

Integrating Geospatial Information and Statistics

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United Nations Initiative on
Global Geospatial Information Management

Positioning geospatial information to address global challenges

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Background & Drivers

Background

- Increasing demand for location based information about places, people, business, economic growth, wellbeing, development,....
- Recognition of the value of linking socio-economic information to location

Global Drivers

- Post-2015 Development Agenda
- Sustainable Development (Rio+20)
- Inclusive Growth
- Environmental Indicators - climate change, etc.
- Human Development
- Economic Performance and Social Progress



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UNSC Decision 44/101, February 2013

- Recognized importance of integrating geospatial information and statistics in supporting social, economic and environmental policy decision-making
- Welcomed greater collaboration between the geospatial and statistical communities at national and international levels
- Requested UNSD to establish an Expert Group composed of representatives of both statistical and geospatial communities to:
 - Carry out work on developing a statistical spatial framework as a global standard for the integration of statistical and geospatial information
 - Including addressing technical, institutional and information policy issues
 - Convene an international conference in 2014 as a way to reach out and develop best practices
- In developing an international statistical geospatial framework:
 - What might this look like?
 - What elements might be required?
 - Statistical Spatial Framework developed by the ABS is an example



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UN-GGIM Decision 3/107, July 2013

- Acknowledged the critical importance of integrating geospatial information with statistics and socio-economic data and the development of a geospatial statistical framework, especially in the context of the post-2015 development agenda
- Supported the decision by Stat. Com. to create an Expert Group
- Supported holding an international conference on the topic and urged the Expert Group to look into institutional arrangements and standards that would facilitate better data integration
- Consider the unique opportunity offered by the preparations of the forthcoming 2020 Round of Censuses
- Recognized the role of ‘linked data’ as an effective methodology for dynamically linking datasets and recommends this be considered by the Expert Group
- Encouraged NGIAs to reach out to their NSO counterparts to actively engage in a dialogue at the national level
- Requested the Expert Group to report back to the Committee in 2014



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Geospatial framework

Analysis and aggregation across geographies



Aggregated to Local Government area or higher



Aggregated to suburb or postcode



Location information at address level



Geocoded unit level data

25 Smith St = x,y: 35.5676, 135.6587



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UN Expert Group on the Integration of Statistical and Geospatial Information

30 October - 1 November 2013, NY



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First meeting of United Nations Expert Group on the Integration of Statistical and Geospatial Information

30 October - 1 November 2013, UNHQ, New York

Decisions/conclusions:

“Agreed on the importance of influencing the 2020 Round of Population Censuses, but noted the importance of the integration of statistical and geospatial information to a broader agenda including agriculture and economic censuses, environmental-economic accounting, and the Post-2015 Development Agenda”



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Decisions/conclusions:

- Country experiences in integrating statistical and geospatial information using geography.
- Approaches to determine and represent geographical units, including geocoding methods.
- Comparisons of grid-based versus administrative approaches to the collection, compilation and dissemination of statistics.
- Statistical analysis of geospatial (environmental, social, etc.) information, and relevance of SDI's and international standards.
- Positioning for the future. Trends in technology, big data, 2020 Round of Censuses, and the post-2015 development agenda.



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International Workshop on Integrating Geospatial and Statistical Information

9-12 June 2014, Beijing, China



International Workshop on Integrating Geospatial and Statistical Information

联合国地理信息与统计融合国际研讨班



147 participants from 41 countries

June 9, 2014, Beijing, China



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<http://ggim.un.org/International%20Workshop.html>

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International Keynote Address

Global Integration Challenges

Geospatial Perspectives

Statistical Perspectives



Location information for decision support- we 'do' because others 'need'. Deliver what is needed (including finding out what is needed)

Get on with it - or someone else will

GIS is more than a tool. Modernise your thinking. GIS enables information management, supports analysis, enables integration, enables policy, etc.

Strong **coordination between statistical and geographic professions** provides an institutional environment for driving integration from the top. Need to have the political will to succeed

Statistical Modernisation programs are an opportunity to instill geospatial and statistical integration into all stages of the statistical cycle, including through metadata driven infrastructure

Population Censuses are key enablers for developing and demonstrating integration and cooperation

Session 1 - Integrating statistical and geospatial information using geography

Country Experiences

Bangladesh
Oman
Seychelles
Turkey
China
Fiji
United Arab Emirates
Mongolia
Ghana

National Statistical Offices and National Mapping/Geoscience/Geospatial Offices are collaborating

Hierarchical geography classifications in widespread use

Population Census a geo-spatial enabler in the collection, analysis and dissemination phases

Data needs to be transformed into information

Widespread use of technology (GPS, ARCGIS). GIS is no longer a new technology - it is embedded in every-day operations e.g. mobile apps

Appetite for more attention to be given in developing standards and capability development

Partnerships with the private sector

The principle of 'collect once - use for multiple tasks' demands collaboration



Session 2 - Approaches to determine and represent geographical units, including geocoding, for statistics

Australia
Poland
Saudi Arabia

- Cooperation between statistical agencies and mapping agencies is CRUCIAL to successful integration, and to successful delivery of information (data, microdata, statistics, maps, databases, etc).
- Aligning geospatial efforts within a statistical office with plans and efforts for developing a NSDI is a useful demonstration of coordination and collaboration within an office
- Data needs to be geocoded and those geocodes need to be maintained - maintenance is essential
- Power of the 'x,y' unit, including for microdata, for collecting data, processing data, and disseminating information drawn from that data
- Information has many uses. Data needs to support known and unknown uses, current and future.
- Is there a desire or a need for some level of common geography in a global context?



Session 2 - Approaches to determine and represent geographical units, including geocoding, for statistics



- Capturing data takes a lot of work - there are lots of different data types that need to be captured (map data, implied geospatial information data, parcel information, statistical layers, etc.)
- Imagery data is important for many reasons. It improves the accuracy of existing data, from whatever source, and can be integrated with other data sources to ensure complete coverage of a country for a Census
- Geographic information is a form of big data - it is voluminous
- Geographic information needs to be current - it needs regular updating
- Coordinating across agencies can be difficult but is beneficial. Suggestions on how to achieve - coordination body (e.g. Philippines), have knowledge of your partners business (e.g. Nigeria Surveyor-General).
- Sharing results with others provides an opportunity to strengthen and build support for continuous improvement within a system (e.g. the public sector) not just within a single organization
- Geodetic reference frame is an important part of the UN-GGIM's work

Morocco
Philippines
Nigeria
Sri Lanka

Session 3 - Grid-based and administrative approaches to the collection, compilation and dissemination of statistics

- Approaches need to be applicable to all types of data including sensitive administrative data
- Meeting legal obligations to protect privacy through confidentiality takes a lot of effort, and requires a sustainable and repeatable solution
- Administrative approaches are responding to the need for statistics for smaller and smaller regions by creating smaller and smaller building blocks
- Approaches need to be flexible to accommodate use in all operations (planning, data collection, processing, sampling, monitoring, results, policy) and all data collections (population census, economic census, surveys, administrative data, etc.)
- Approaches need to be sustainable, repeatable, maintainable over time
- Are there opportunities for institutional partnerships within a country to create a unique 'grid' or 'map' for use by all agencies within a government

France
Mexico
Indonesia

Session 3 - Grid-based and administrative approaches to the collection, compilation and dissemination of statistics

USA
China
Kenya

- What are the merits of each approach? Is there a common understanding and global agreement on the merits of each? The Expert Group has started articulating the pros and cons, and research is continuing

- Metadata as well as data is important

- Does it have to be one approach or the other? Can they work together? Are there uses and users for both, or a hybrid of the two?

- Building knowledge and capability in approaches across all operations (collection, compilation, analysis, dissemination, etc.) is important



Session 4 - Statistical analysis of geospatial information, and relevance of SDIs and international standards



- Integration can start simple and inexpensively
- Coordination of organizational entities within a country, led by an institution with integrated leadership, can create an environment for integrating between the two sciences
- Users, both public and private, are demanding the information we can produce through collaboration and coordination
- Consumers are driving change, consumers have choice, consumers will need standards, interoperability and accuracy. As the professions, we need to ensure this is carried forward
- Through collaboration and coordination, arrive at harmonization on journey towards synergy. This also requires building geo-literacy
- Change takes commitment

Session 4 - Statistical analysis of geospatial information, and relevance of SDIs and international standards



- Collaborative techniques and tools:
 - Working together on a demonstration project
 - Joint development of a National Statistics Development and National Spatial Data Infrastructure Strategy
 - Joint development of remoteness classifications
 - Joint statement of roles (e.g. of who produces maps)
- Importance of demonstrating benefits for the government e.g. location information for decision support
- Is there any global convergence towards a 'norm' for the smallest unit e.g. 300mx300m



Session 5 - Positioning for the future: Trends in technology, big data, 2020 round of Population censuses, and the Post-2015 Development Agenda



- Geospatial-statistical integration gives an opportunity to contain (reduce) costs
- US system is a good example of how to build and maintain an address system as a basis for geospatial and statistical integration
- Data system hierarchy - spatial statistics that require a 'x,y' coordinate and regional statistics that can be produced from administrative boundaries
- Geodata Cooperation Agreement is a tool for agencies to work together to share spatial data for official use at an annual fee (Sweden)
- Spatial data can improve the quality (accuracy, relevance, accessibility) of official statistics
- Need a paradigm shift - must include spatial data and GIS-tools in the whole production chain: input-throughput-output
- Technology can enable an integrated platform to facilitate statistical and geospatial integration

Key Messages

We are on a journey

Users want information, not data

**Collaboration
Cooperation
Coordination
Commitment
(C)Harmonisation**

Population Census is an enabler and opportunity

This is the start of an important journey to unite our professions and our business.

Users want information/knowledge. We need to transform data into information. Collection, processing, analysis and operations are a means to an end - not the end in themselves.

Collaboration is essential. Statistics and Maps are parts of an overall information management framework. They don't exist in isolation.

Cooperation is essential. Between communities, between countries. Regionally and internationally. For capability building. To lower costs. To turn data into information.

Coordination between the statistical and geographic offices within a country is an important step. Institutional integration provides the political will within a country to support statistical and geospatial integration.

All of this takes commitment.

Population Censuses are KEY enablers for demonstrating statistical and geospatial integration - but its more than just input. Its all parts of the production chain: input – throughput – output, statistical cycle, and should be reusable for other collections and data sources. Build in a sustainable and repeatable way.



United Nations
Statistical
Commission



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INFORMATION MANAGEMENT

United Nations Global Forum on The Integration of Statistical and Geospatial Information

4-5 August 2014, UN Headquarters, New York

**This Global Forum is being convened in conjunction with the
4th Session of UN-GGIM, and is open to National Statistical
Organisations, UN-GGIM members, and invited experts**

Come and interact with international experts and colleagues from the statistical and geospatial communities on topics including:

- Integration of socio-economic and environmental information using geography
- International standards development to improve geo-statistics
- New developments in geocoding statistics
- How National Spatial Data Infrastructure developments can support statistical operations
- Development of an international statistical – geospatial framework
- Positioning countries for the 2020 round of Population Censuses

Panel sessions will discuss key topics

<http://ggim.un.org/Global%20Forum.html>

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Thank you



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