

The 5th UN-GGIM-AP Plenary Meeting

Working Group *Report*

WG 3: Regional Spatial Data Infrastructure

Kuala Lumpur, Malaysia⁶
16-20 October 2016

Chair: Ms. Jie Jiang, China

Vice Chairs:

Mr. Simon Costello, Australia,
Mr. Lee Sangho, Korea,
Ms. Bayarmaa Enkhtur, Mongolia,
Mr. Alireza Vafae Nejad, Iran,



UN-GGIM-AP

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

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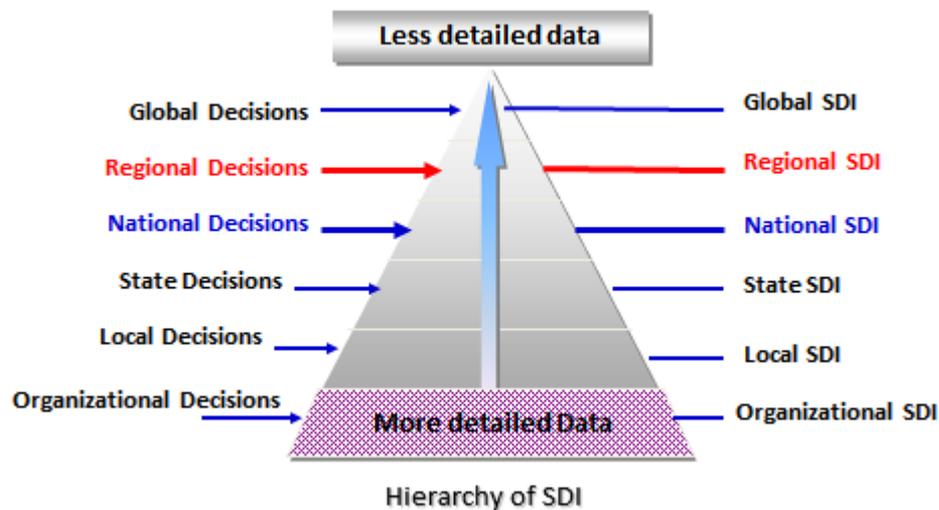
Outline

- Brief Introduction of WG3
- Resolutions Adopted at the 20th UNRCC-AP corresponds to WG3
- Work Plan of WG3
- Actions Taken by WG3 Since the 20th UNRCC-AP
- Further Work Plan



Brief Introduction of WG3 - background

- Regional sustainable development must aim at a high level of taking into account the diversity of situations in the various regions of the UNGGIM-AP members. The balanced developed, interoperable and sharable Geo-spatial information in the region is essential for the **regional sustainable development**.
- Many NSDIs have been established in the member countries. But a number of problems exist regarding the **availability, quality, uniformity, accessibility and sharing of spatial information**.
- It is necessary to promote the common understanding of establishing a regional SDI by **using unified data standards**, and to **share or interoperate** the SDI for location-based services.



Brief Introduction of WG3– Timeline and Membership

■ Timeline: 2015 ~2018

■ Membership

● Chair:

MS. Jie Jiang, National Geomatics Center of China , jjie@nsdi.gov.cn

● Vice-Chairs:

Mr. Simon Costello, Geoscience Australia, Simon.Costello@ga.gov.au

Mr. Lee Sangho, National Geographic Information Institute, addlsh78@korea.kr

Ms. Bayarmaa Enkhtur, ALAGaC, Mongolia, bayarmaa.e@gazar.gov.mn

Mr. Alireza Vafaei Nejad, National Cartographic Center of Iran, a_vafaei@sbu.ac.ir



Jie Jiang



Simon Costello



Lee Sangho



Bayarmaa Enkhtur



Alireza Vafaei Nejad



Resolutions corresponds to WG3

The Conference:

Noting

- the increasing regional issues and location based services require the access and sharing of geo-spatial information among countries for regional sustainable development;
- the increasing demand for effective on-line location-based services from government, professional agencies and public;
- the establishment of national geospatial data infrastructures in some countries; while there are different levels of development of NSDI among the countries;
- national geospatial portals have been established in some countries to improve the accessibility and application of the data; while the interoperability among these portals may not be achieved;
- the problems regarding availability, quality, interoperability, accessibility and sharing of geospatial data among the countries;
- the need to keep the efforts technical in nature so as not to raise political concerns.



Resolutions corresponds to WG3

Recommends that

- Conduct a survey to investigate and assess the current status of NSDI development of the member countries, with focus on access, management, update, web-based services and sharing of data/services;
- Identify the common data standards, including data themes, specifications and metadata catalogue for regional SDI as well as common service standards, including interfaces and specifications for the interoperability of portals; draft data and service sharing rules;
- Conduct pilot project with some countries to test the mechanisms of sharing data/services under pre-drafted rules and integrate web-based services/portals for the interoperation of the NSDIs;
- Refine the data/service standards and data/service sharing rules based on the results of the pilot projects; develop guidelines on the use of these standards and rules for regional SDI; disseminate these guidelines to the countries of the region;
- Develop joint action programs for the provision of educational and training for the data/service sharing, portal construction, and application for regional SDI.



Work Plan of WG3

No	Activities/Steps	Period	Targeted goals
1	Conduct a survey to investigate and assess the current status of NSDI development of the member countries, with focus on access, management, update, web-based services and sharing of data/service	2015-2018	1 st draft report in the middle of 2016; 2 nd draft report in the end of 2017; final report in the middle of 2018
2	Identify the common data standards, including data themes, specifications and metadata catalogue for regional SDI as well as common service standards, including interfaces and specifications for the interoperability of portals; draft data and service sharing rules;	2015-2018	1 st draft in the middle of 2016; 2 nd draft in the end of 2017; final report in the middle of 2018
3	Conduct pilot project with some countries to test the mechanisms of sharing data under pre-drafted rules and integrate web-based services/portals for the interoperation of the NSDIs;	2016-2018	As soon as the cooperation established among countries including China, Korea, Indonesia, Mongolia, Viet Nam Pilot projects be finished by the middle of 2018
5	Training courses on regional SDI, portal/platform and application	2016-2018	Pending on the availability of the fund, should be conducted before the ending of the pilot projects
6	Workshops, seminars co-organized with other International organizations	2016-2018	2017, co-organized with ISPRS

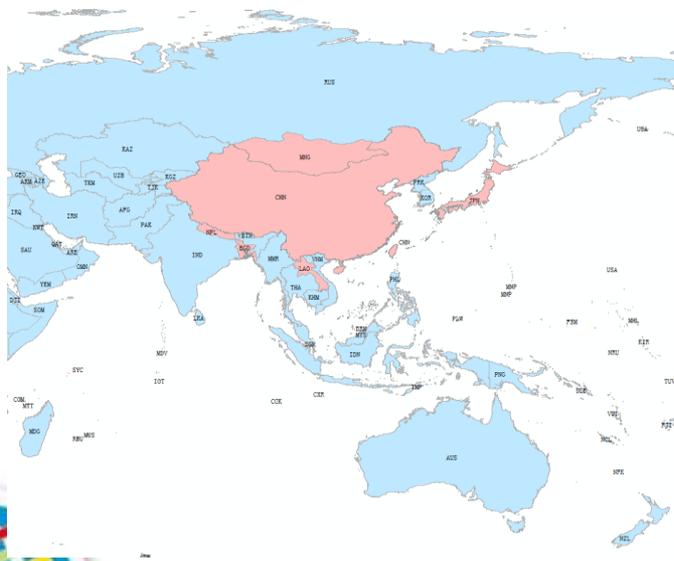
Activities since the EB Meeting (May 2016)

- Designed a questionnaire on the status of NSDI development of the member countries, with focus on access, management, update, web-based services and sharing of data/service. The questionnaire has been distributed to member countries by the Secretariat of UN-GGIM-AP in June 2016. Eight replies have been received by September 2016. And an elementary analysis has been done based on the received questionnaire.
- Help to organize the 1st ISPRS-UNGGIM National Mapping and Cadastral Agencies Forum during the ISPRS Prague Congress on 14-15 July, 2016. National Mapping and Cadastral Agencies worldwide took part in the Forum to share the scientific, technical and application issues.
- A pilot portal for Regional SDI Service Interoperation has been done by National Geomatics Center of China, which can integrate on-line services released by different agencies and countries based on OGC standards. Successfully integrated the services published in Geospatial BNPB, the website developed by Indonesia and WG 2 (term 2012-2015) for disaster management.
- Australia has made efforts on conducting pilot project with some countries to test the mechanisms of sharing data under pre-drafted rules and integrate web-based services/portals for the interoperation of the NSDIs.



Elementary Analysis to the Questionnaire on the Current Status of Spatial Data Infrastructure in AP Region

- The Questionnaire with 26 questions was designed by UN-GGIM-AP WG 3 on “Regional SDI”, with focus on access, management, update, web-based services and sharing of data/service.
- The questionnaire has been distributed to member countries by the Secretariat of UN-GGIM-AP in June 2016. Eight replies have been received by September 2016.



- **Bangladesh:** Survey of Bangladesh
- **Brunei Darussalam:** Survey Department, Ministry of Development
- **P.R. China:** National Geomatics Center of China
- **Hong Kong SAR:** Lands Department, Hong Kong SAR Government
- **Japan:** Geospatial Information Authority of Japan
- **Lao People's Democratic Republic:** Ministry of Home Affairs
- **Mongolia:** Administration of Land affairs, geodesy and cartography
- **Nepal:** Survey Department



Elementary Analysis to the Questionnaire on the Current Status of Spatial Data Infrastructure in AP Region

- NSDIs are developed by the National Mapping Agency (NMA) in all country/region (except Hong Kong).
- About 38% of the countries have Laws and Policies related to NSDI, and about 50% have not yet
- About 50% of the countries have standards related to NSDI, and about 38 have not yet.



Fig.2 Laws for NSDI



Fig.3 Standards for NSDI

Green = "Yes"
Yellow = "No"



Elementary Analysis to the Questionnaire on the Current Status of Spatial Data Infrastructure in AP Region

- Control Point, Road, Water, Administration Area, Land Cover, Elevation, Place Name are the most essential themes in NSDI

	Control	Road	Railway	Water	Admin Area	Land Cover	Resi. Area	BLD Area	Pipe	Elevation	Names	POI	Named Area	Parcel
LAOS	1	1	2	1	1	1	1	1	2	1	1	1	1	2
MONGOLIA	1	1	1	1	1	1	1	1	1	1	1	2	2	1
BANGLADESH	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEPAL	2	2	2	2	2	2	2	2	2	2	2	2	2	2
JAPAN	1	1	1	1	1	1	1	1	1	1	1	1	1	0
BRUNEI	1	1	2	1	1	1	2	2	2	1	1	1	1	1
CHINA	1	1	1	1	1	1	1	1	1	1	1	1	1	2
HK	2	1	2	2	2	2	2	1	2	2	2	2	2	1

- Digital Ortho-photo, digital elevation model and digital topographic data are the most essential data types in NSDI

	DLG	DOM	DSM	DEM
LAOS	1	1	1	1
MONGOLIA	1	1	2	1
BANGLADESH	0	0	0	0
NEPAL	2	2	0	0
JAPAN	1	1	0	1
BRUNEI	2	1	2	2
CHINA	1	1	1	1
HK	2	2	2	2



Elementary Analysis to the Questionnaire on the Current Status of Spatial Data Infrastructure in AP Region

- Different Coordinate Referencing Systems are used by different countries/regions

Country/Region	Coordinate Referencing System
LAOS	Lao National Datum 1997
MONGOLIA	
BANGLADESH	
NEPAL	Modified UTM
JAPAN	
BRUNEI	GDBD2009
CHINA	CGCS2000
HK	Hong Kong 1980 Grid

- 1:50000, 1:1000, 1:100000 are the most essential scale of the digital topographic data

	1:500 or greater	1:1000	1:5000	1:10000	1:25000	1:50000	1:100000	1:250000	1:500000	1:1 million or smaller
LAOS	0	0	1		1	1	1	0	0	0
MONGOLIA	1	1	0		1	1	1	0	1	1
BANGLADESH	0	0	0		0	0	0	0	0	0
NEPAL	0	0	0		1	1	0	0	1	0
JAPAN	0	0	0		0	0	0	0	0	0
BRUNEI	0	1	0		0	1	1	1	0	0
CHINA	1	1	0	1	0	1	0	1	0	1
HK	0	1	1		0	1	1	1	0	0



Elementary Analysis to the Questionnaire on the Current Status of Spatial Data Infrastructure in AP Region

- Most countries/regions restrict access or limited circulation the data for public from domestic and abroad.



Fig.5 Limits to domestic public access



Fig.6 Limits to abroad public access



Elementary Analysis to the Questionnaire on the Current Status of Spatial Data Infrastructure in AP Region

- One country (12.5%) proved free access to public users, and 4 countries/regions (50%) provide free access to governmental users.



Fig.7 Free for public use

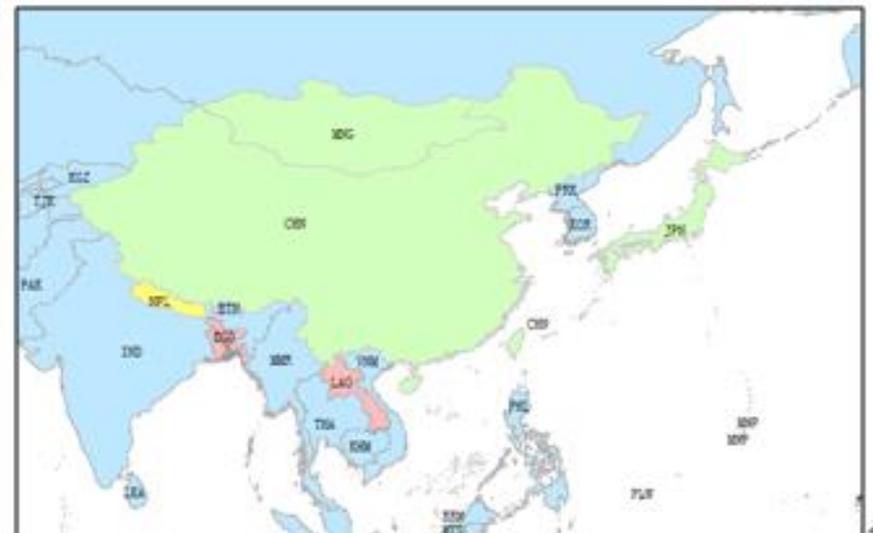


Fig.8 Free for governmental use



Elementary Analysis to the Questionnaire on the Current Status of Spatial Data Infrastructure in AP Region

- 3 countries (37.5%) provide on-line datasets order, while 50% provide on-line services.



Fig.9 on-line datasets order



Fig.10 on-line information services



Elementary Analysis to the Questionnaire on the Current Status of Spatial Data Infrastructure in AP Region

- Only 2 countries (25%) have the national portal for geo-information service based on NSDI, while 6 countries (75%) have plan to establish one or upgrade the one.

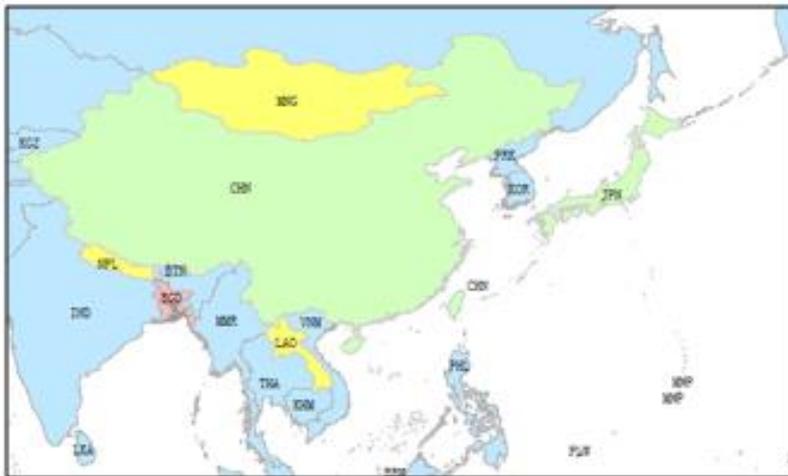


Fig.11 Already have Portal

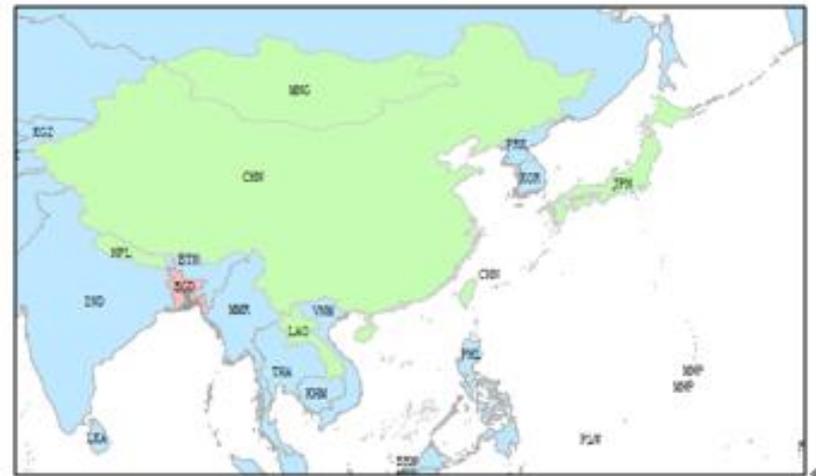


Fig.12 Plan to have or update Portal



Elementary Analysis to the Questionnaire on the Current Status of Spatial Data Infrastructure in AP Region

- Most of the countries/regions are interested in sharing some of the data in NSDI and on-line services with other countries/regions, while current only 2 countries has signed agreements with foreign countries/regions or international organizations on sharing data/ service based on NSDI. .

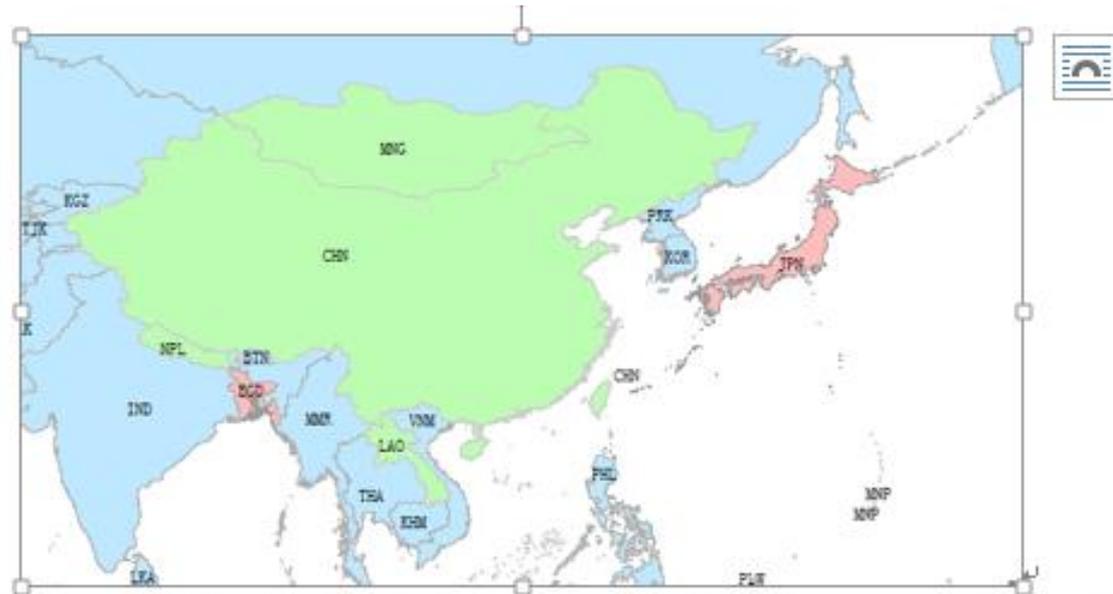


Fig.13 Interested in sharing data/services with other countries/regions



Elementary Analysis to the Questionnaire on the Current Status of Spatial Data Infrastructure in AP Region

Based on this draft analysis, we can get the following draft conclusions for improving the development of NSDI and the interoperability of Regional SDI.

- Efforts on Law/Policies and standards for NSDI should be enhanced, and the one for regional SDI should be developed;
- Unique Coordinate Referencing System should be adopted by different NSDI;
- Efforts on establishing National Geospatial Portal can be done by UNGGIM-AP, by organizing technical training, seminar, workshop, and conduct pilot study and provide some demonstration/models/products;
- Data/service sharing among countries/regions can be promoted because most of the countries are interested in it.

Calling for return of the Questionnaire.



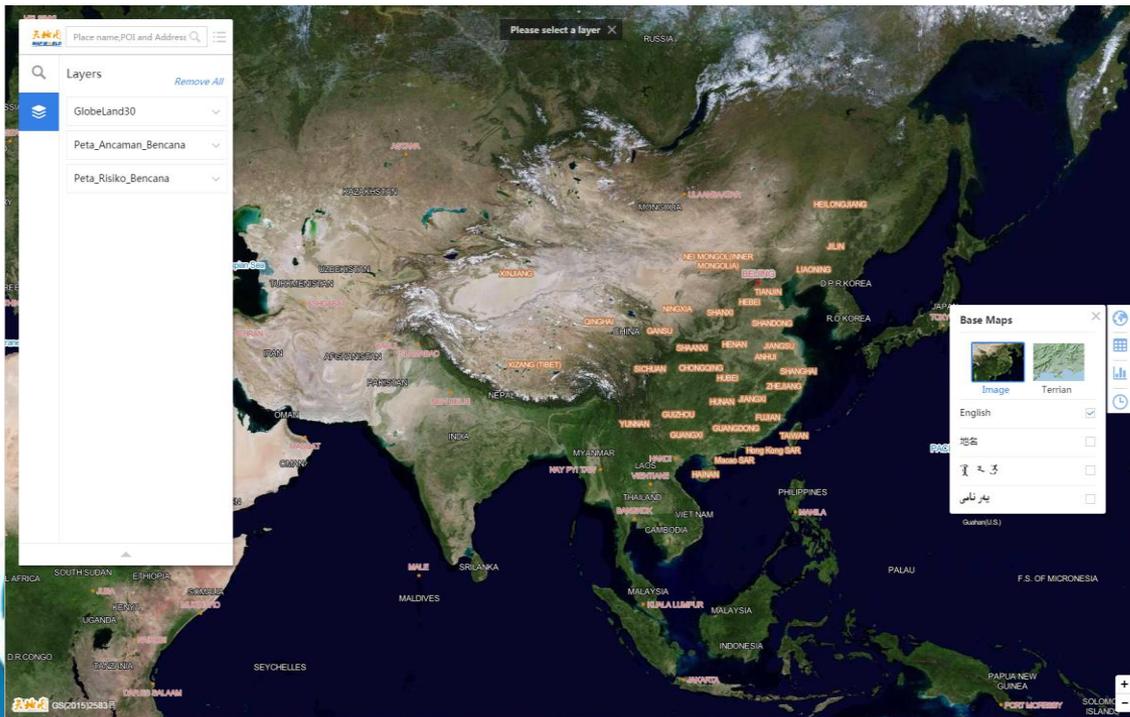
The 1st ISPRS-UNGGIM National Mapping and Cadastral Agencies Forum

- WG 3 helped to organized the 1st ISPRS-UNGGIM National Mapping and Cadastral Agencies Forum during the ISPRS Prague Congress on 14-15 July, 2016.
- The Forum was opened by Greg Scott, Global Geospatial Information Management, United Nations Statistics Division, Department of Economic and Social Affairs.
- Total 4 sessions were arranged, with the topic of Imagery for National tasks, 3-dimensional geoinformation, Geospatial data infrastructures, Quality assessment of geoinfomation.
- Officers and experts from National Mapping Agencies of Ireland, U.S. , Spain, Saudi Arabia, France, the Netherlands, Czech Republic, Germany, Austria, China, Ethopia, Finland, UK, Swiss, India, etc. made the presentations.



Pilot on establishing the Regional SDI Portal

- The pilot was developed by the team from National Geomatics Center of China (NGCC).
- One website () has been established based on the Chinese National GeoInformation Service Platform “MapWorld”, taking the reference of the data themes, data sharing rules, OGC standards defined by UN-GGIM-AP WG3.
- Integrated the information published in Geospatial BNPB, the website developed by Indonesia and WG 2 (term 2012-2015) for disaster management.

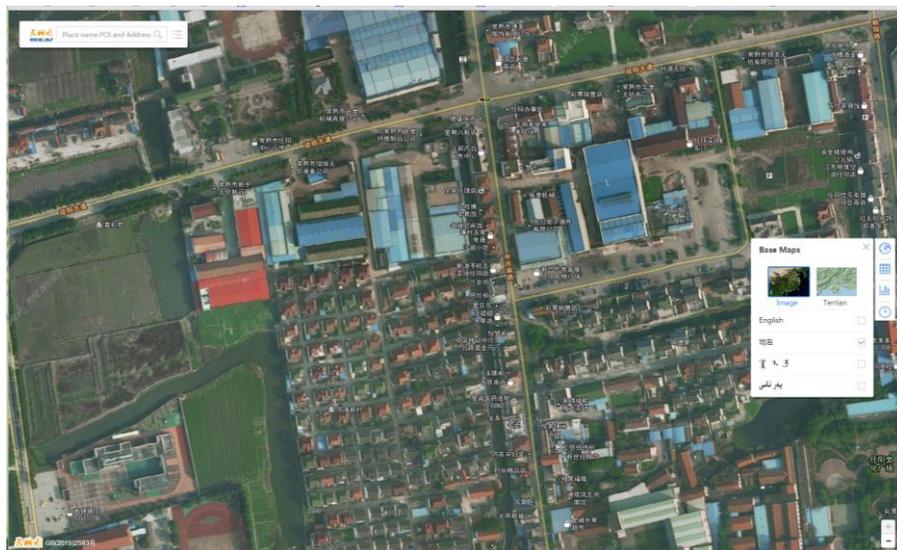


<http://unggimap.tianditu.com/demo/>

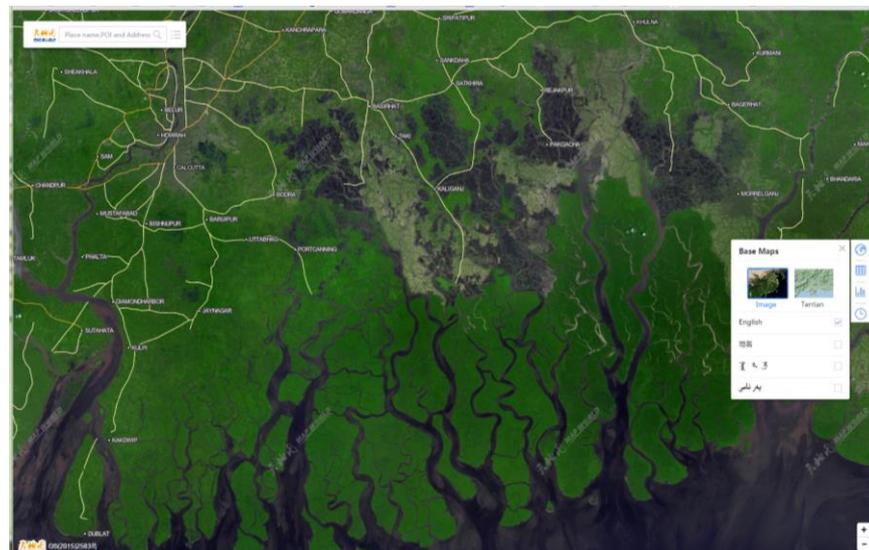
Pilot on establishing the Regional SDI Portal

Map Layers in the Portal

- Image Map, including 250 meter (global area), 30 meter (AP area), 2 meter (China and some country), 0.5 meter (more than 500 Chinese Cities)



0.5 meter image in China
(Total 0.9 Million SQKM in China)



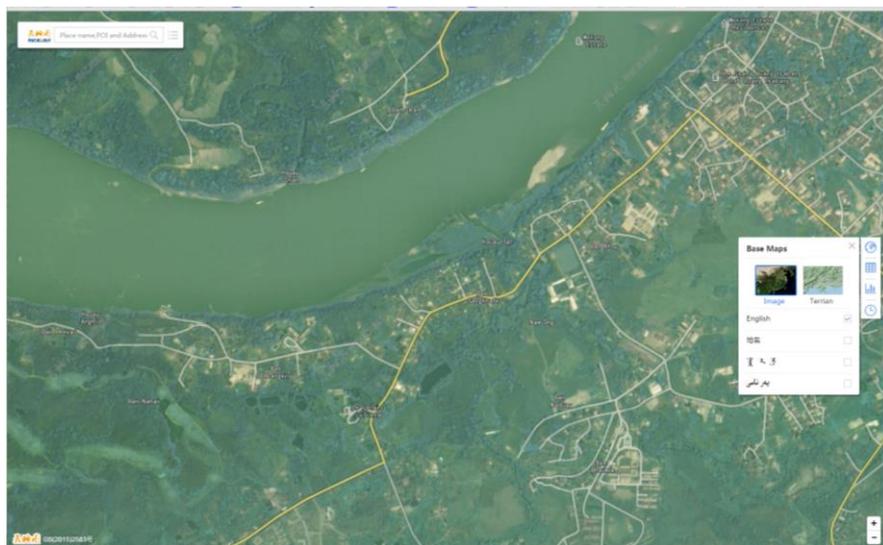
30 meter image in Bangladesh
(Total 70 Million SQKM in the World)



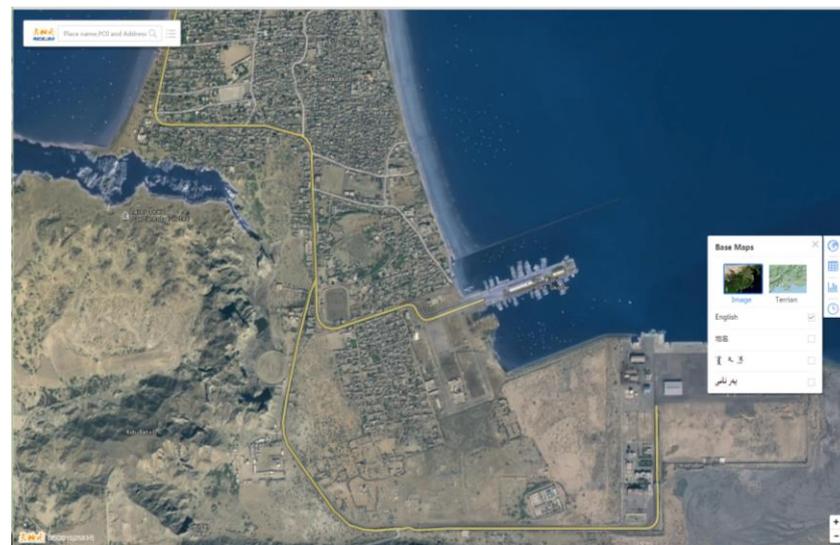
Pilot on establishing the Regional SDI Portal

Map Layers in the Portal

- Image Map, including 250 meter (global area), 30 meter (AP area), 2 meter (China and some country), 0.5 meter (more than 500 Chinese Cities);



2 meter image in Laos



2 meter image in Pakistan



Pilot on establishing the Regional SDI Portal

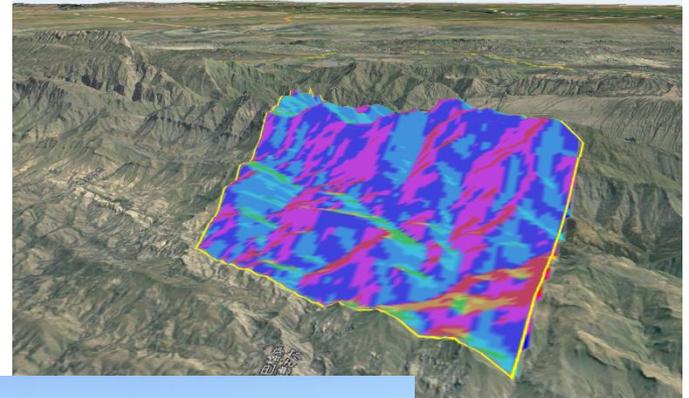
Map Layers in the Portal

- Terrain shading map, based on 90 meter SRTM (global area), 25 meter DEM (China area), 10 meter DSM (some countries);

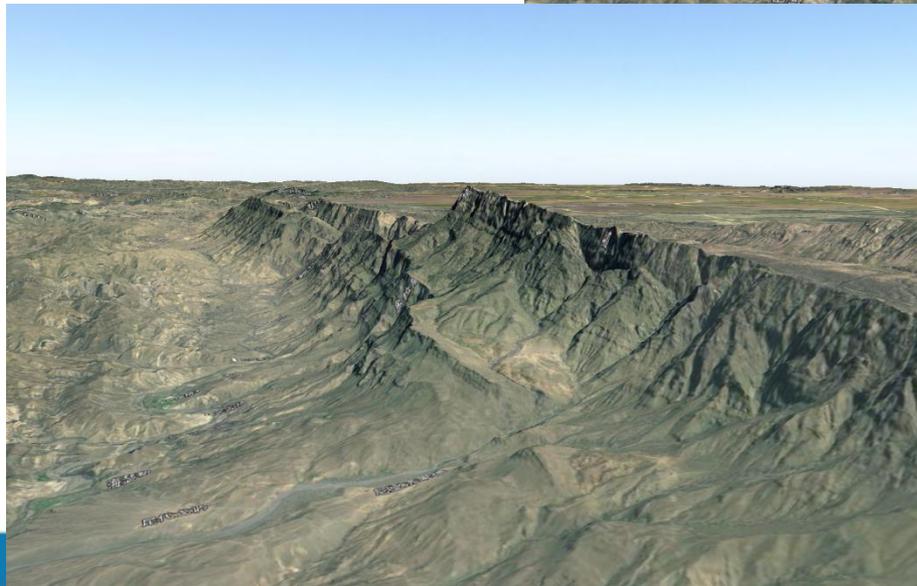


Shade map based on 10 m DSM

On-line slope analysis



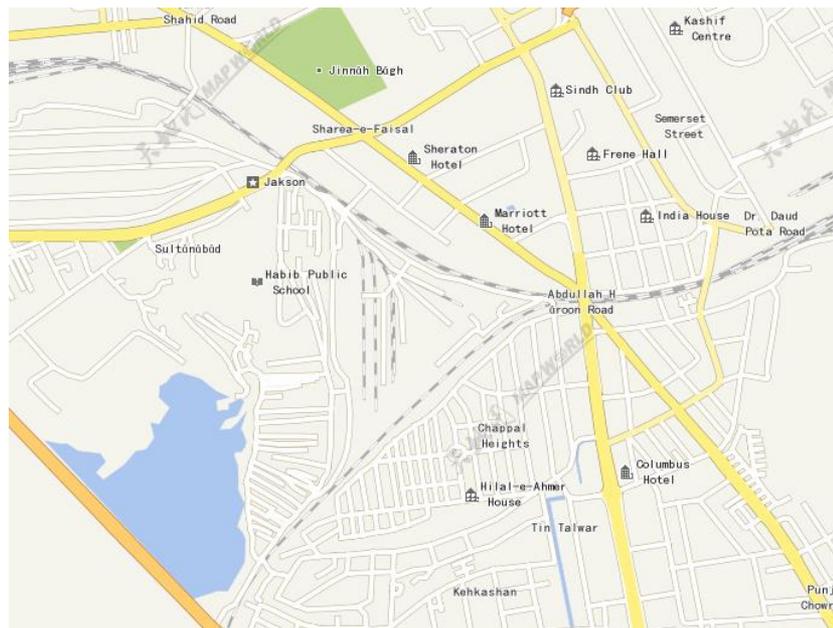
On-line 3D View
based on 10 m DSM and 2
m DOM



Pilot on establishing the Regional SDI Portal

Map Layers in the Portal

- Place names (in English, Chinese), including global area administrative place names, natural place names and POIs, especial detail in China area



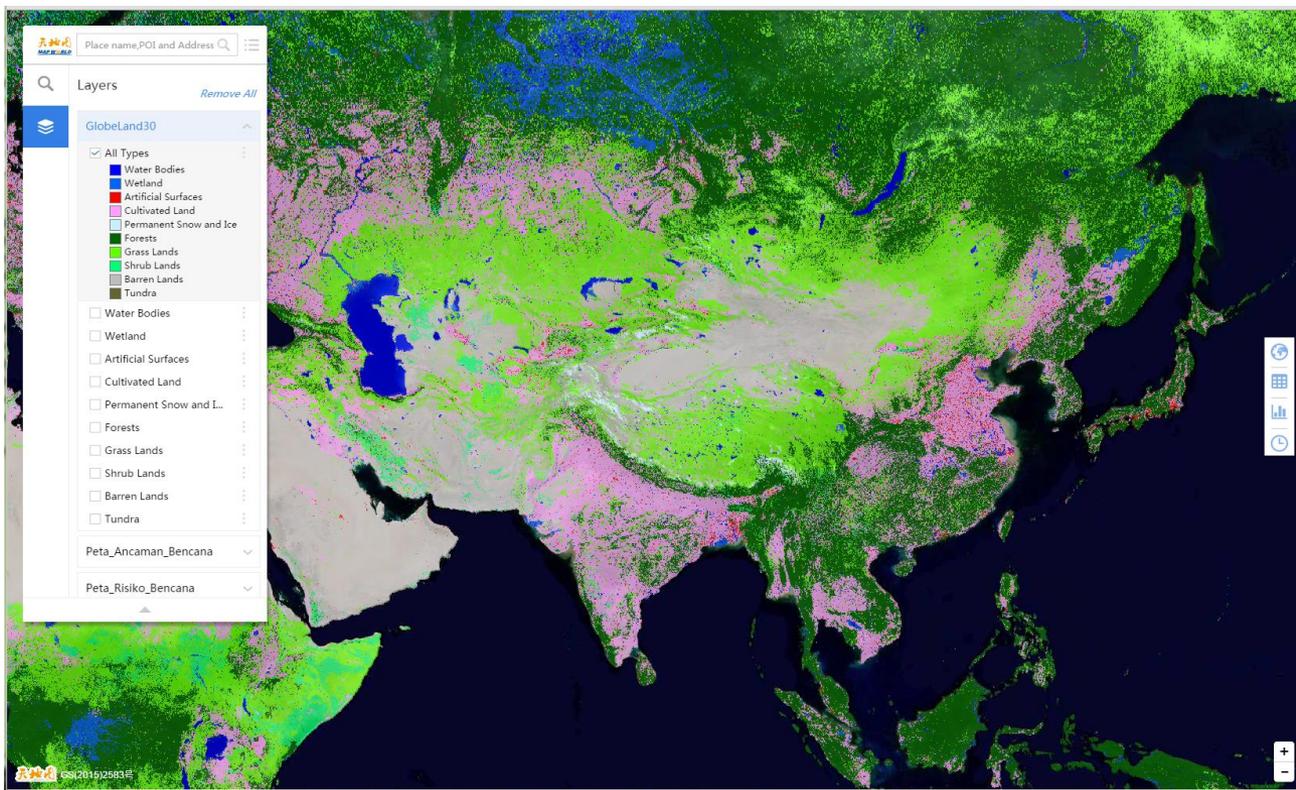
Roads and Place Names (in Chinese, English)



Pilot on establishing the Regional SDI Portal

Map Layers in the Portal

- Global land cover data at 30 meter resolution with 10 different classes for years 2000 and 2010. It is developed by China and distributed by UN.



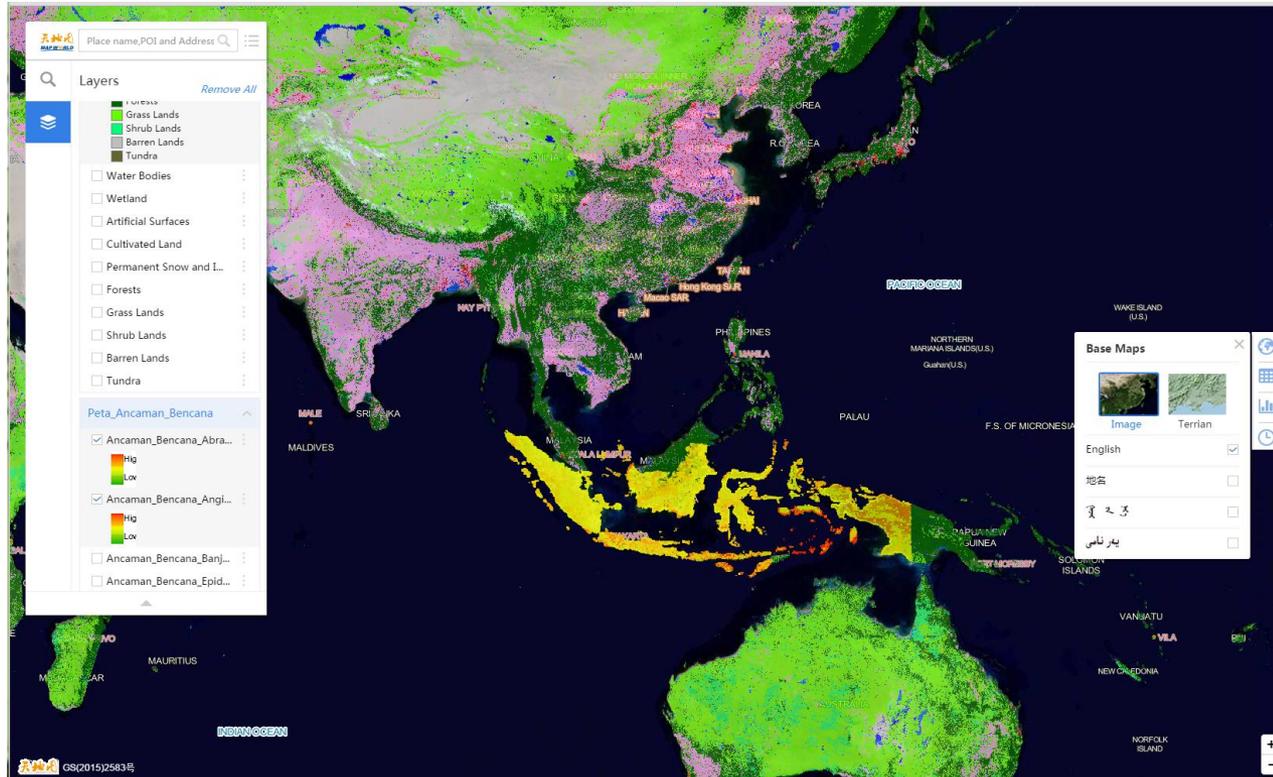
Global Land Cover at 30 meter resolution



Pilot on establishing the Regional SDI Portal

Map Layers in the Portal

- Peta Ancaman Bencana, Peta Risiko Bencana: Disaster management information developed by Indonesia.



Disaster Management Information from Indonesia



UN-GGIM-AP

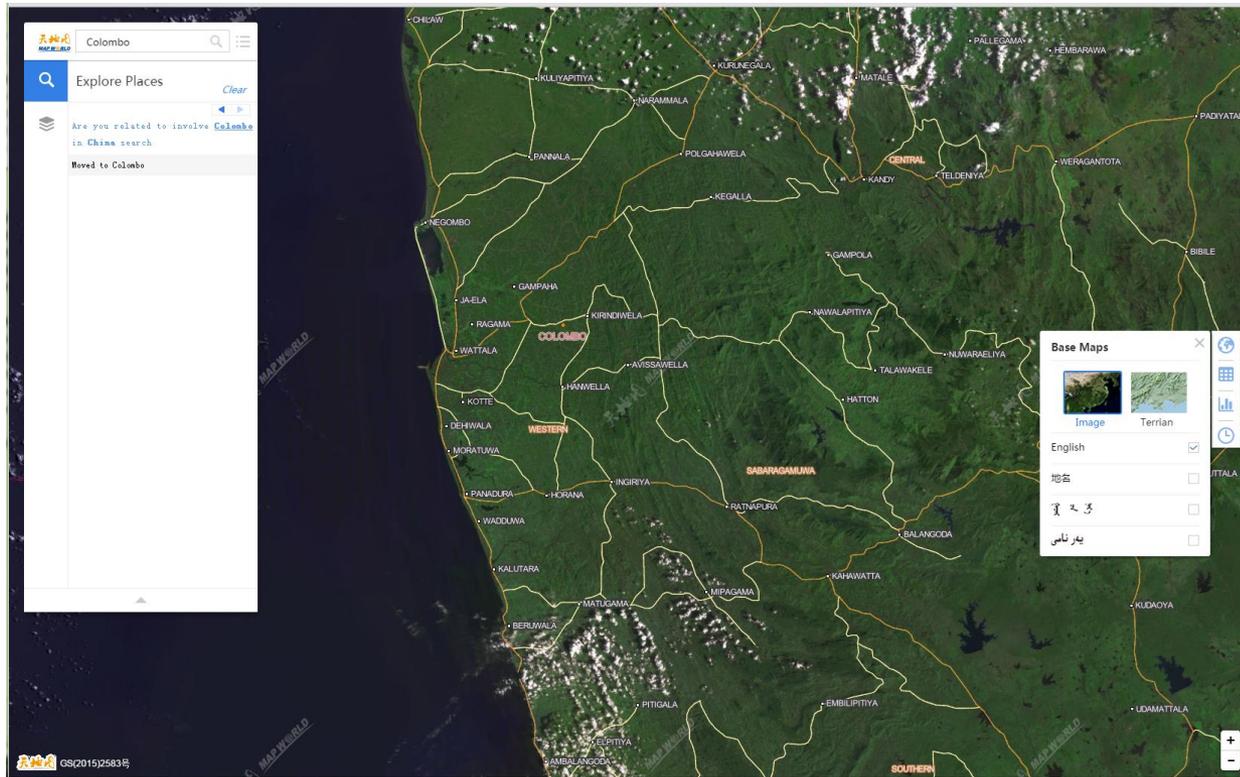
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Pilot on establishing the Regional SDI Portal

Standards used in the Portal: OGC WMS and WMTS.

Functions provided by the Portal: Map browse, Place name searching and positioning (in English and Chinese)



Searching and positioning “Colombo”



Pilot on establishing the Regional SDI Portal

Further works

- Provide URLs of the on-line services, so everyone can integrate the services into their own systems
- Provide menu to let users can upload map layers or services into the Portal so to let others to use.

Call for participating: UN-GGIM-AP members, WG 3 co-chairs, to work together to improve the Portal:

- Provide URLs that can be integrated into the Portal;
- Help to evaluate and validate the information published in the Portal;
- Provide comments and suggestions to improve the Portal.



Searching and positioning “Colombo”

Thanks for Attention!



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