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Global Geospatial Information Management for Asia and the Pacific**

**Report of the Working Group 2
Data Sharing and Integration for Disaster Management ***

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Regional Committee of United Nations Global Geospatial Information Management
for Asia and the Pacific

(UN-GGIM-AP)



Working Group 2



**Data Sharing and Integration for Disaster
Management**

Status Report 2013-October 2015

for the

**20th UNRCC-AP and 4th UN-GGIM-AP Plenary
Meeting**

6-10 October, 2015

Jeju island, Republic of Korea

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1. Resolutions adopted at the 19thUNRCC-AP, Thailand (2012)

Data Sharing and integration for disaster management

The Conference,

Recognizing that the Asia-Pacific region is prone to many natural hazards and devastating disasters, and that geospatial information plays a very important role in making timely information available to support and respond to emergency situations,

Recalling that the Rio+20 outcome document urged governments and organizations to commit to disaster risk reduction in order to enhance the resilience of cities and communities to disasters, according to their own circumstances and capacities,

Also recalling that the Rio+20 outcome document specifically recognized the ‘importance of comprehensive hazard and risk assessments, and knowledge- and information-sharing, including reliable geospatial information’,

Noting that one of the issues identified by the UN-GGIM Inventory of Issues included the sharing of geospatial information between government agencies in an official and sustainable manner,

Mindful of the existing national, regional and global projects and activities relevant to data sharing for disaster management,

Mindful also that implementing any solution to improve data and information sharing for disaster management needs to be based on an understanding of different user requirements, and recognition of the variability of spatial data infrastructures and their content between member States,

Recommends

(a) Initial research on existing national and international geoportals for the sharing of data and information related to disaster management in order to identify the different types of user requirements associated with different hazards types, different phases of the disaster management activity(e.g. risk assessment; preparedness planning; rescue and recovery), and how this reflects on data requirements;

(b) A phased approach to developing a standards-based sub-regional pilot(s) to support data sharing for disaster management to demonstrate the federation of national data, metadata and web services to a regional level;

(c) Initial design and implementation of a regional geoportal for disaster management with an objective to have in place a sub-regional portal as a minimum outcome in the next 3 years.

2. Actions Taken since the 19th UNRCC-AP, Thailand(2012)

2.A) In 2012:

- **Investigating disaster information networks**

As spatial data describing the disaster, information gathered from different organizations and NGOs are critical for emergency management. This highlights the need for both Intra- and Inter-Organization communications. There, hence, arises a need for an Integrated Communication and Information Network for Disaster Management so in working group2 existing disaster information network share being investigated to reveal the best alternative. These activities satisfy item A.1 of work plan.

- **Investigating Geoportals**

Existing Geoportals that aim to assist disaster management at national and regional levels are investigated. The aim of this investigation is to extract the disaster types and the disaster management phases they support, the information they represent and the analyses and services they provide. It could form a guideline for a regional disaster management Geoportal. Item A.2 is supported by these activities.

- **Investigating required data for disaster management Geoportals**

For this investigation we have limited the research domain. We choose earthquake and flood as the first two case studies to investigate required data. The required data must support spatial analysis in order to manage disaster.

- **Investigating required spatial analyses**

Disaster relief involves the response phase of disaster management. GIS and GIS professionals can assist immediately by helping decision makers understand the scope of the damage and identify locations where people may be trapped or injured or require medical support and rescue. As with the previous objective, earthquake and flood case studies present some important examples of required spatial analyses for review. We will investigate existing implemented disaster management projects to extract the analyses they performed related to flood and earthquake.

2.B) In 2013:

- **Design Disaster Management Geoportal**

With the aim of designing and creating the Asia and Pacific Disaster Management Geoportal, a questionnaire for the vice chairs was prepared and sent to them.

- Design the architecture of the DM-GP.

- Request the architecture of the DM-GP of experienced countries (Indonesia, New Zealand, Korea, Japan, and Australia).
- Investigate the received architecture of the DM-GP to design the architecture of the regional DM-GP.
 - Clarification of required standards and specifications for the development of DM-GP
- Request the titles of standards that used for development of the DM-GP of experienced countries (Indonesia, New Zealand, Korea, Japan, and Australia) in respect of metadata, data and services.
- Investigate the standards of the DM-GP to adopt required standards for the regional DM-GP.
 - Investigation of service composition techniques
- Request the techniques used for service composition of unit services in the DM-GP of experienced countries (Indonesia, New Zealand, Korea, Japan, and Australia)
- Investigate the received composition techniques of unit services to adopt or design appropriate technique for service composition of the regional DM-GP.
 - Development of sample web services to satisfy unit operations.
- Request the list of unit services that are presented in the DM-GP of experienced countries (Indonesia, New Zealand, Korea, Japan, and Australia)
- Investigate the received list of unit services to adopt some sample web services and develop them.
 - Development of the DM-GP
 - Development of a service composition technique within the DM-GP

- **Resolutions adopted at the 2nd UN-GGIM-AP Plenary Meeting, Tehran, Iran, 2013**

Developing a Regional Geoportal for Disaster Management

The Committee,

Recognizing that the region is prone to many types of natural hazards, including earthquakes, floods, tsunamis, landslides, droughts, and tropical storms, and that geospatial information has a potential to play an essential role in reducing the impact of such hazards when integrated into disaster information management system ,

Recalling the resolution at 19th UNRCC-AP that recommended the Committee to design and develop a disaster management Geoportal through a pilot project,

Acknowledging that some member countries have already had some experiences in developing such Geoportals,

Noting that the pilot project should involve multiple member countries of potential hazard risks, focusing particularly on two major types of hazards that have largest impact in the region, to develop balanced standards, especially common georeference and operational schemes that are applicable for the whole region.

Recommends

- (a) To work with at least three experienced member countries which have been coping with the two types of hazards to identify and share technical and non-technical ingredients and standards for successful development and operation of disaster management Geoportals,
- (b) To start collaborating with some member countries, which are currently without a disaster management Geoportal, to develop a pilot national Geoportal for each country and test its feasibility to understand the requirements for a regional Geoportal.
- (c) To seek support from member countries in developing disaster management Geoportals in the region.

2.C) In 2014:

- **Resolutions adopted at the 3rd UN-GGIM-AP Plenary Meeting, Bali, Indonesia, 2014**

The Committee,

Recalling the contribution and efforts of Member States to share their experiences on disaster management and capacity building and existing national and regional Geoportals relevant to data sharing for disaster management can be used to understand different user requirements, and recognition of the variability of spatial data infrastructures between Member States, also the disaster management Geoportal should support all disaster management phases, including mitigation, preparedness, response and recovery, and define standards to share information between Member States and implement necessary processes and these Geoportals must additionally contain records of past regional disasters that have occurred in Asia-Pacific region

Recommends,

- (a) Design and implement a regional Geoportal for disaster management, based on available best practice and standards, and based on the results of research completed in the first phase of the WG2 work plan, with the objective to have in place a sub-regional portal as a minimum outcome before the 20th UNRCC-AP in 2015;

(b) Through WG Chairs and Vice Chairs, define standards for data entry and analysis to identify potential high risk areas of earthquakes and vulnerable areas of flooding, in order to enhance the preparedness against hazards;

(c) Study the potential of volunteered geographic information (VGI) and other dynamic informal data provided during disasters, and how it should be integrated and implemented in national and regional disaster management Geoportals.

- Based on countries recommendations related to disaster management Geoportal the below schedule table designed and based on the resolution items (a,b,c), for each country we've suggested some responsibilities.

Mitigation Phase:

	Activities	Responsible	Duration (Months in 2015)
Earthquake & Flood	Micro zonation & Building codes	Korea, New Zealand, Iran, ...	4-6

Preparedness Phase:

	Activities	Responsible	Duration (Months in 2015)
Earthquake	Automatic online processing	Iran, ... (Process) Other Members (Data Entry)	4-6
	Strain Analysis	Iran, ... (Process) Others Members (Data Entry)	4-6
	Identify potential high risk	Iran, ... (Process)	5-7
Flood	Utilizing information from DEM	China, Indonesia, ... (Process)	4-6
	Increasing the volume of water	China, Indonesia, ... (Process)	4-6
	Identify vulnerable areas of flooding	China, Indonesia, ... (Process)	6-9

Response Phase:

	Activities	Responsible	Duration (Months in 2015)
Earthquake & Flood	Sheltering	Iran, ... (Process)	4-9
	Path Finding	New Zealand, ... (Process)	4-9
	Loss Assessment	Iran, China, ... (Process)	4-9
	VGI (Volunteer Geospatial Information)	Korea, Indonesia, ... (Process)	4-9

Recovery Phase:

	Activities	Responsible	Duration (Months in 2015)
Earthquake & Flood	Facilities like positioning for creating new cities	Korea, ... (Process)	5-7
	Implementing plans on the current maps in Geoportal	New Zealand, Indonesia, ... (Process)	6-8

a) Processing for Disaster Management phases

- Identification of required processing for Disaster Management phases
- Recognition of required standards for processing implementation

b) Implemented Sample of Disaster Management Geoportal

- Presentation of national Disaster Management Geoportal

WG2 in cooperation with the Secretariat has released the WG2 proto-type geoportal within the domain of UN-GGIM-AP at <http://geoportal-prototype.un-ggim-ap.org/unggim/>. After the Nepal earthquake struck on 25th April 2015, InSAR-derived crustal deformation data using ALOS2 data and Global Map data for elevation and land cover of central Nepal were shared through the geoportal."

Working Group 2 works on Data Sharing and Integration for Disaster Management. It conducts projects to support data sharing for disaster management, including research to identify user requirements associated with risk assessment, preparedness planning, rescue and recovery. Therefore for this purpose WG2 proto-type geoportal released and after Nepal earthquake it shared the ALOS data and Global Map data through geoportal.

Main fields where ALOS data can be used are cartography, regional environmental monitoring, disaster monitoring and natural resource surveying. As to cartography, ALOS data is capable to produce 1:25,000 scale maps with 3-5 meters accuracy as well as to produce DEM with 2.5 meters resolution.

Secretariat has updated the website for maintenance and promotion of the UN-GGIM-AP Website and new information materials were contributed from 8 member countries and uploaded to the website.

➤ **Consequence table of UN-GGIM-AP Working Group2 activities:**

Resolution adopted	Recommends	Results
At 19thUNRCC-AP, Thailand (2012)	(a)	1-The activities of 2012 2- Item A of UN-GGIM-AP WG2 work plan (Appendix A) 3 - research by WG2 in National Cartographic Center (Appendix B)
At 19thUNRCC-AP, Thailand (2012) & At the2nd UN-GGIM-AP Plenary Meeting, Tehran, Iran, 2013	(b)	1-The activities of 2013 2- Item B of UN-GGIM-AP WG2 work plan (Appendix A)
At 19thUNRCC-AP, Thailand (2012) & At the3rd UN-GGIM-AP Plenary Meeting, Bali, Indonesia, 2014	(c)	1-The activities of 2014 2-Implemented Sample of Disaster Management Geoportal (Appendix C) 3- WG2 Prototype Geoportal (Appendix D) 4- Study the potential of volunteered geographic information (VGI) (Appendix E)

Appendixes:

Appendix A: UN-GGIM-AP Working Group2 Workplan

Appendix B: Research in the case of investigating disaster management Geoportals at the national and regional levels by WG2 in National Cartographic Center. (Result of Phase A of WG2 Workplan)

Appendix C: Implemented Sample of Disaster Management Geoportal

Appendix D: WG2 Prototype Geoportal

Appendix E: full report of Volunteer Geospatial Information regards to Respond phase by Korea