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Development of a knowledge base for geospatial information management

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Note by the Secretariat

Summary

The present paper contains the report of the Secretariat on the initiative to design and develop a knowledge base for geospatial information and to disseminate it through a web-based portal for consideration by the Committee of Experts on Global Geospatial Information Management.

At its third session, held in July 2013, the Committee of Experts, by decision 3/112 (see E/2013/46), took note of the report of the Secretariat on the initiative to design and develop a knowledge base for geospatial information and to disseminate it through a web-based portal. The Committee invited Member States to provide feedback to the Secretariat on the structure of the knowledge base portal prototype, and requested the Secretariat to make the beta version of the portal operational after its third session. The report of the Secretariat describes the new structure of the knowledge base and its content in terms of geospatial information themes presented by geographical level (global, regional and national), based on the comments received from Member States. The information, collected from the best practices, case studies and four survey-based studies compiled by countries, will be made available through the knowledge base. The report outlines the actions to be taken for the completion of a searchable and continuously updated repository, building on the existing resources of the website of the Committee of Experts on Global Geospatial Information Management.

I. Introduction

1. At its third session, held in July 2013, the Committee of Experts took note of the report prepared by the Secretariat on the initiative to design and develop a UN-GGIM knowledge base and disseminate it through a web-based portal, following-up on its previous decision 2/105 to create a knowledge base for geospatial information (E/2012/46,) which was initially mandated by the ECOSOC 2011 resolution that established the Committee of Experts. The Committee invited the Member States to provide feedback to the Secretariat on the structure of the UN-GGIM knowledge base portal prototype, and requested the Secretariat to make the beta version of the UN-GGIM knowledge base portal operational after the Committee of Experts meeting.

2. The Secretariat has since sought comments from Member States and international organizations on ways to enhance the structure, content and portal interface of the knowledge base. The Secretariat received very useful comments from a Member State and concrete help on the design and development of the knowledge base from an intern from another Member State. With this help, the Secretariat has initiated the redesign of the knowledge base with a new structure. In addition, it reinforced its content in order to reach out to more users, acknowledging that it will take some time and resources in order to have a finalised operational version of the knowledge base.

3. The present report describes the new structure of the knowledge base and its content in terms of geospatial information categories presented by geographical level (global, regional and national). Building on the existing resources of the website of the Committee of Experts, the information, collected from the best practices, case studies and four survey-based studies compiled by countries, will be made available through the Knowledge Base. The report outlines the actions to be taken for the completion of a searchable and continuously updated repository, and the intention of a final product by 2015. The Committee of Experts is invited to take note of the report and to express its views on the way forward for the global geospatial information community, under the coordination of the Committee of Experts, with regard to the development and maintenance of the GGIM knowledge base for geospatial information. Points for discussion and decision are provided in paragraph 16.

II. Structure and content of the knowledge base

4. Taking into account comments provided by Member States, following the presentation of the knowledge base prototype at the third session of the Committee of Experts, the Secretariat has proceeded with a new structure for the knowledge base to provide easy access to a global repository of information and knowledge in support of global geospatial information management. The knowledge base is intended to be a dynamic resource that provides a simple user interface and tools to search, browse, find and answer questions on geospatial information management. Its target is a wide cross section of users from the national geospatial information authorities and other governmental organizations, international and regional organizations, universities and research institutions, NGOs and the general public.

5. The knowledge base is also intended to be used to generate new information; contribute to the value proposition and understanding of geospatial information; promote the development of geospatial information infrastructures at national, regional and global levels; increase partnerships and collaborative geospatial ventures; and compile and disseminate best practices, particularly those related to legal instruments, management

models and technical standards, in support of capacity development in geospatial information, particularly in developing countries.

6. The structure of the knowledge base has been built around three levels of geospatial information management: global, regional and national. Each level is in turn broken down into categories, then eventually into sub-categories (see Annex I). This telescopic structure is built to be simple and intuitive, but also taking into account the functionalities of the software at disposal.

7. The home page provides a statement describing the intent of the knowledge base, with simplified access through the three main geospatial information entries presented by geographical level. In addition, the home page provides a list of the latest articles by title, date of posting, as well as date of last modification. We find also the popular articles listed by title, date of posting and rating. Tags of key words related to geospatial information and a search entry are also provided (see Annex II).

8. Each of the main entry levels can be opened into a number of categories with a brief explanation on each page associated with the category. The categories under the global level are in turn decomposed into sub-categories. Under each category or sub-category, the knowledge base contains a classified and categorised set of documents covering areas such as: UN-GGIM resolutions, laws/directives related to geospatial information, geospatial information strategies and policies, geospatial information management best practices and case studies in countries, training manuals and technical toolkits on geospatial information, country reports on the progress of national geospatial information infrastructures, information on educational/training institutions in geospatial information, and country survey results among others (see Annex III).

9. Key content for the knowledge base is the country survey results on four major thematic areas: (1) the status of national geospatial information management and systems; (2) global geodetic information management; (3) the status of mapping in the world; and (4) the integration of geospatial and statistical information (see Annex IV). The survey-based questionnaires provide a wealth of information which, if organized by country, with a cross-cutting analysis of the results, would help to build a country profile, and eventually to measure progress/changes over time in survey responses.

III. Use and search capabilities

10. As stated earlier, it is advantageous to have the information contained in the knowledge base organized by country to measure progress/changes over time in the status of geospatial information. However, those who may be looking for other information may not search for information by country. One suggestion by a Member State is to organize documents, cited in survey responses, by generally agreed SDI components (governance, operational policies, standards, technology, and data). This would better serve those looking for information with a country tag as well so you can always refer back to the country.

11. While this is an important step towards a better understanding and overview of the components of a national geospatial information infrastructure and their status in different countries, what is still more important is to identify the gaps experienced by countries, and help find the best ways to work with them and the relevant organizations on how to overcome and close these gaps. Therefore, and it was stated in a previous

report, further work should be carried out in the form of a detailed analysis of the four questionnaires to identify the gaps and devise a road map for supporting Member States in need to strengthen their geospatial information capacities.

12. A fundamental component of creating and maintaining the UN-GGIM knowledge base is its population with relevant geospatial information facts to support the work of Member States and other relevant stakeholders. An important body of information needed for the knowledge base is the general information on the status of geospatial information management across Member States. It is therefore proposed that a UN-GGIM Fact Book detailing Member State geospatial information management profiles be created. Such a profile would provide information on the organisation, data and standards, technical infrastructure and current programmes and projects. Annex V details the initial categories and data fields that are proposed for the Member States profile.

13. In presenting the prototype, it was suggested to add registration and password-protected logins, but the reaction has been that the knowledge base should be publically accessible in order to maximize the sharing of information. Additionally, the Secretariat has received many requests about the provision of census results by individual countries. In this regard, the Committee of Experts is invited to take a position whether it would be acceptable to respond to the requests and release the results about individual countries.

14. The knowledge base is nearing the status of a final product. Capturing all the features outlined initially has been time-consuming and required resources which were not always available. The work on the knowledge base will continue after the beta version has been reviewed by the Member States and after taking into account the views expressed by the Committee of Experts at its fourth session. It is envisaged that the final product would be completed and presented to the Committee of Experts at its fifth session in 2015.

15. Importantly, the knowledge base is created upon requests from the Member States and dedicated primarily to their user needs. Its sustainability relies on the degree of involvement of and input from the Member States. Therefore, the Secretariat requests contribution of material from the Member States and a continued provision of updated documents on the status of development of their geospatial information infrastructures. The contribution of the regional committees is also important to populate the knowledge base with useful and productive information on the progress made at regional levels.

V. Points for discussion

16. The Committee is invited to:

(a) Take note of the report and to express its views on the way forward for completing the knowledge base portal, including the additional functionalities to be incorporated;

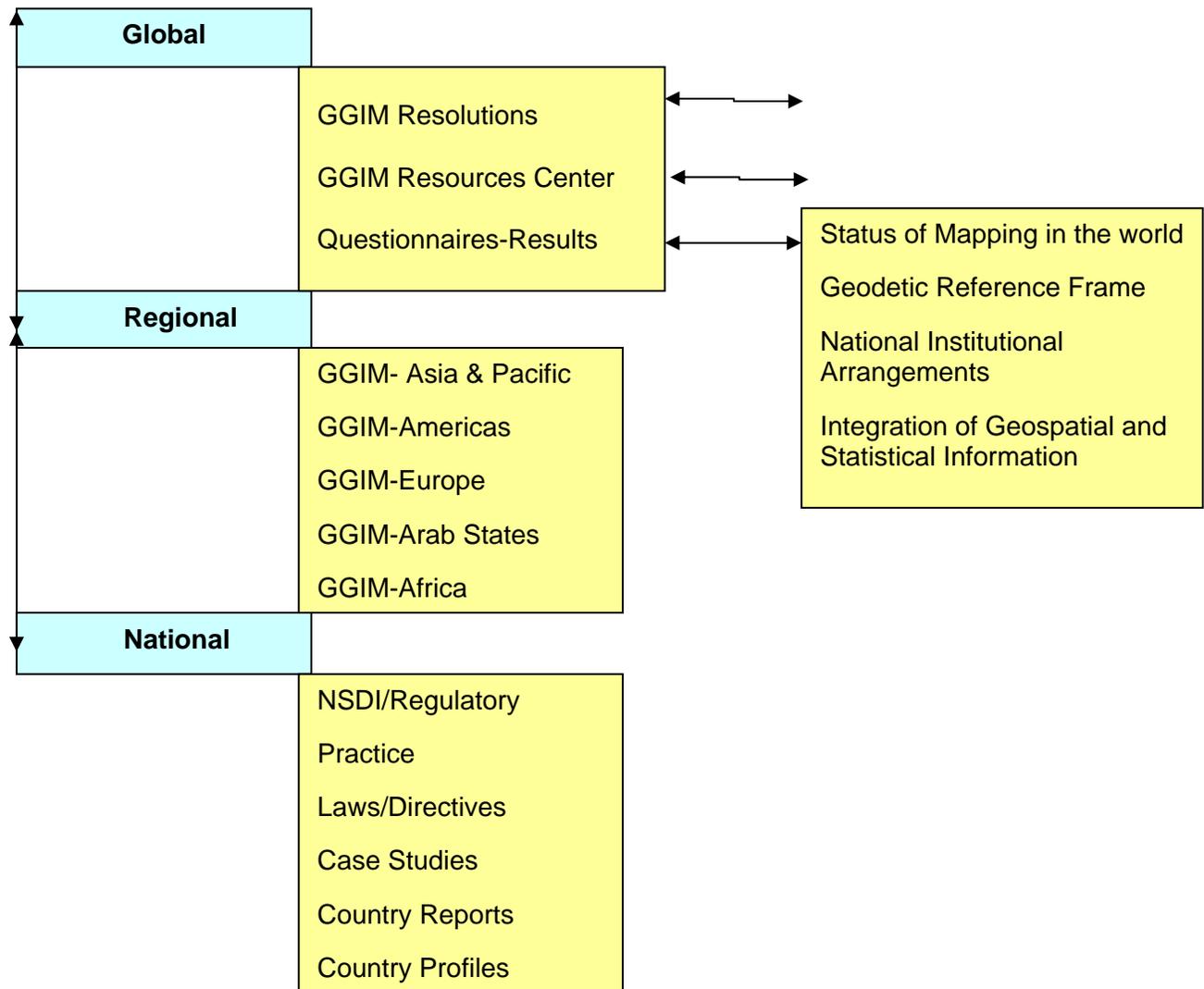
(b) Encourage Member States to contribute material and assist in the provision of relevant information at national level;

(c) Consider the proposal to create a UN-GGIM fact book consisting of Member States profiles and to review the categories and data fields required, as well as to contribute to the creation of their member profiles, and whether the profiles should be made public information;

(d) Provide guidance on what mechanisms will be put in place for the maintenance of the knowledge base, and what other kinds of data/information the geospatial information community wish to have access to; and

(e) Provide guidance on the time frame within which a progress report should be submitted at a future meeting.

Annex I: Structure of the Knowledge Base



Annex II: Knowledge Base Home Page

The screenshot shows the GGIM Knowledge Base home page. At the top, there is a navigation bar with links for Home, Search, Tags, and Members. Below this, a welcome message for a guest user is displayed. The main content area is divided into several sections:

- Knowledgebase:** A search bar and a breadcrumb trail showing 'Home > Knowledgebase'.
- Introduction:** A paragraph explaining the purpose of the knowledge base, which is to optimize data collection and provide access to a global repository of geospatial information.
- Navigation:** A sidebar menu with categories: Global, Regional, and National.
- Latest Articles:** A table listing recent articles with their titles, posting dates, authors, and last modified dates.
- Popular Articles:** A table listing popular articles with their titles and ratings.

Latest Articles Table:

Title	Last Modified
User case study from Egypt ★★★★★ Posted Tuesday, July 16, 2013 by GGIM_KB_Admin , Tags: Case study , Egypt	Tuesday, June 17, 2014
user case study of Switzerland Posted Friday, October 18, 2013 by GGIM_KB_Admin , Tags: Europe , Mapping , Switzerland...	Tuesday, June 17, 2014
Questionnaire Results (E/CN.3/2013/2) @ Posted Tuesday, June 10, 2014 by Staff_Consultant	Tuesday, June 17, 2014
Questionnaire Results (E/C.20/2013/5/Add.1) @ Posted Tuesday, June 10, 2014 by Staff_Consultant	Tuesday, June 17, 2014
Questionnaire Results (E/C.20/2013/4/Add.1) @ Posted Tuesday, June 10, 2014 by Staff_Consultant	Tuesday, June 17, 2014

Popular Articles Table:

Title	Rating
National Spatial Data Infrastructure & Regulatory Practices ★★★★★	

Annex III: Categories and Themes

The screenshot displays the GGIM Knowledge Base website interface. The browser address bar shows the URL <http://ggim.un.org/knowledgebase/KnowledgebaseCategory11.aspx>. The page title is "GGIM Knowledge Base".

Navigation links include Home, Search, Tags, and Members. A welcome message for a guest user is present, along with links for Login and Register. There are also links for Latest Additions and Most Popular.

The main content area features a breadcrumb trail: Home » Knowledgebase » Global. A tree view on the left lists the following categories and their sub-items:

- Knowledgebase
 - Global
 - GGIM Resolutions
 - Resolutions and Decisions of High Level Forum
 - Resolutions of Committee of Experts
 - Resolutions Specific to Work Programme
 - Supporting Resolutions
 - GGIM Resources Center
 - Resource Documents
 - List of Educational/Training Institutions
 - Toolkits and Technical Resources
 - Links Related to Geospatial Information
 - Questionnaires
 - Status of Mapping in the World
 - Geodetic Reference Framework
 - National Institutional Arrangements
 - Integration of Geospatial and Statistical Information
 - Regional
 - GGIM-AP
 - GGIM-AM: Introduction, Rules
 - GGIM-Europe
 - GGIM-Arab States
 - GGIM-Africa
 - National
 - National Spatial Data Infrastructure and Regulatory Practice
 - Geospatial Information Laws/Directives
 - GGIM Case Studies/Best Practices
 - Country Reports
 - UN-GGIM Country Profiles

A search bar is visible at the bottom right of the page.

Annex IV: Thematic Questionnaires

The screenshot shows a web browser window displaying the GGIM Knowledge Base. The URL is <http://ggim.un.org/knowledgebase/KnowledgebaseCategory7.aspx>. The page title is "Status of Mapping in the W...".

The GGIM logo is visible, along with the text "UNITED NATIONS INITIATIVE ON GLOBAL GEOSPATIAL INFORMATION MANAGEMENT". Navigation links include "GGIM Home", "UN Home", "Department of Economic and Social Affairs", "UN Statistics Division", and "UN Cartographic Section".

The main content area is titled "GGIM Knowledge Base" and includes a search bar and navigation options: "Home", "Search", "Tags", "Members", "Latest Additions", and "Most Popular". A breadcrumb trail reads: "Home » Knowledgebase » Global » Questionnaires » Status of Mapping in the World".

The left sidebar shows a tree view of the Knowledgebase structure:

- Knowledgebase
 - Global
 - GGIM Resolutions
 - GGIM Resources Center
 - Questionnaires
 - Status of Mapping in the World
 - Geodetic Reference Framework
 - National Institutional Arrangements
 - Integration of Geospatial and Statistical Information
 - Regional
 - National

The main text area contains the following paragraph:

The questionnaire on the Status of Mapping in the World was distributed globally in April 2012 by the Secretariat of UN-GGIM to the national mapping agencies of the Member States (The original questionnaire was in English, accompanied by versions in French, Russian and Spanish, to support its use by a wider technical audience). The analysis was carried out by ISPRS (by Prof. Gottfried Konecny) and the initial results concerned 91 responses (from 90 UN Member States and 1 from Northern Ireland) that have been received as of the end of May 2013. In terms of the number of responses from the various regions, Europe has provided 36 responses, followed by the Americas (15), Africa (20), and by Asia and the Pacific (19). The responses cover only about 50% of the global land areas, and without the coverage of the ocean areas which constitute 2/3 of the globe (See results in the report E/C.20/2013/15/Add.1 presented to the 3rd session of UN-GGIM, held in Cambridge in July 2013). It is worth noting that additional countries have responded and, as of the end of May 2014, the total number is 105 countries.

A table titled "Status of Mapping in the World" displays the following data:

Title	Last Modified
Questionnaire Results (E/C.20/2013/15/Add.1) @ Posted Tuesday, June 10, 2014 by Staff Consultant	Tuesday, June 17, 2014
Questionnaire Form (Original in English and versions in 3...) @ Posted Tuesday, June 10, 2014 by Staff Consultant	Wednesday, June 11, 2014

At the bottom of the page, there is a search bar with the text "Search for..." and a "Go" button. The footer contains the text: "Powered By InstantKB.NET 2.0.6 © 2014 Execution: 0.016. 2 queries. Compression Disabled."

Annex V: UN-GGIM Fact Book on Member Profile

1. GENERAL

Country Name
Region Americas/Caribbean
UN-GGIM Regional Body UN-GGIM Americas
Participation Active

Mapping/GGIM Organization
Address

Contact Name
Position
E-mail
Telephone
Fax

2. ORGANISATIONAL FEATURES

GIM Program (*)
GIM Policy
GIM Legislation
GIM Strategy/Plan
GIM Web address

Leadership
Staff
Specific GIM Budget
Government Entities
Private Sector

3. DATA AND STANDARDS

Fundamental Data
Availability
Data Sets

Standards
Web/Portal Services
Data Access Policies

4. TECHNICAL INFRASTRUCTURE

Geodetic Infrastructure
ICT Infrastructure
Hardware Platform
GIM Software Platform

5. CURRENT PROGRAMME AND PROJECTS

Project x
Organization
Project Objectives
Funding
Duration
Achievements

6. ACHIEVEMENTS AND NEEDS

Notable Achievements
GIM Requirements
Future Areas of Work

(*) GIM: Geospatial Information Management