

Fundamental Data Themes – Where next?

Side Meeting



UN-GGIM
EUROPE

UNITED NATIONS
COMMITTEE OF EXPERTS ON
GLOBAL GEOSPATIAL
INFORMATION MANAGEMENT

8th Session of the Committee of Experts
30st July 2018



Agenda

1. Introductory Remarks

Antonio Arozarena, Vice-Chair, UN:GGIM Europe Regional Committee

2. Review of progress to date

Clare Hadley, WG Chair

Mark Iliffe, UN-GGIM Secretariat

3. Round Table on future actions:

Pier-Giorgio Zaccheddu

EG – ISGI

Gary Johnston

SC-GGRF

Siau Yong Ng

WG – NIA

Christina Wasström

ISO/TC211

André Nonguierma

UN-GGIM: Africa Secretariat

Mark Iliffe

UN-GGIM Secretariat

4. Open Discussion

Moderated and interactive discussion and questions from the floor

5. Summary and Conclusions

Moderator: Carol Agius

6. Second Administrative Level Boundaries

Guillaume Le Sourd, UN Dept of Field Support



Review of progress to date

Clare Hadley, Chair of FDWG



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Background to the FDWG

GGIM 5 – A report on fundamental data themes prepared by GGIM:Europe.

GGIM5 agreed that there is:

*'an urgent need for a set of **global fundamental geospatial data themes** that could be harmonized in order to enable the measurement, monitoring and management of sustainable development in a consistent way over time and to facilitate evidence-based decision-making and policy-making'*



UN GGIM: Europe asked to take lead to:



- Produce a recommendation for a minimum list of **global fundamental geospatial data themes**. Each data theme should be supported by a description and guidelines.
- Take account of **existing activity** being undertaken by UN-GGIM regional committees, ensuring that where possible **existing resources** are used.
- Consider the prioritisation of the data themes and how they **link to other data needs** within the UN-GGIM programme of work.
- Consider the specific needs and vulnerabilities of small island developing States.
- Ensure that the data themes should be technical in nature so as not to raise political concerns.





The route we took ...



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Methodology

Regions



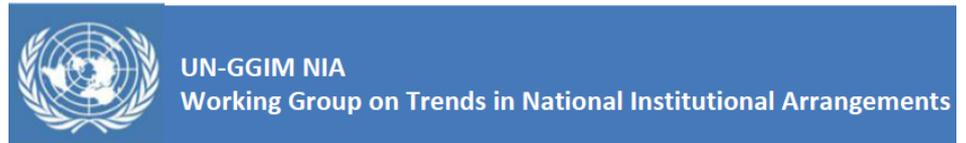
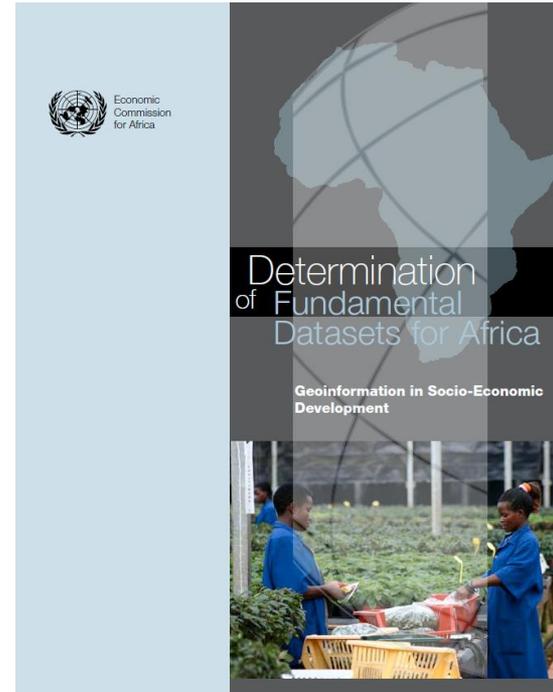
WG Members



It was not difficult to find existing work ...



Fundamental Geospatial Data



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'Common Denominator' approach

UN-GGIM: Europe	GGIM: Africa (UNECA and GSDR)	GGIM: AP (ANZLIC)	UN-GGIM: Arab States	UN GGIM: Americas (PAIGH)	WG - NIA
Geographical names	Geographic names	Place names	Names	Geographic names	Geographical names
Administrative units	Boundaries	Administrative boundaries	Administrative Boundaries	Administrative Units	Administrative units
Transport networks	Transportation	Transport	Transport Networks	Communications networks	Transport networks
Hydrography	Hydrography Drainage	Water	Hydrography	Hydrography	Hydrography
Orthoimagery	Imagery	Imagery	Imagery	Images	Imagery
Elevation	Hypsography	Elevation and depth	Elevation	Relief	Elevation
Land cover	Natural environment	Land cover	Land cover	Land cover	Land Cover
Cadastral parcels	Tenure/parcels (part of land management theme)	Land parcel and property	Land parcels	Cadastral records	Cadastral parcels
Addresses	Street addresses (part of land management theme)	Geocoded addressing	Addresses	Addresses	
Buildings	Populated places (part of Boundaries theme)			Population	Settlements
Utilities and government services	Utilities and services		Utilities		
Area Management	Land management units/areas				
Statistical Units					
Land Use					

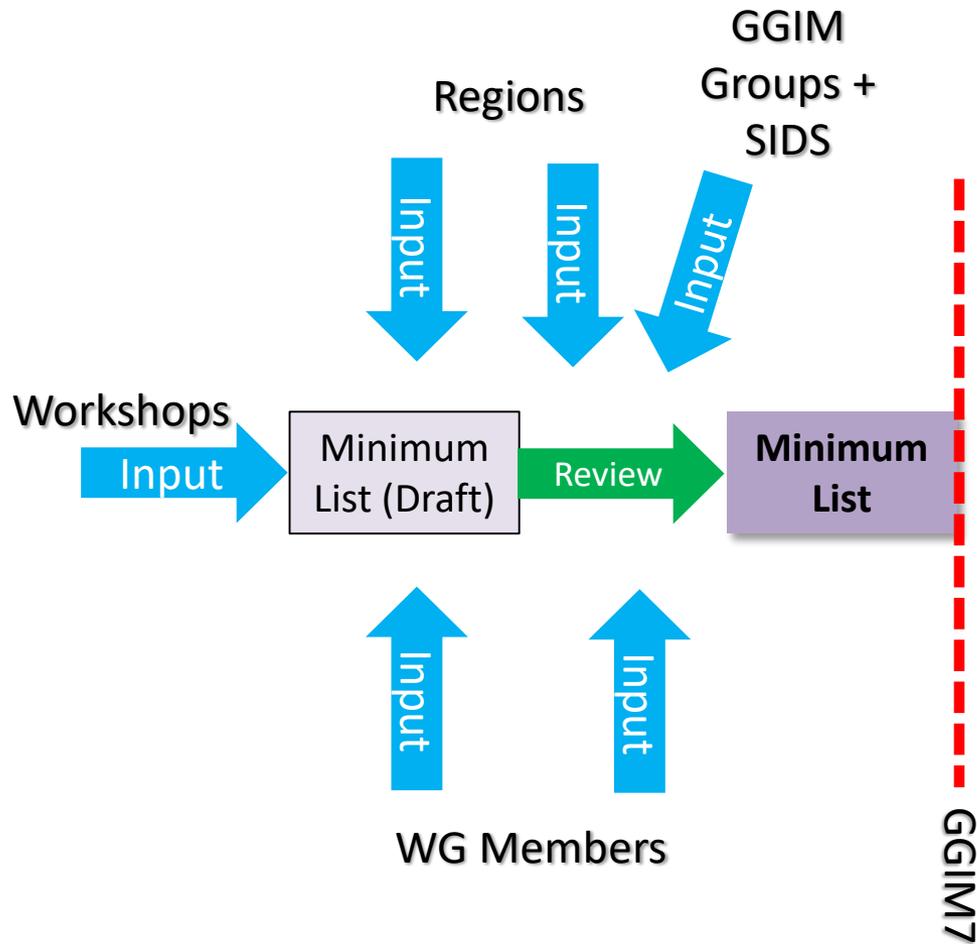


SDG Requirements approach

INSPIRE Theme	Sustainable Development Goal													
	1	2	3	5	6	7	8	9	11	12	13	14	15	
Address														
Administrative units														
Cadastral parcels														
Geographical Names														
Hydrography														
Transport networks (road, rail, water, air, cable)														
Protected sites														
Elevation														
Land cover														
Ortho-Imagery														
Geology														
Buildings														
Land use (existing , planned)														
Soils														
Human health														
Governmental services and utilities														
Environmental Monitoring facilities														
Production facilities														
Agricultural facilities														
Population distribution/ Statistical Units														
Area management - Regulated areas														
Natural risk zones														
Sea regions														
Oceanographic features														
Atmospheric conditions – meteorologic features														
Biogeographical regions														
Habitats and biotope														
Species distribution														
Energy resources														
Mineral resources														



Methodology



Data Themes and Reference Frame

- Addresses
- Buildings and Settlements
- Elevation and depth
- Functional Areas
- Geographical Names
- Geology and Soils
- Land Cover and Land Use
- Land Parcels
- Orthoimagery
- Physical infrastructure
- Population distribution
- Transport Networks
- Water
- Reference Frame: Global Geodetic Reference Framework



GGIM7 – Fundamental Data Highlights

The Committee of Experts:

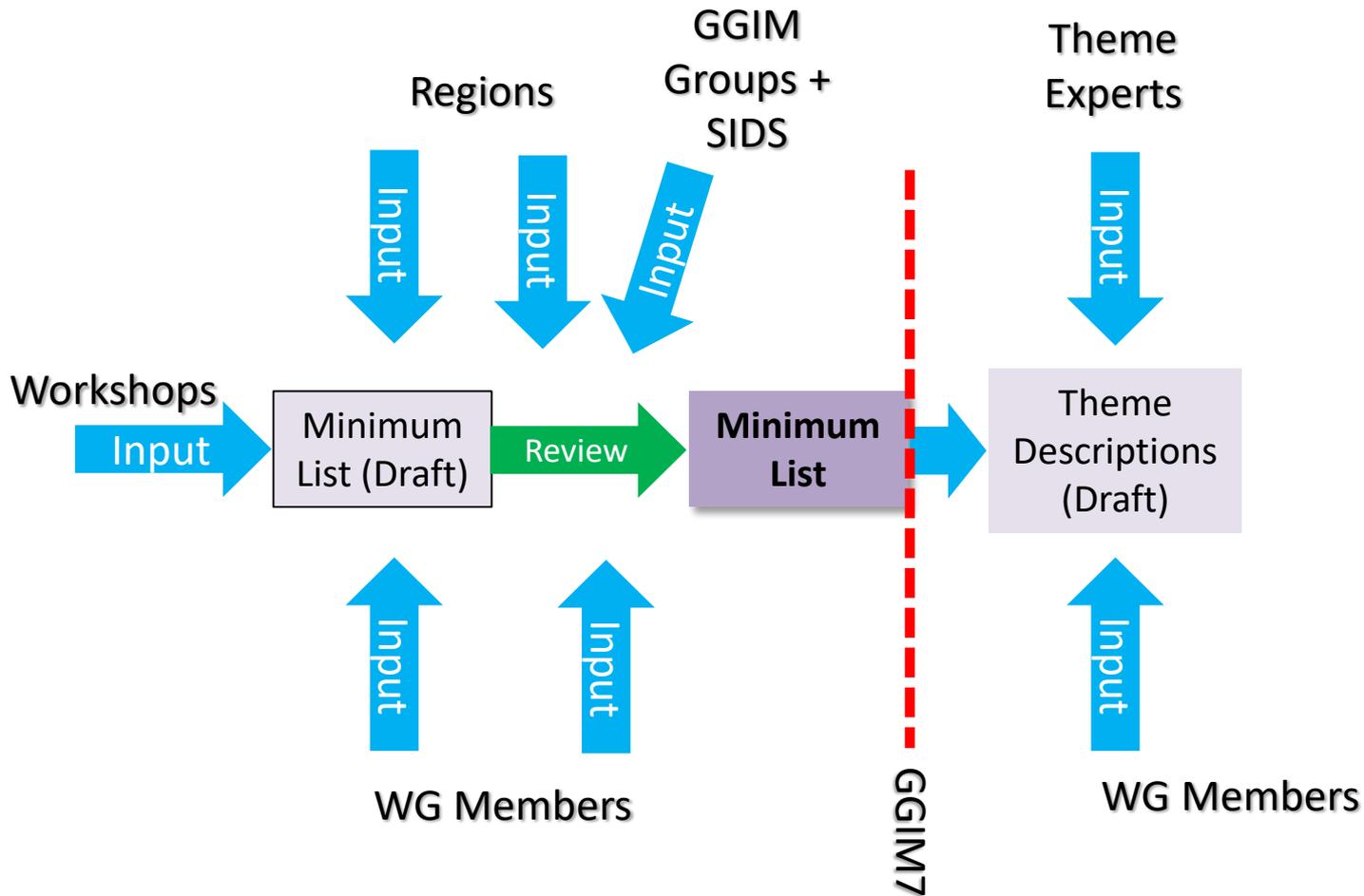
- **Supported adoption** of the minimum list subject to minor suggested amendments, noting that it had been developed through broad consultation and consensus
- Agreed that the GGIM:Europe should complete the top level theme descriptions and further detail could be done with experts in specific domains.
- Supported the offer from GGIM:Europe to work with Secretariat and other groups to draw up plans for promoting and socialising the proposed ML to the wider community including the non-geospatial community.
- Took note of the suggestions that the WG consider:
 - Including measures to ensure implement the data themes
 - Recognising positioning as a theme
 - How the themes may be integrated into statistics, EO and other imagery
 - How to bring contributing elements of GGIM's work together into a coherent communication so as to amplify their impact in influencing national policies



Progress since GGIM7



Methodology



Theme Description – One side A4 only

Theme title
Description
Why this theme fundamental?
Which sustainable development goals (SDGs) will it help to meet?
Geospatial data features in more detail
Possible sources of geospatial data
Existing geospatial data standards



Example - Addresses

Theme title:

Addresses

Description

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.

Why is this theme fundamental?

Addresses underpin government administration at all levels; and good administration is a prerequisite for achieving sustainable development goals. An address is often the unit to which a public service, such as water, is provided. Addresses also enable effective communication with citizens; informing them of policies applying to them, and notifying them of relevant incidents. The theme also helps in managing buildings and properties, and supports social surveys. Datasets relating to individuals or households are often linked to addresses, which can therefore play a role in connecting otherwise-unrelated information. Geocoding addresses relates such information to geographic location. This allows for location-based data analytics and data mining.

Which sustainable development goals (SDGs) will it help to meet?

Addresses have been identified as playing a key role in the achievement of SDGs 4,6,7, 9 and 11.

Geospatial data features in more detail

The addresses theme comprises a single feature type, address, to which a variable number of attributes may be attached. Typically, in urban areas these comprise at least one locator (building, floor or apartment number and/or name), a two-dimensional geographic position and a number of address components which place the address within other features such as a road, a locality, an administrative unit or postal code. In rural areas the locator may be less precise.

Possible sources of geospatial data

Address datasets are usually maintained by public authorities. While data may be created and maintained at local level, it should ideally be compiled into a single national register.

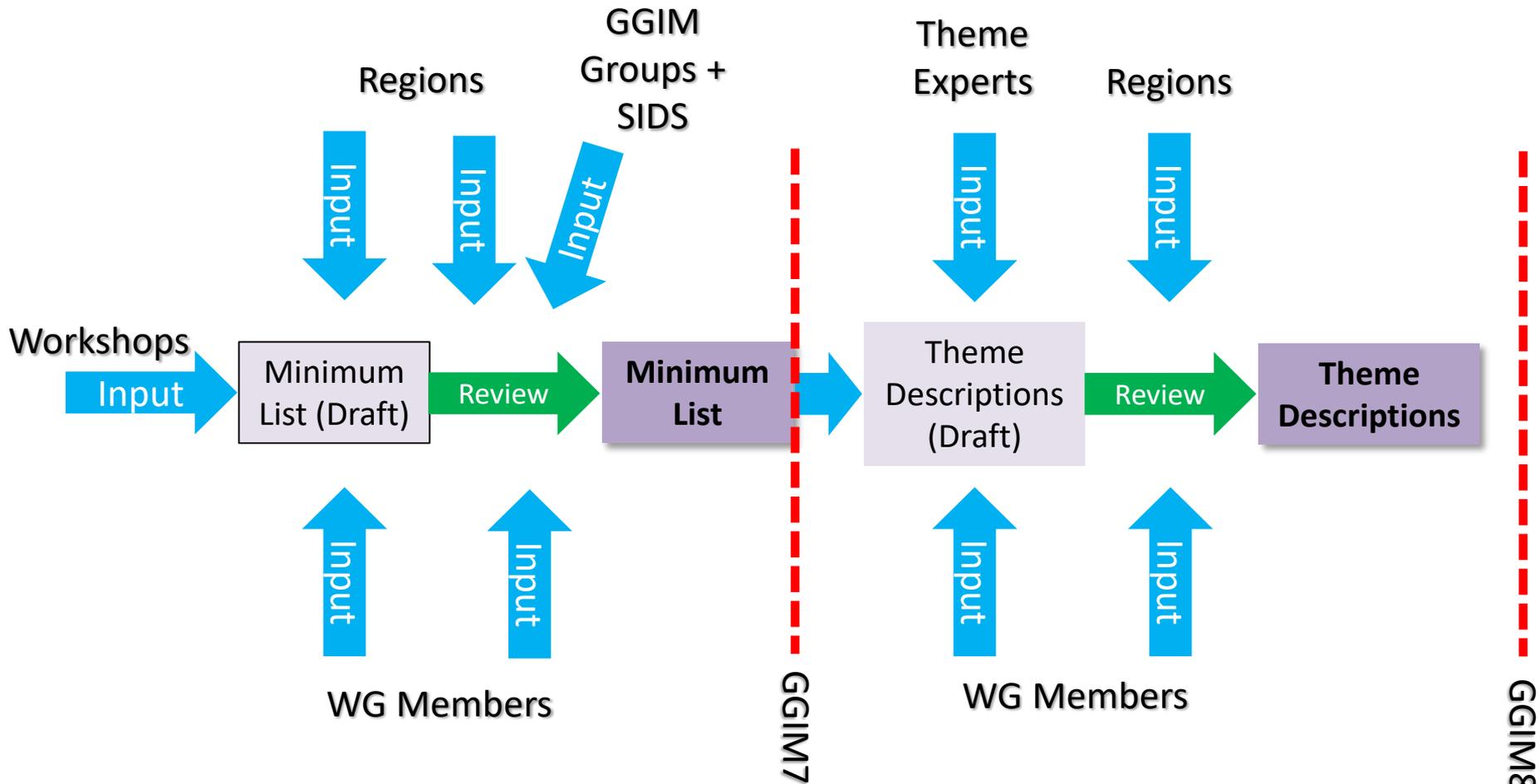
Existing geospatial data standards

Note: This is indicative. Other lists of standards exist and UN-GGIM will seek to work with thematic experts to develop a list of relevant data standards.

- INSPIRE Data Specification on Addresses – Technical Guidelines 3.1
- ISO 19160-1:2015 Addressing -- Part 1: Conceptual model
- ISA Programme Location Core Vocabulary
- ISO 19160-4(UPU, Universal Postal Union) Addressing--Part4: International postal address components and template language



Methodology





Where does the road go now?



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Where does the road go now?

- Promotion and awareness raising



Icons



Global Geodetic Reference Frame



Geographical Names



Addresses



Functional Areas



Buildings and Settlements



Land Parcels



Transport Networks



Elevation and Depth



Population Distribution



Land Cover and Land Use



Geology and Soils



Physical Infrastructure



Water



Orthoimagery



Data Themes Storyboard

Created by the GGIM Secretariat:

[Story Map Cascade](#)



Geographical Names

Geographical names provide orientation and identity to places. They are location identifiers for features of the environment, in cultural and physical features on Earth, such as regions, settlements, or any cultural or geographic or topographical feature of public or historical interest, such as Uhuru Peak of Mount Kilimanjaro.

Functional Areas

Functional areas reflect, and support, the

Population Distribution

Land Parcels

Land parcels may be associated with land registers (or equivalent) that establish the rights and possibly the restrictions, and responsibilities that a party (a natural or legal person) has on a land parcel on ground below ground or above ground.

Elevation and Depth

This theme contains vertical distances from a reference surface. It includes the shape of the surface of the Earth, both on land and under a body of water such as oceans, seas, lakes and rivers. Elevations and Bathymetry measure the distance and the shape of landforms and features in relation to a reference surface (datum) (signed Elevation/Depth # 0).

Reference surface can be the ellipsoid of the GIS, (geoid or system) (oid) or the geoid of the GIS, or in the case of city, it may also be a reference surface that estimates the tide or the season. This data contributes to the national data infrastructure in the form of Digital Elevation Models (DEM), Surface Models (DSM), contours, isolated points, etc.

Water

Water has a geometric location and identifier of some type. This might be a name. Attributes will vary by sub-theme (i.e. marine features will require different attributes e.g. salinity, temperature, as compared with terrestrial rivers e.g. sink flow).

Coastal and transitional waters as well as the

Buildings and Settlements

The Buildings and Settlements theme spans various scales or resolutions. The Building is at the more granular level, which at a smaller scale might be referred to as a block or area. A settlement is formed by a collection of built-up areas, including dwellings, other buildings, and associated facts.

Minimum attributes are the location geometry and an identifier of some type. Additional useful attributes include number, address, name, functional classification.

Urban Land Use

Urban Land Use is required, for example, for developing land management policy, understanding spatial patterns of biodiversity and predicting effects of climate change and may also be used to forecast other phenomena, such as coastal erosion and flooding. It is critical data in national assessments of biodiversity, conservation efforts, and water quality monitoring.

Land Cover and Use

Transport Networks

Physical Infrastructure

Industrial and utility facilities and administrative and social government services such as public administration, transport infrastructure, civil protection sites, schools and hospitals.

Many SDG targets explicitly mention the accessibility to basic services. The infrastructure of a country is the means by which services are delivered to the population, be that hospitals, schools or electricity and telecom services.

Physical Infrastructure

Geology and Soils

Geology and soils are essential for understanding natural resources, soil erosion or identity, soil pollution, nuclear waste storage, crop suitability, and conditions that affect the structural engineering of buildings.

Geology and Soils

Addresses

The addresses theme comprises a single feature type, address, to which a variable number of attributes may be attached. Typically these comprise at least the locator (building floor or apartment number), street name, a two-dimensional geographic position and a number of address components that place the address within other features such as a road, a locality, an administrative unit or postal code.

Address datasets are usually maintained by a single authority. Where data may be created and maintained at local level, it could ideally be compiled into a single national register.

Fundamental Geospatial Data Themes



Where does the road go now?

- Promotion and awareness raising
- Inclusion in the Integrated Geospatial Information Framework



Integrated Geospatial Information Framework



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Where does the road go now?

- Promotion and awareness raising
- Inclusion in the Integrated Geospatial Information Framework
- Regional and national implementation ...



Workshop on implementation in Africa



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Workshop on Fundamental Themes - Europe



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How are we doing against our ToRs?

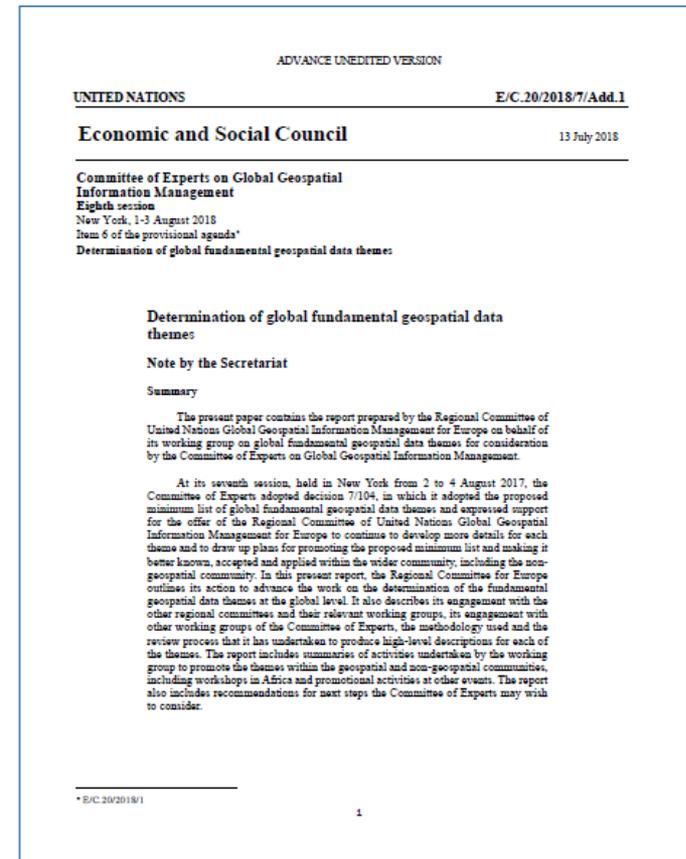
1. Produce a recommendation for a minimum list of global fundamental geospatial data themes. ✓
 2. Each data theme should be supported by a description and guidelines. ✓
 3. Take account of existing activity being undertaken by UN-GGIM regional committees, ensuring that where possible existing resources are used. ✓
 4. Consider the prioritisation of the data themes and how they link to other data needs with in the UN-GGIM programme of work. ✓
 5. Consider the specific needs and vulnerabilities of small island developing States. ✓
 6. Ensure that the data themes should be technical in nature as not to raise political concerns. ✓
- And
7. Suggestions from the Committee of Experts at GGIM7 ✓



GGIM8 - Report

Report to GGIM8 includes:

- Methodology
- Theme Descriptions
- Theme icons
- Promotion activities
- Recommendations to Committee of Experts



The Committee of Experts is invited to:

- (a) Take note of the report and express its views on the valuable progress of the Working Group, including the provision of theme descriptions for the 14 global fundamental geospatial data themes; and
- (b) Provide guidance on steps to promote, communicate and raise awareness of the 14 global fundamental geospatial data themes widely across the global geospatial information community, UN-GGIM Regional Committees, wider UN System, and within the broader global geospatial ecosystem.



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Guillaume Le Sourd, UN Dept of Field Support





Round Table



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Where next? – Round Table

Round Table participants have been asked:

- *How do the fundamental themes fit with your work programme?*

And then:

- *What steps do you think should be taken to promote and socialise the themes, integrate them with other GGIM work, and support implementation?*



Round Table on future actions

Pier-Giorgio Zaccheddu

Gary Johnston

Siau Yong Ng

Christina Wasström

André Nonguierma

Mark Iliffe

Rik Wouters

EG – ISGI

SC-GGRF

WG – NIA

ISO/TC211

UN-GGIM: Africa Sec

UN-GGIM Secretariat

EG-LADM

Moderators: Clare Hadley and Carol Agius



Discussion



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Summary and Conclusions



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Thank you for coming!



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