, governance, service delivery and activity management areas.
Geographical Names	Geographical names provide orientation and identity to places. They are location identifiers for cultural and physical features of the real world, such as regions, settlements, or any feature of public or historical interest. They are often used as a proxy for other data themes such as Settlements.
Geology and Soils	Geology is the composition and properties of geologic materials (rocks and sediments) underground and outcropping at the land's surface. It includes bedrock, aquifers, geomorphology for land and marine environments, mineral resources and overlying soils. Soil is the upper part of the earth's crust, formed by mineral particles, organic matter, water, air and living organisms.
Land Cover and Land Use	Land cover represents the physical and biological cover of the earth's surface. Land use is the current and future planned management, and modification of the natural environment for different human purposes or economic activities.
Land Parcels	Areas of land or more generally of the Earth's surface (land and/or water) under common rights (such as ownership or easements), claims (such as minerals or indigenous land) or use. This theme can include individual fields and cadastral parcels.
Orthoimagery	Orthoimagery is geo-referenced rectified image data of the Earth's surface, from satellite or airborne sensors. (Although technically not a theme in its own right, orthoimagery is included as, when interpreted, it's a widely-used data source for many other data themes.)
Physical infrastructure	This theme includes industrial & utility facilities, and the service delivery facilities associated with administrative & social governmental services such as public administrations, utilities, transport, civil protection, schools and hospitals.
Population distribution	Geographical distribution of people, including population characteristics.
Transport Networks	Transport Networks are the suite of road, rail, air, cable and water transport routes and their connectivity.
Water	Extent and conditions of all water features including rivers, lakes and marine features.

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The Challenges to ensure application of Geospatial Data Themes in Africa

- The Region represented by **UN-GGIM: Africa** is the worst poorly mapped part of the world, and hence **Fundamental Geospatial Data Sets** are either not available at all or the available Data are neither maintained nor accurate.
- Inadequate effective national leadership and institutional arrangements for the adoption and implementation of the **Global Fundamental Geospatial Information Data Themes** and for operationalizing an integrated and coherent approach to **UN-GGIM: Africa** activities are prevalent at continental and national level.
- Member States lack adequate capacity and capability to undertake activities that ensure the production and dissemination of timely, accurate and maintained **Fundamental Geospatial Data** for national planning and decision-making purposes.

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UN-GGIM: Africa
The Way Forward

1. Overarching Geospatial Information Policy for Africa

- After more than a decade of work on **Geospatial Data Infrastructure** development in Africa, it still remains an incoherent piece-meal approach characterized by loose networks and informal relationships with evidence of a complete lack of national geospatial information policy on the continent.
- In this regard, **UN-GGIM: Africa** needs to take the step to develop an **African Geospatial Information Policy** as an overarching policy framework for formulating national policies for geospatial information on the continent.
- The expectation is that the framework will help in harmonizing the efforts and in attracting the funding required to drive the efforts, maintain support and gather momentum in enhancing Member States capabilities to undertake reforms that increasingly ensure operational effectiveness to support timely delivery of geospatial data, products and services for national planning and decision-making.

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The Way Forward

2. Geospatial Information Standards for Africa

- African countries and their partners collect and manage large amounts of geospatial data, but these data are often not easily accessible or not well documented and organized in a standardized way. **UN-GGIM: Africa** has embarked on the preparation of a guideline document on geospatial standards.
- National mapping agencies will use this guideline document as a reference for strengthening the harmonization of **Fundamental Geospatial Datasets in Africa**, including the common standards and metadata that would make statistical and geospatial information more useable and more relevant to a wider range of stakeholders.

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The Way Forward

3. Capacity Development

- To fully leverage the "enabling" capabilities of geospatial information for sustainable development, capacity building requires immediate attention so as to ensure that **Africa is not left behind** in this regard.
- However, in Africa, it is recognized that the **geospatial information divide is growing and an urgent intervention is required** to reverse this trend and to enable the continent to reap the benefit of this critical development infrastructure

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Thank You!