

20th United Nations Regional Cartographic Conference
for Asia and the Pacific (UNRCC-AP)

WG Status Report 2012-2015
***WG 3: Place Based Management for
Economic Growth***

Jeju, Republic of Korea
6-9 October 2015

Chair: Ms. Jie Jiang, China

Vice Chair: Sr Hasan bin Jamil, Malaysia (2014~2015)

Vice Chair: Mr. Simon Costello, Australia (2012~2015)

Vice Chair: Mr. Ahmad Fauzi bin Nordin (2012~2014)



UN-GGIM-AP

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

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Outline

- Terms of Reference for WG3
- Resolutions Adopted at the 19th UNRCC-AP corresponds to WG3
- Work Plan of WG3
- Actions Taken by WG3 Since the 19th UNRCC-AP
- Further Work Plan



Activities since 19th UNRCC-AP ---1

**Investigation the status of development of
place-based information management**



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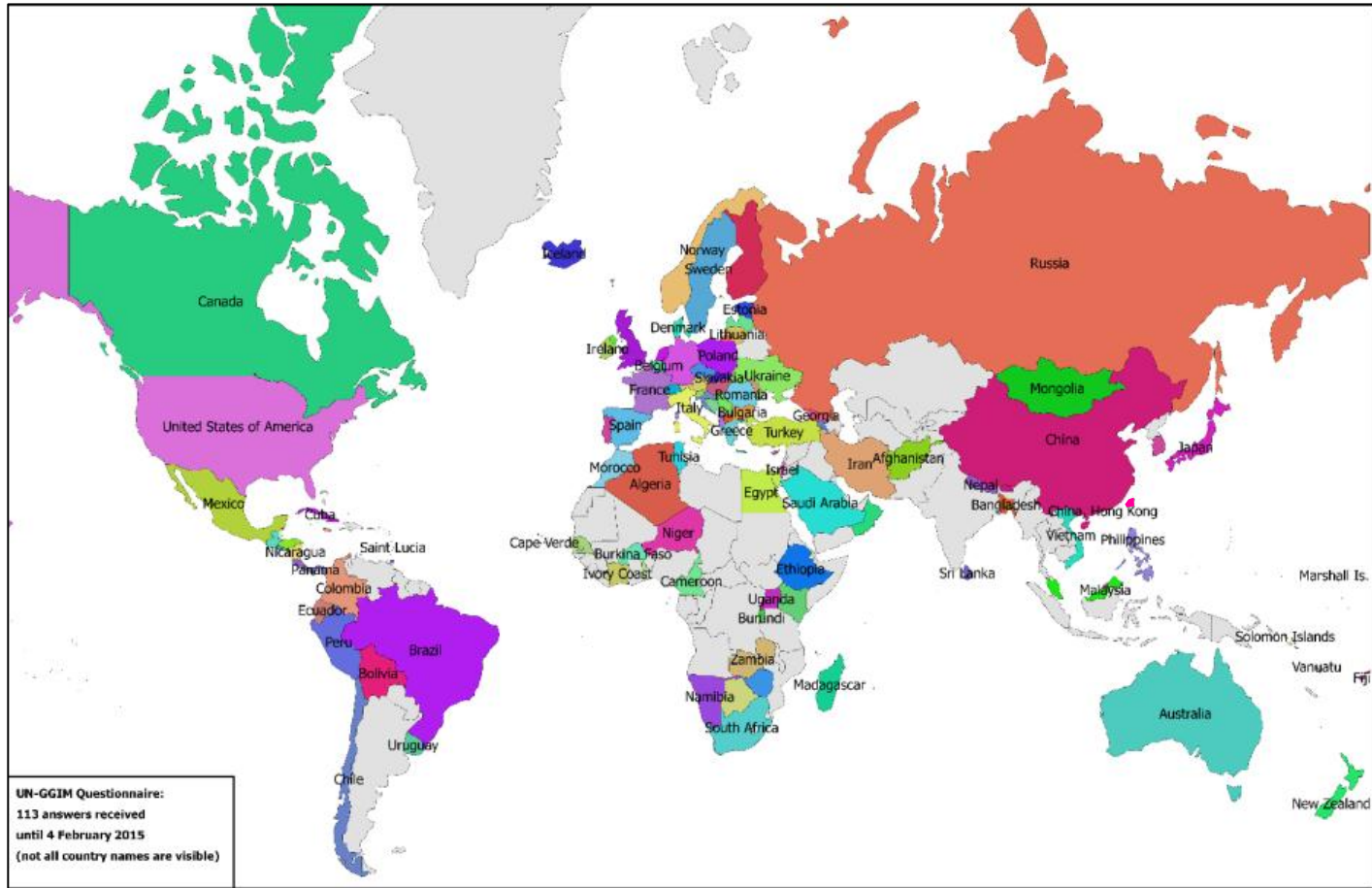
Origins of the Investigation

The investigation was conducted based on the joint efforts by ISPRS and UNGGIM leading by Gottfried Konecny, Emeritus Professor from Leibniz University Hannover.

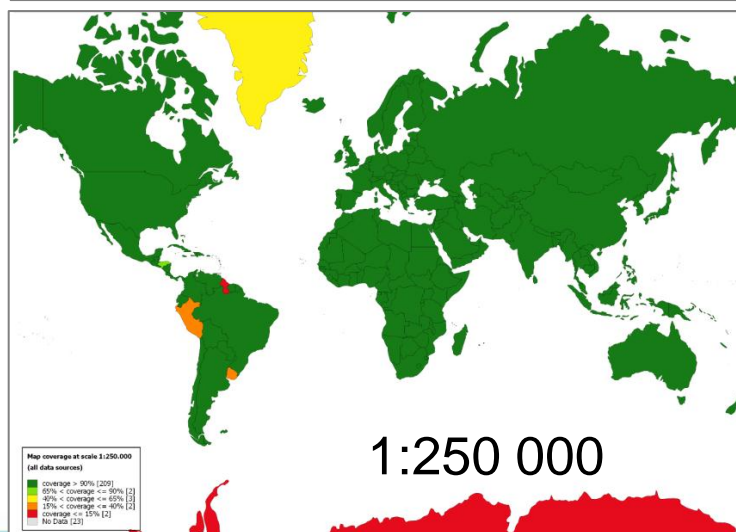
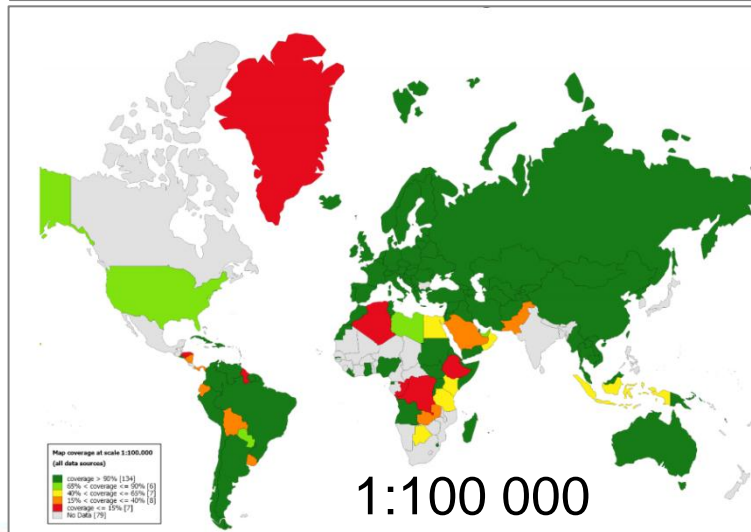
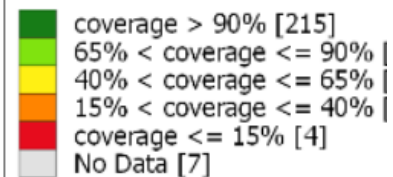
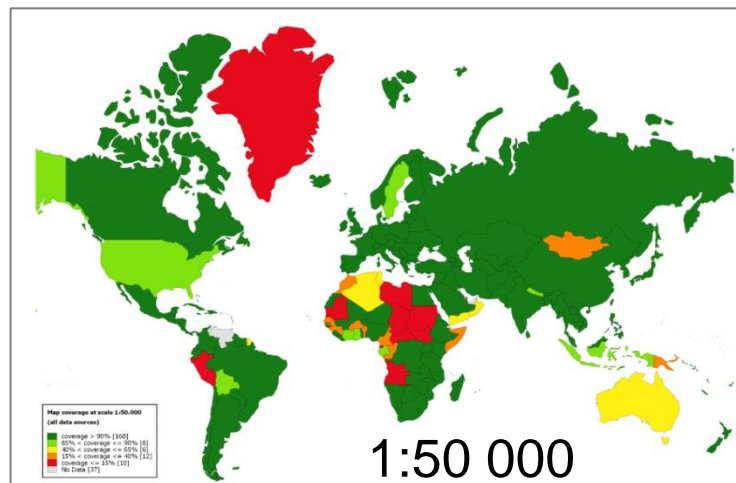
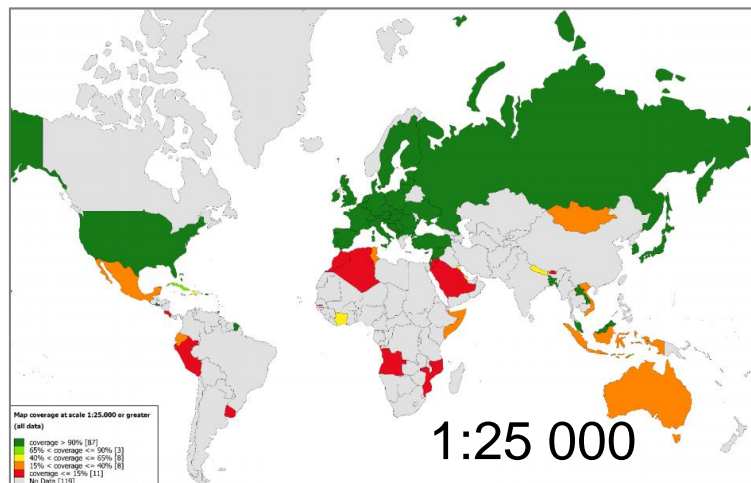
- Studies by the UN Secretariat in 1968, 1974, 1980, 1986 on the Status of Mapping in the World
- Last Report on the Studies at UNRCC-AP 1987 in Bangkok, published in World Cartography XX, 1990 (status of data 1986)
- The United Nations Regional Cartographic Conferences (UNRCC) for the Americas and for Asia and the Pacific nevertheless continued to recommend to the Secretariat to continue the studies on the global status of mapping.
- ISPRS Council in November 2011 offer cooperation to UNGGIM to start a joint project on the survey of the status of topographic geospatial information. The project was approved by Dr. Paul Cheung, director of UNGGIM. Dr. Amor Laaribi as UNGGIM contact, and Prof. Gottfried Konecny of Leibniz University Hannover as ISPRS contact.
- An ISPRS Working Group (WG IV/2) has been created to assure sustainability of the effort. The investigation got the financial support under the ISPRS Scientific Initiatives Program for the Year 2014~2015.
- **In January 2012, a joint questionnaire with 27 questions was designed between ISPRS and UNGGIM. The GGIM Secretariat has mailed it to the UN member States on April 27, 2012.**
- **By July 2014, 113 answers of the questionnaire were received.**



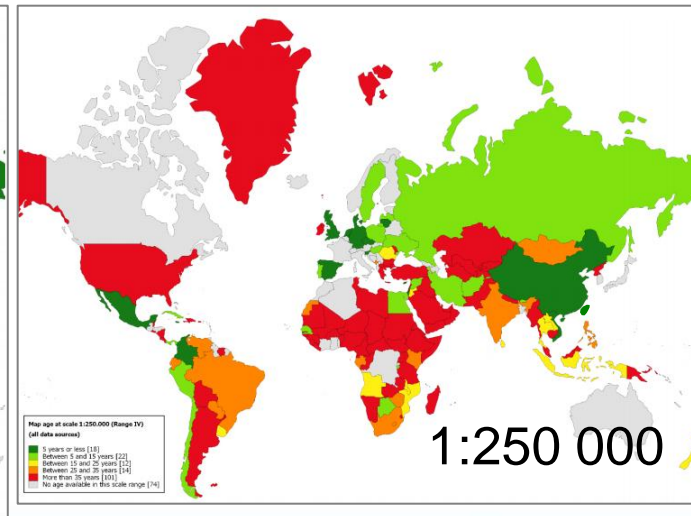
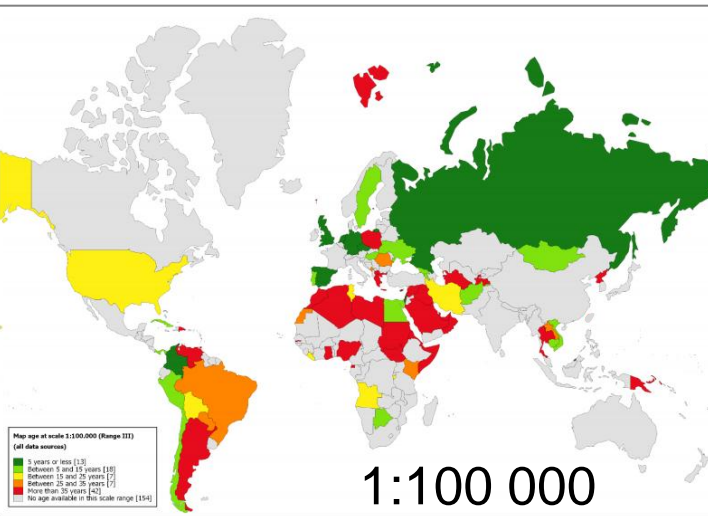
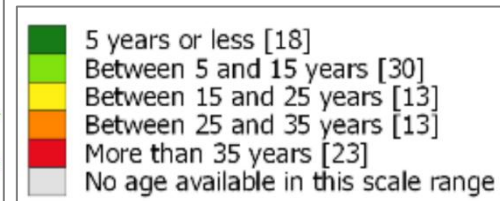
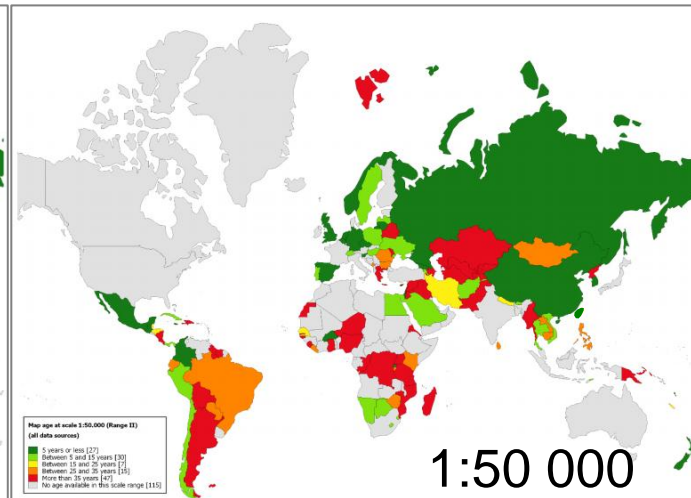
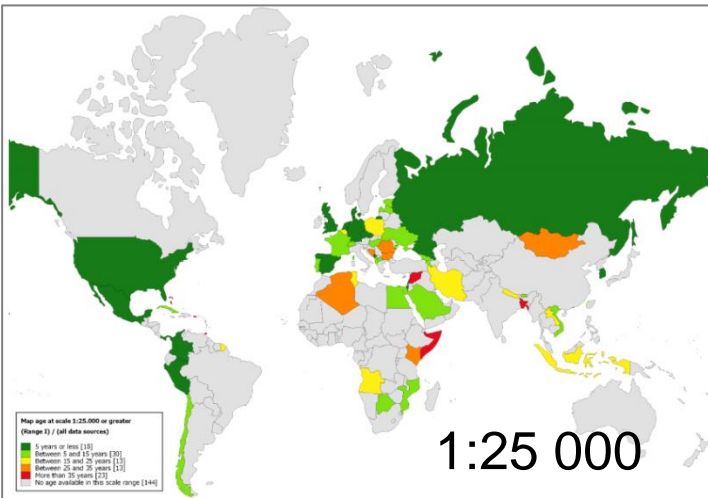
113 Returned Questionnaires out of 193 UN Member Countries



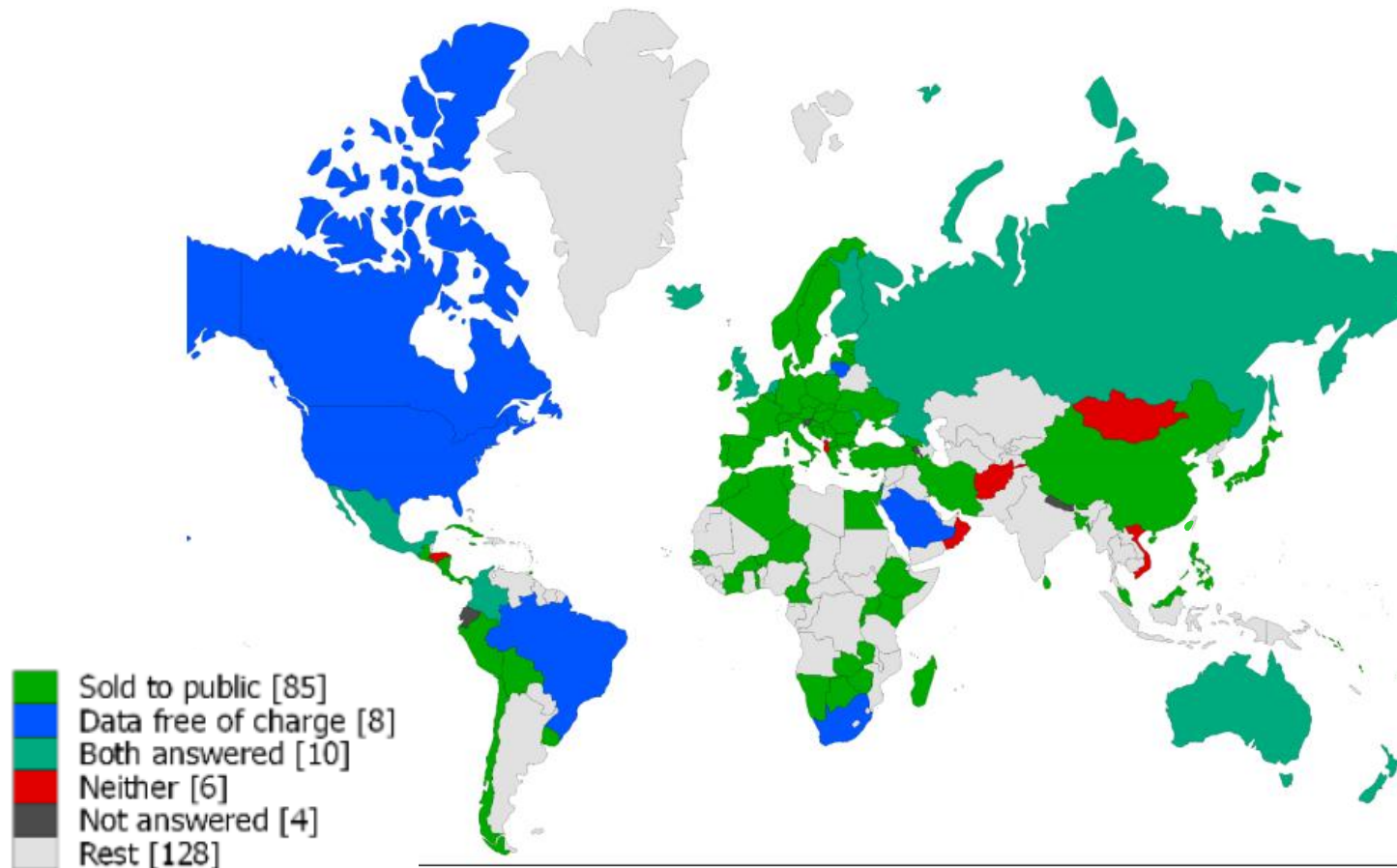
Data Coverage in 2012



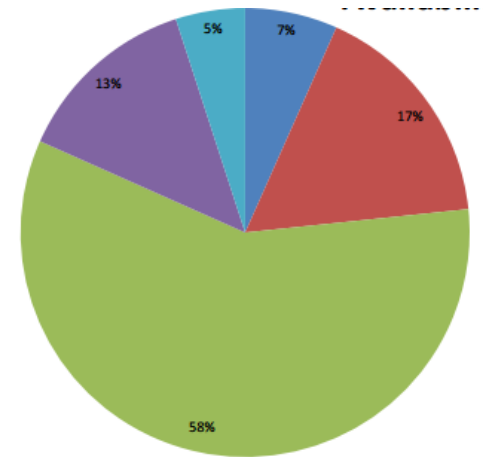
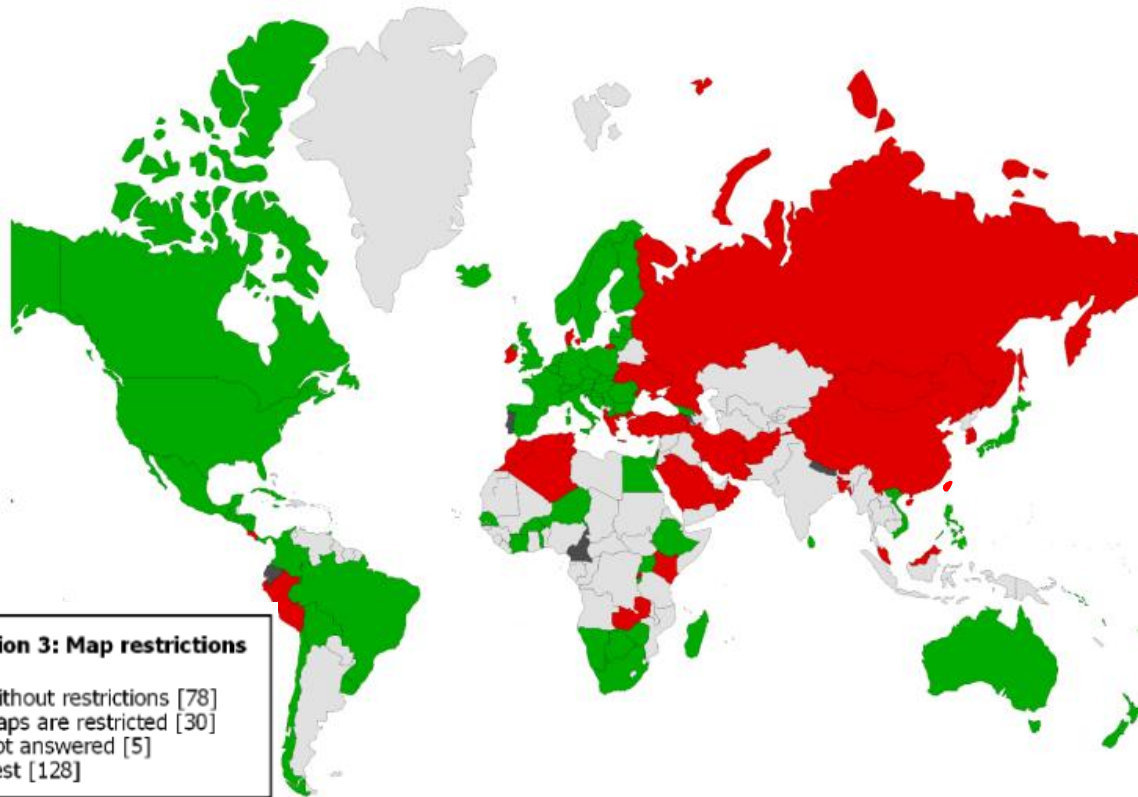
Data Age in Years Counting from 2012



Map Charges



Map Restrictions

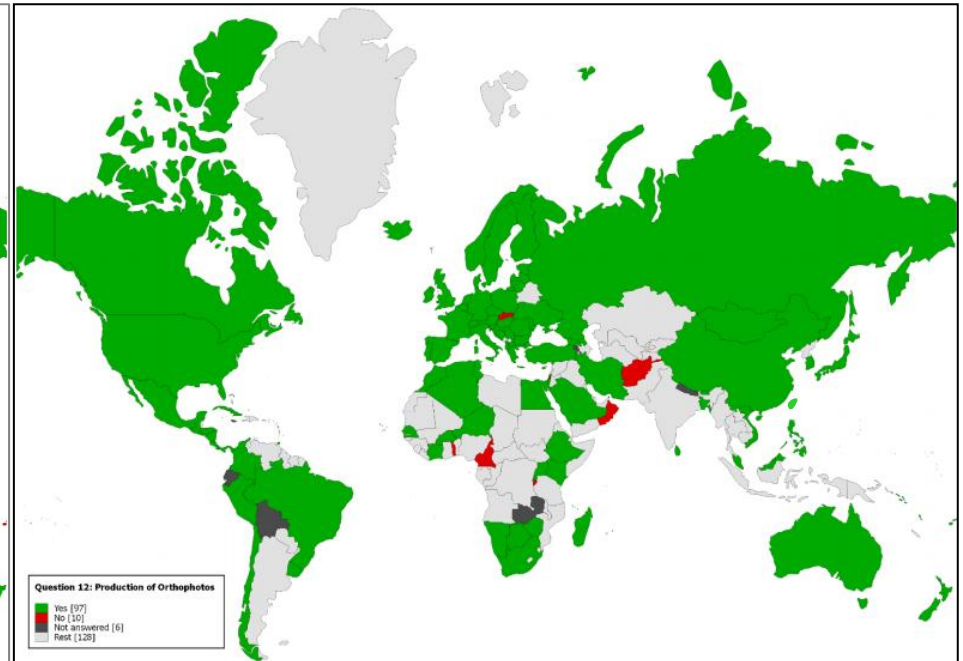
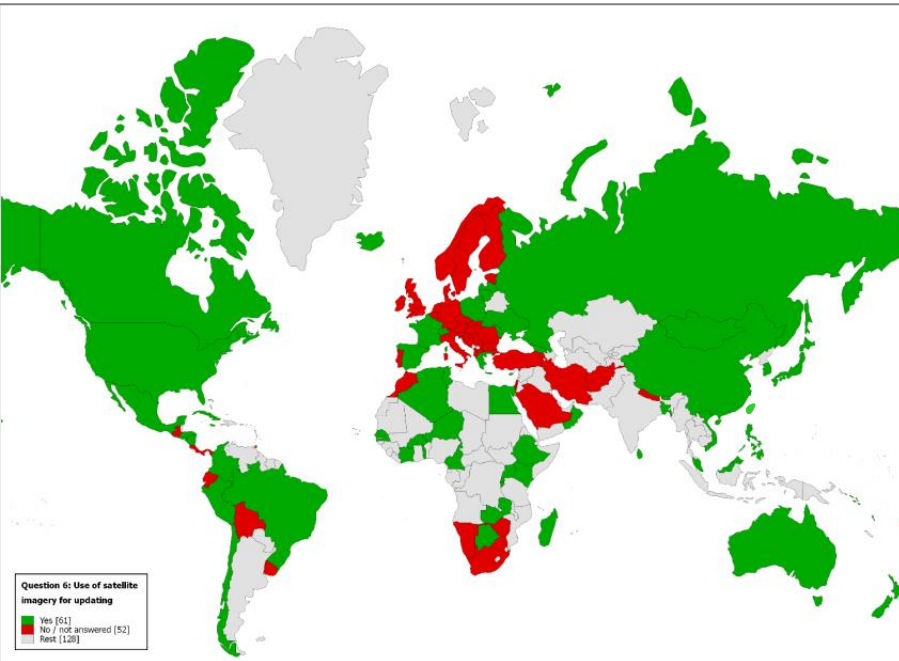


- restricted (not sold)
- restricted (sold)
- open (sold)
- open (sold and free of charge)
- open (free of charge)



Use of Satellite Data for Mapping and map Updating

Production of Orthophotos

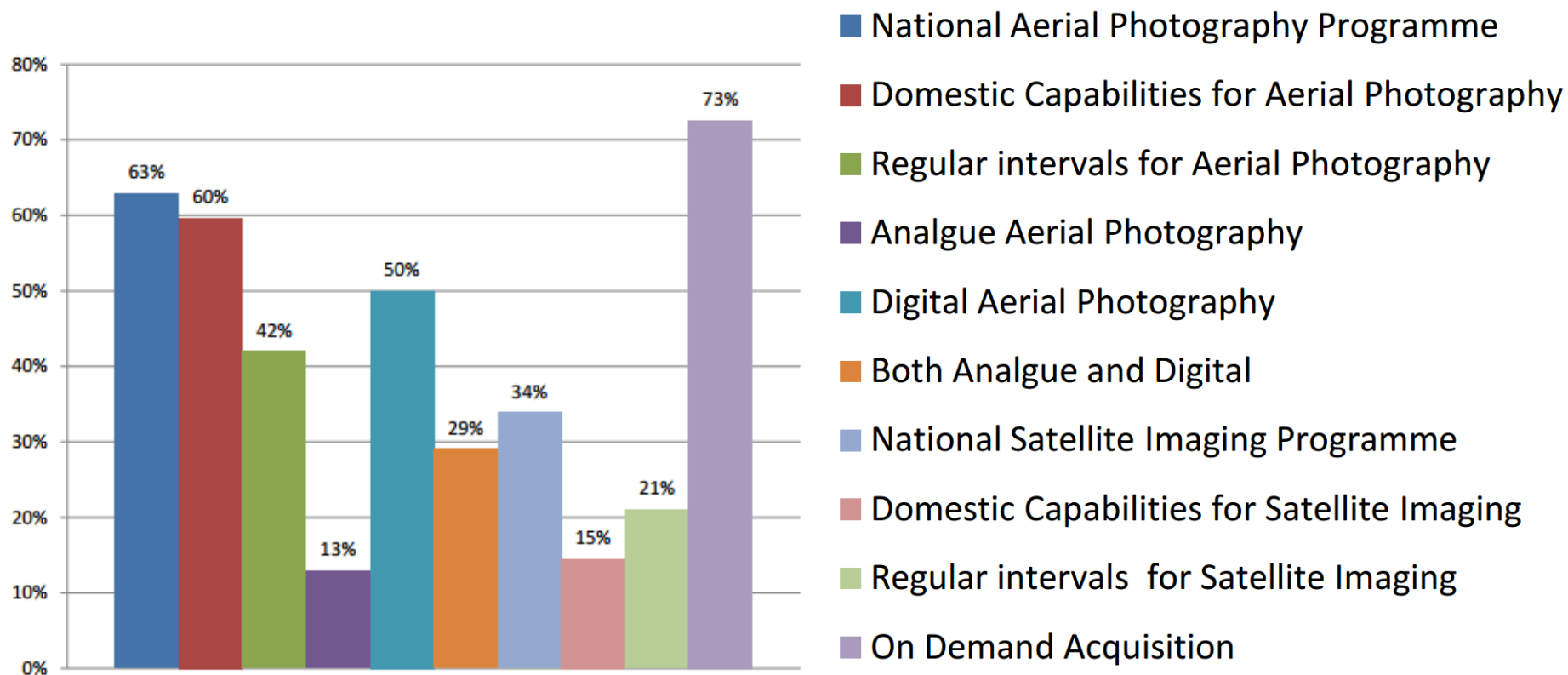


Yes [61]
No / not answered [52]
Rest [128]

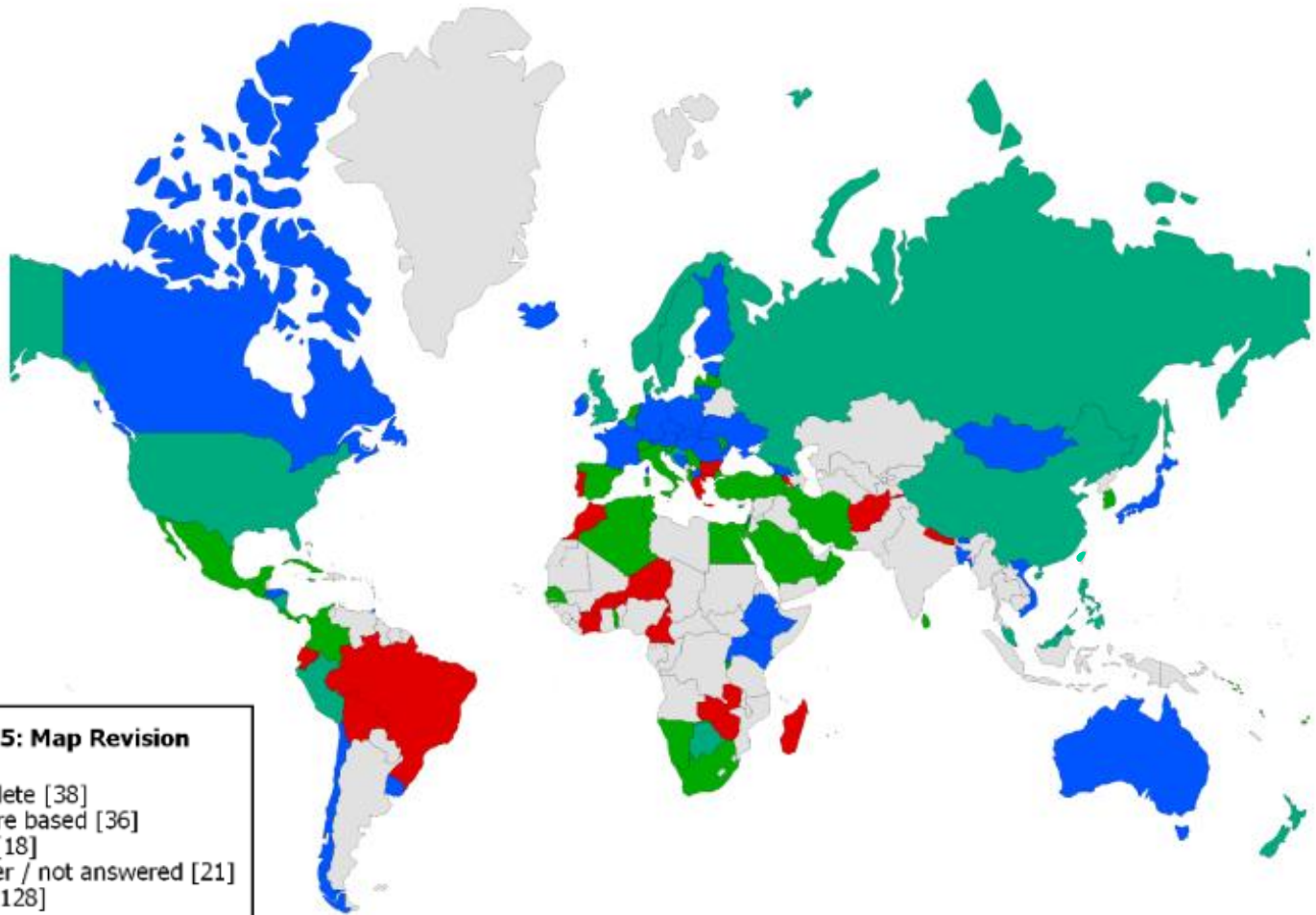
Yes [97]
No [10]
Not answered [6]
Rest [128]



National Aerial and Satellite Imaging Programs



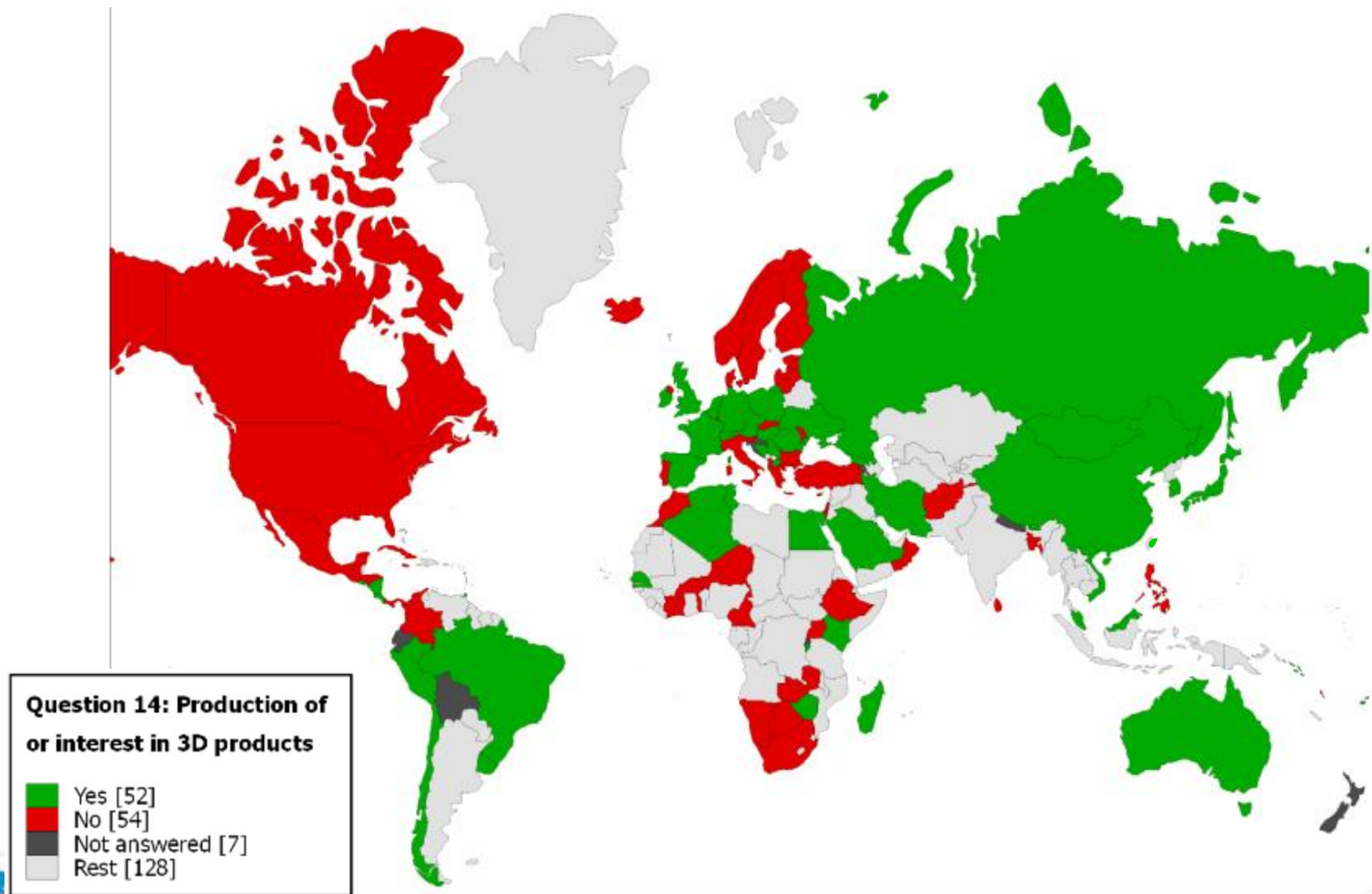
Map Update



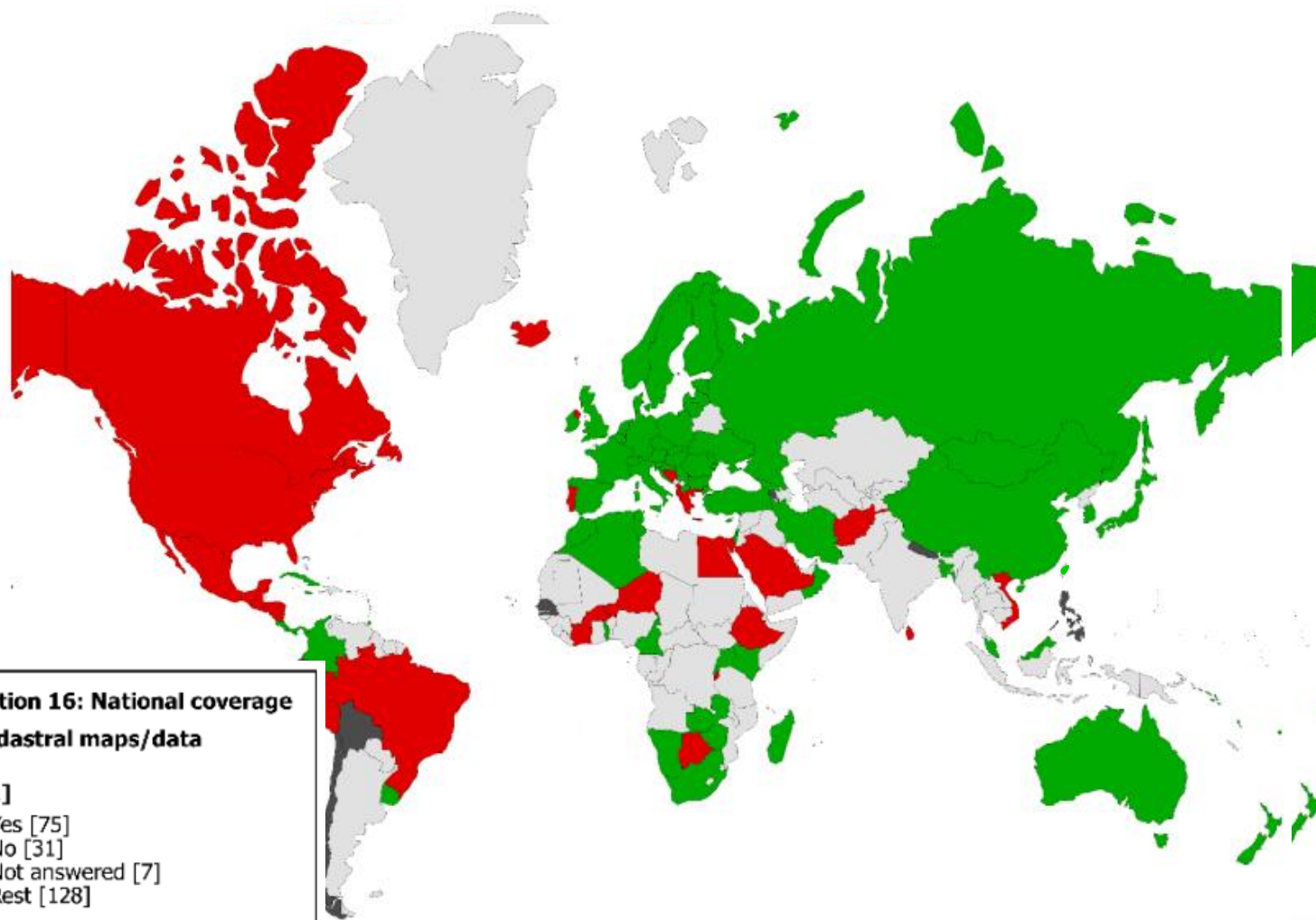
Question 5: Map Revision

- Complete [38]
- Feature based [36]
- Both [18]
- Neither / not answered [21]
- Rest [128]

Interest in 3D Products



National Coverage of Cadastral Maps



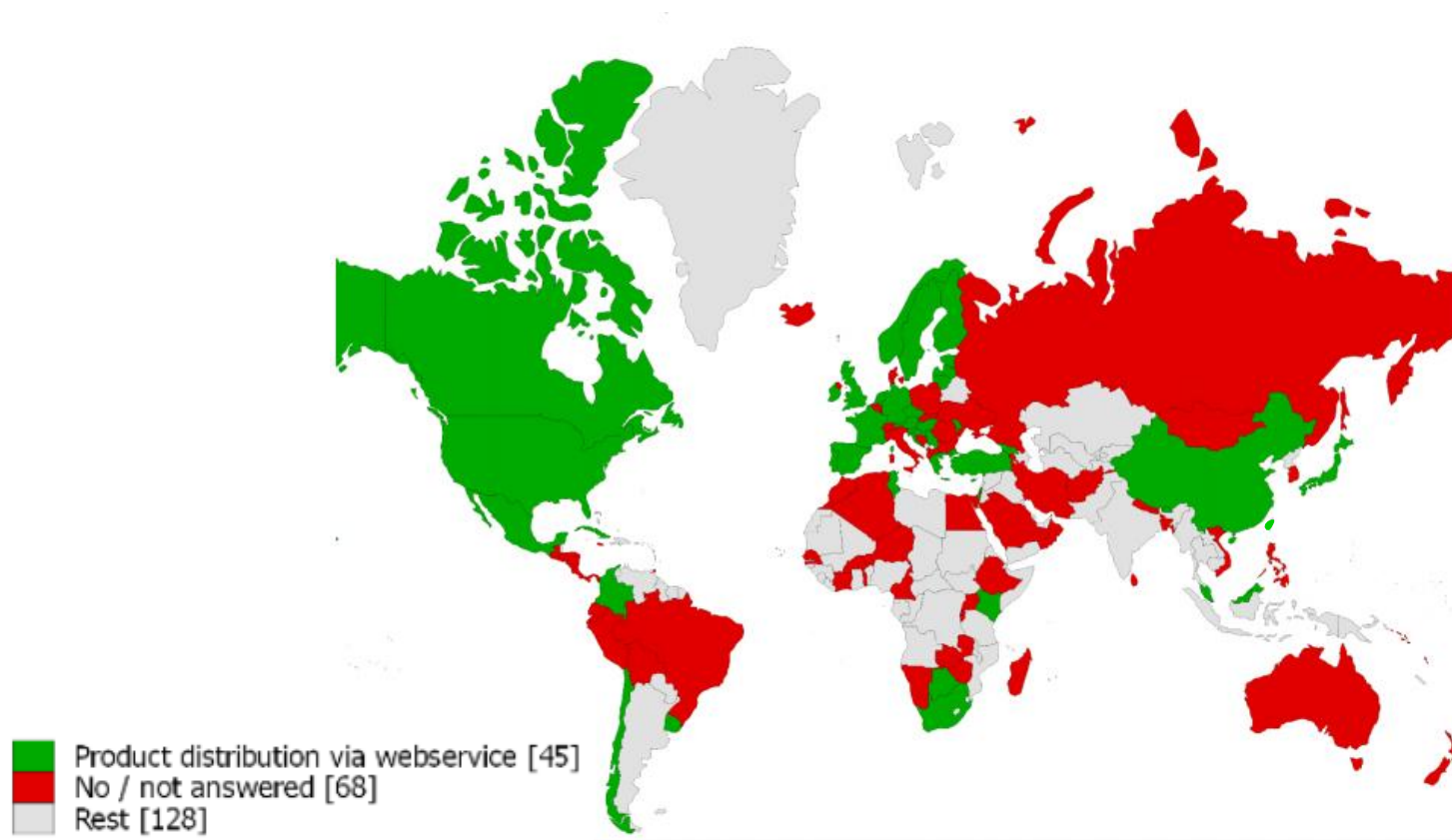
Question 16: National coverage of cadastral maps/data

[241]

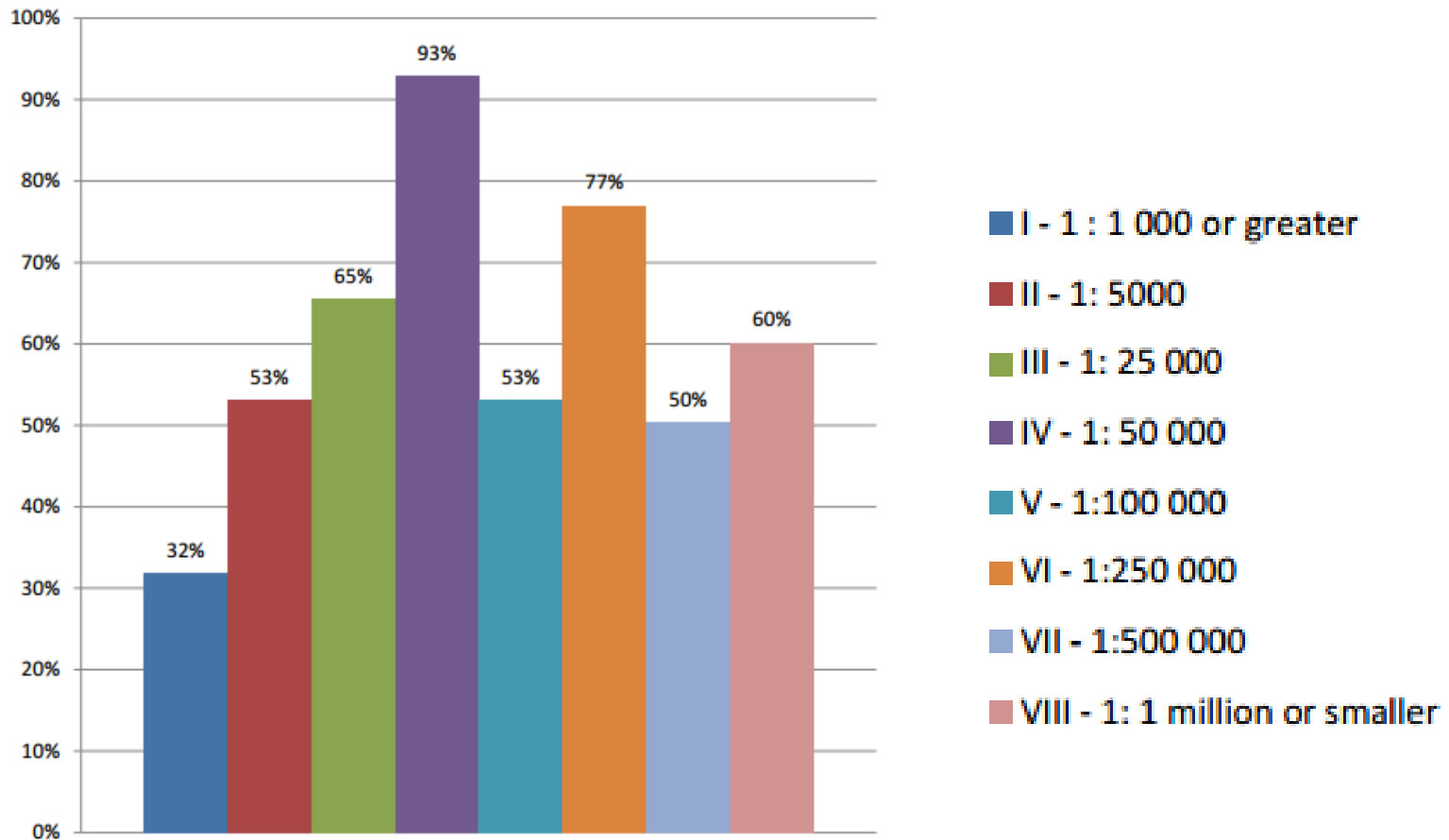
- Yes [75]
- No [31]
- Not answered [7]
- Rest [128]



Product Distribution via Web Services

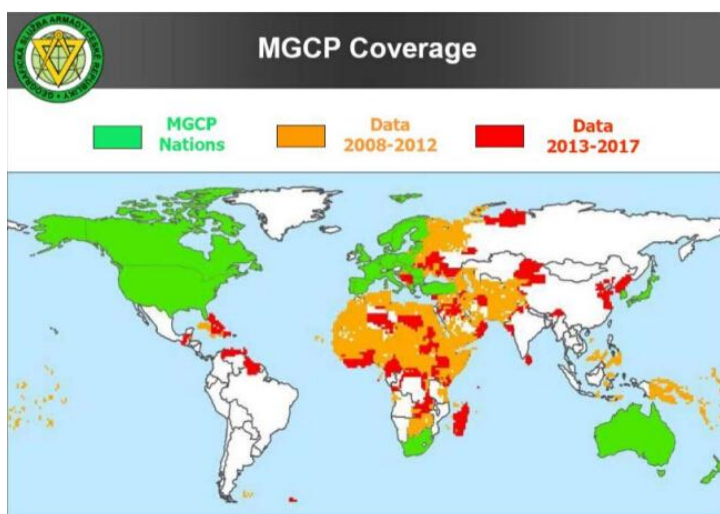


Map Scales Used

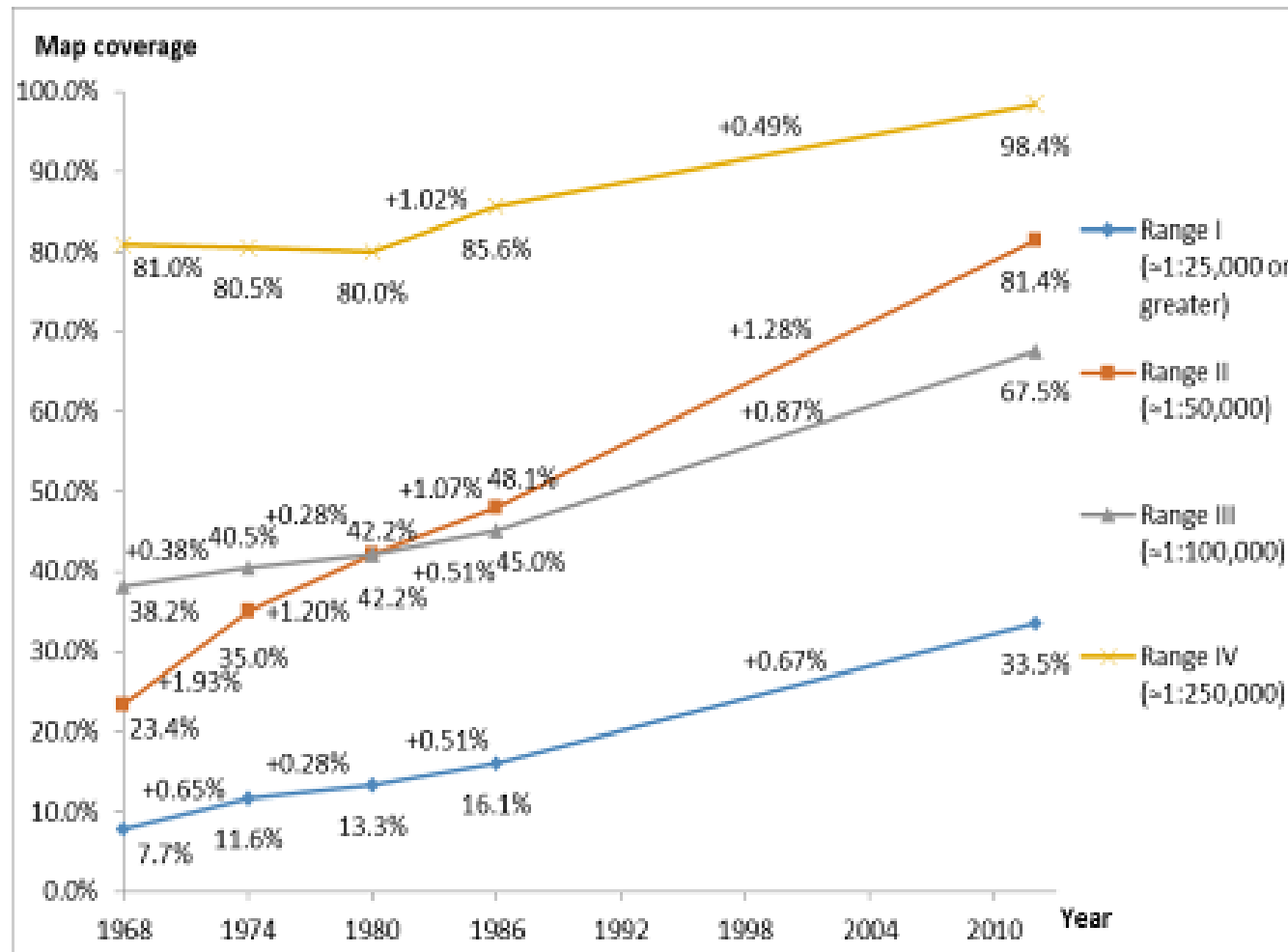


Other Sources

- Other sources have been used to obtain the mapping status during the investigation, including :
 - International Map and Geospatial Data Vendors, such as Eastview Geospatial, Minneapolis, Minnesota, USA and ILH Stuttgart, Germany;
 - Geospatial Industry, such as Google, Microsoft, Scanex, Yandex, Here, TomTom;
 - Military Agencies, such as MGCP (Multinational Geospatial Co-production Program) and UN Cartographic Section in peacekeeping operations;
 - Regional Bodies, such as PAIGH or EuroGeographics;
 - Regional UN Activities, such as UNGGIM-Americas and UNGGIM-AP.
 - New mapping products (such as street view, indoor map and navigation map, etc.) should be added into the NSDI.

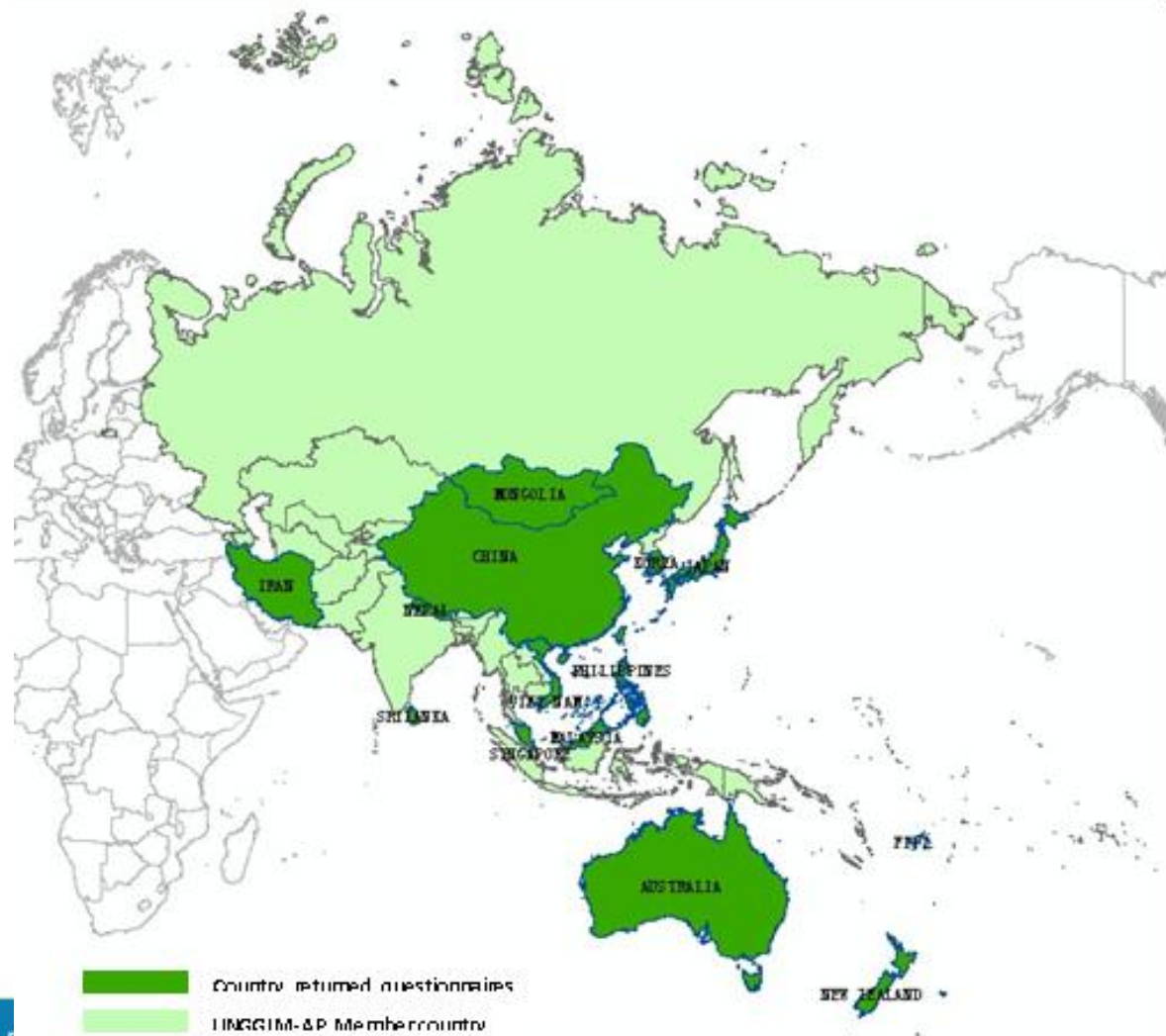


Percentages of total world area covered in each scale category, 1968-1974-1980-1986-2012



The Status of Topographic Mapping in the AP region

- Among the 60 UNGGIM-AP member countries/regions, 14 returned the, including Australia, China, Fiji, Iran, Japan, Malaysia, Mongolia, Nepal, New Zealand, Philippines, Republic of Korea, Singapore, Sri Lanka, Vietnam.



Scale of Map in different countries

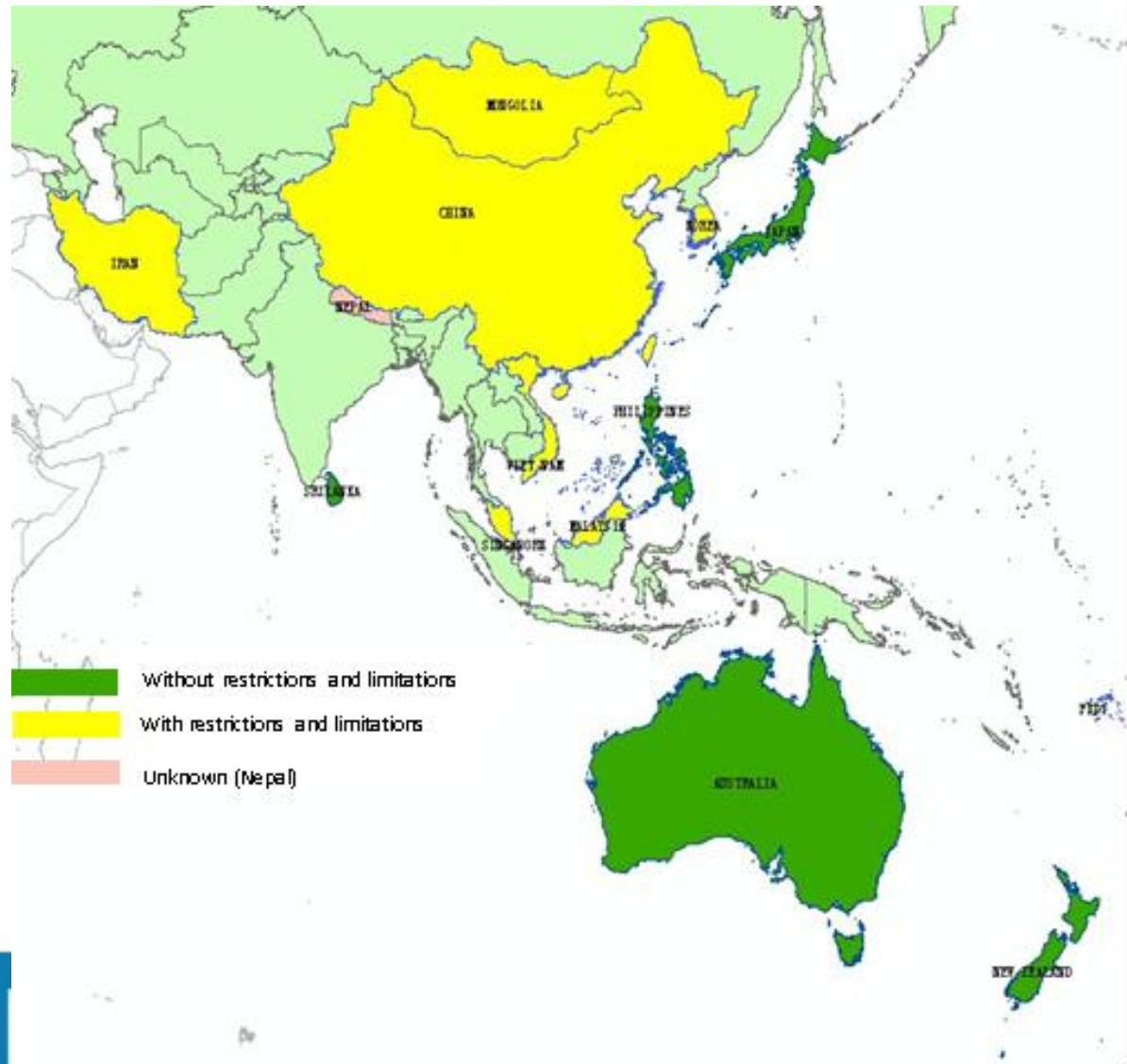
- All country have national topographic maps/databases. The scale of map/databases changes in different countries. But most countries have 1:250, 000 and 1:50,000 scale.

Country/region	1:1 million or smaller	1:500 000	1:250 000	1:200 000	1:100 000	1:50 000	1:25 000	1:10 000	1:5 000	1:1 000 or greater
Australia										
China										
Fiji										
Iran										
Japan										
Malaysia										
Mongolia										
Nepal										
New Zealand										
Philippines										
Republic of Korean										
Singapore										
Sri Lanka										
Vietnam										



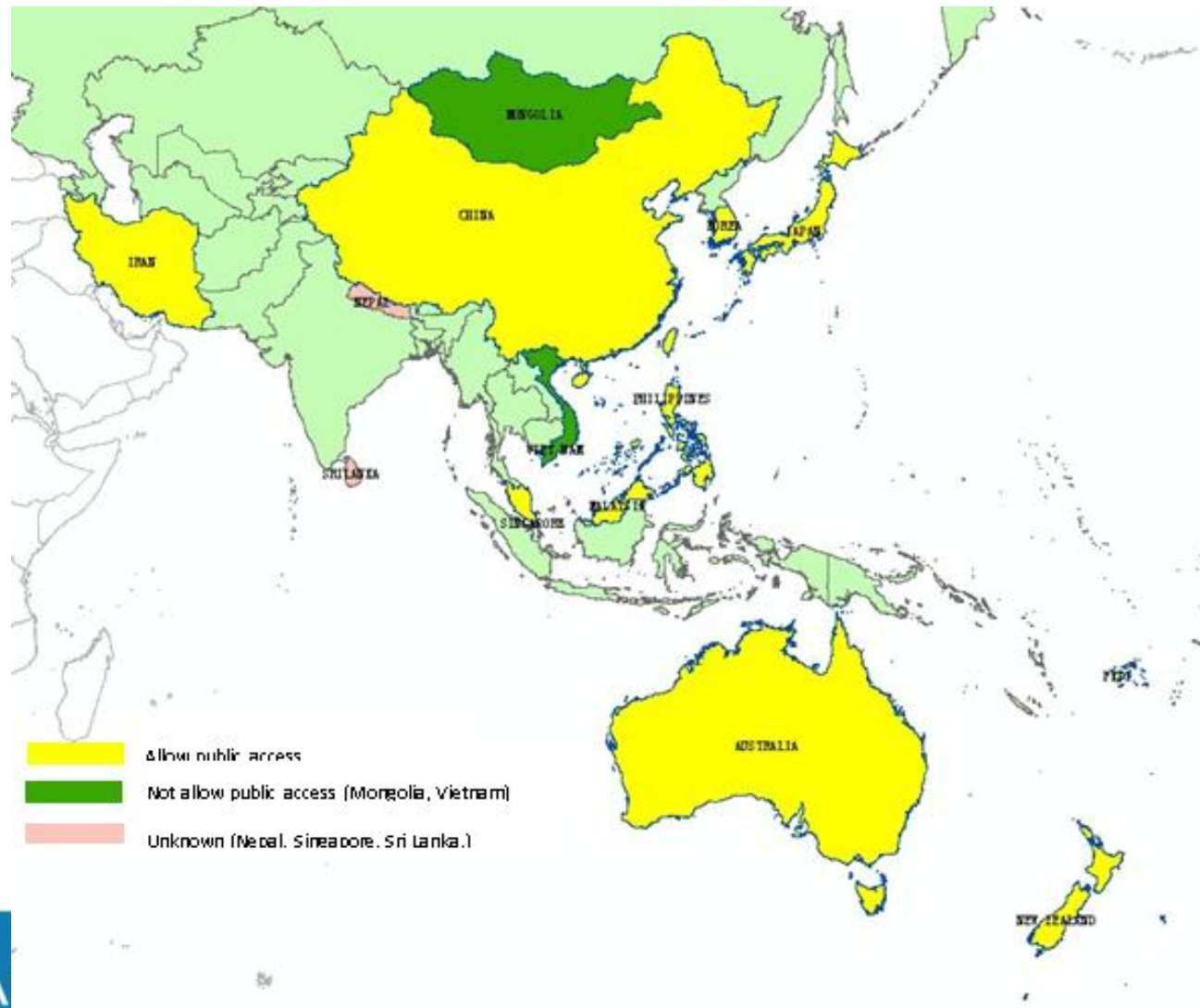
Map Restriction

- Eight of the countries have restricted access or limited circulation to the maps/data. Five countries (Australia, New Zealand, Sri Lanka, Japan, Philippines) have no restrictions or limitations. One country (Nepal) has not submitted related information.



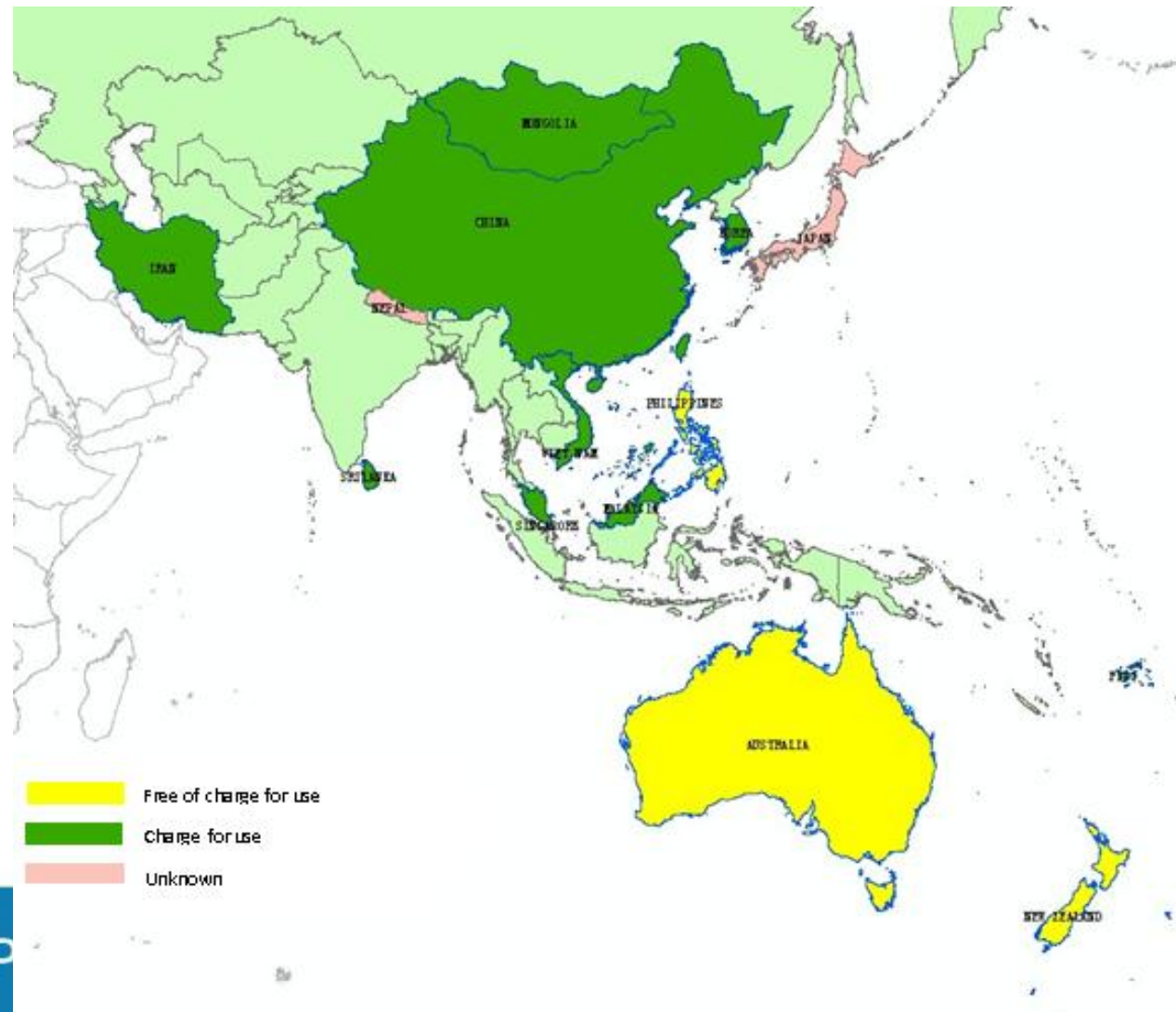
Public Access

- Nine of the countries allow public access to the map/data. Two countries (Mongolia, Vietnam) don't allow public access. Three countries have not submitted related information (Nepal, Singapore, Sri Lanka).



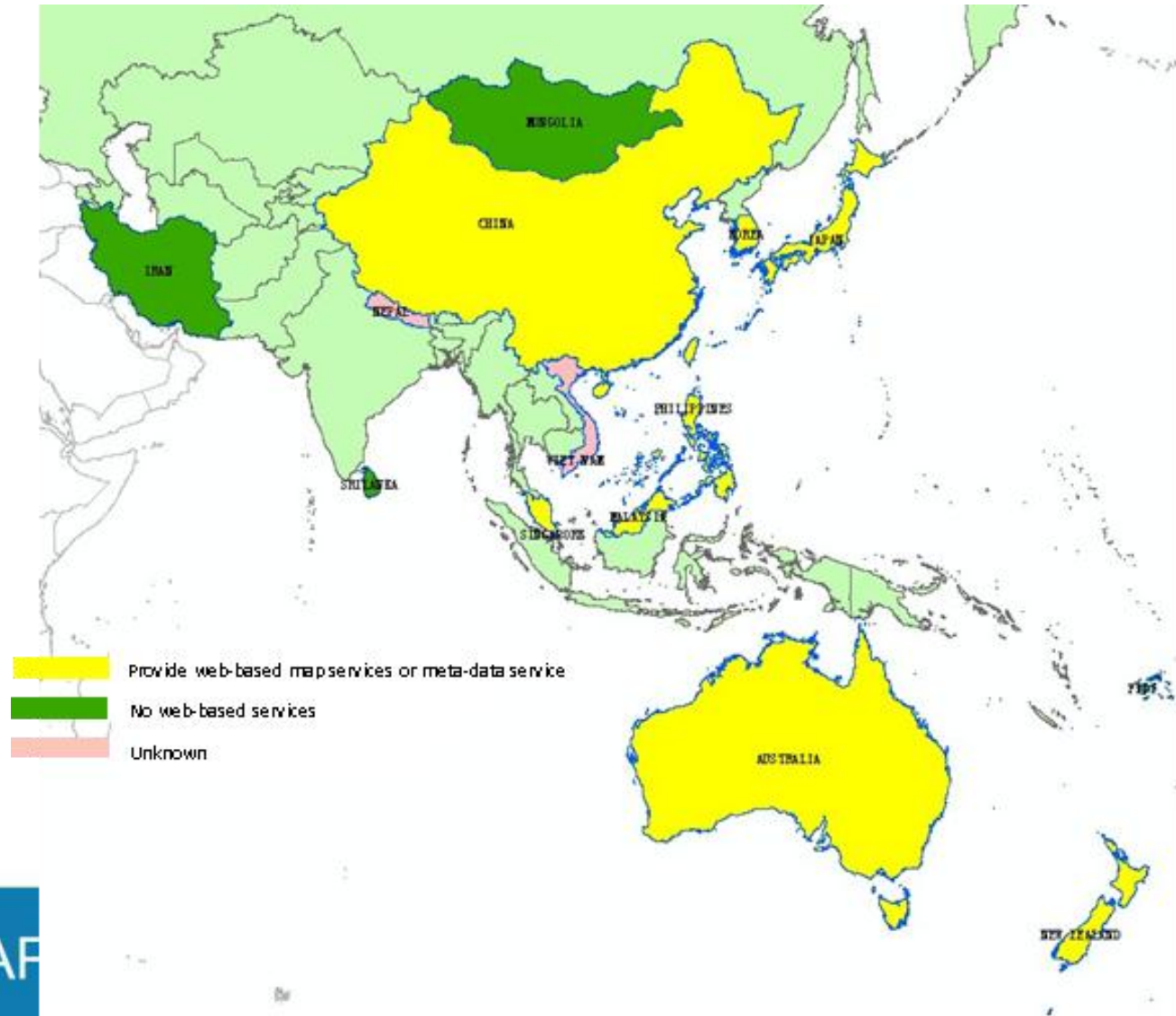
Charge for use

- Nine countries charge for use of the map/data. Three of the countries (Australia, New Zealand, Philippines) don't charge for use of the map/data. Two countries (Nepal, Japan) have not submitted related information.



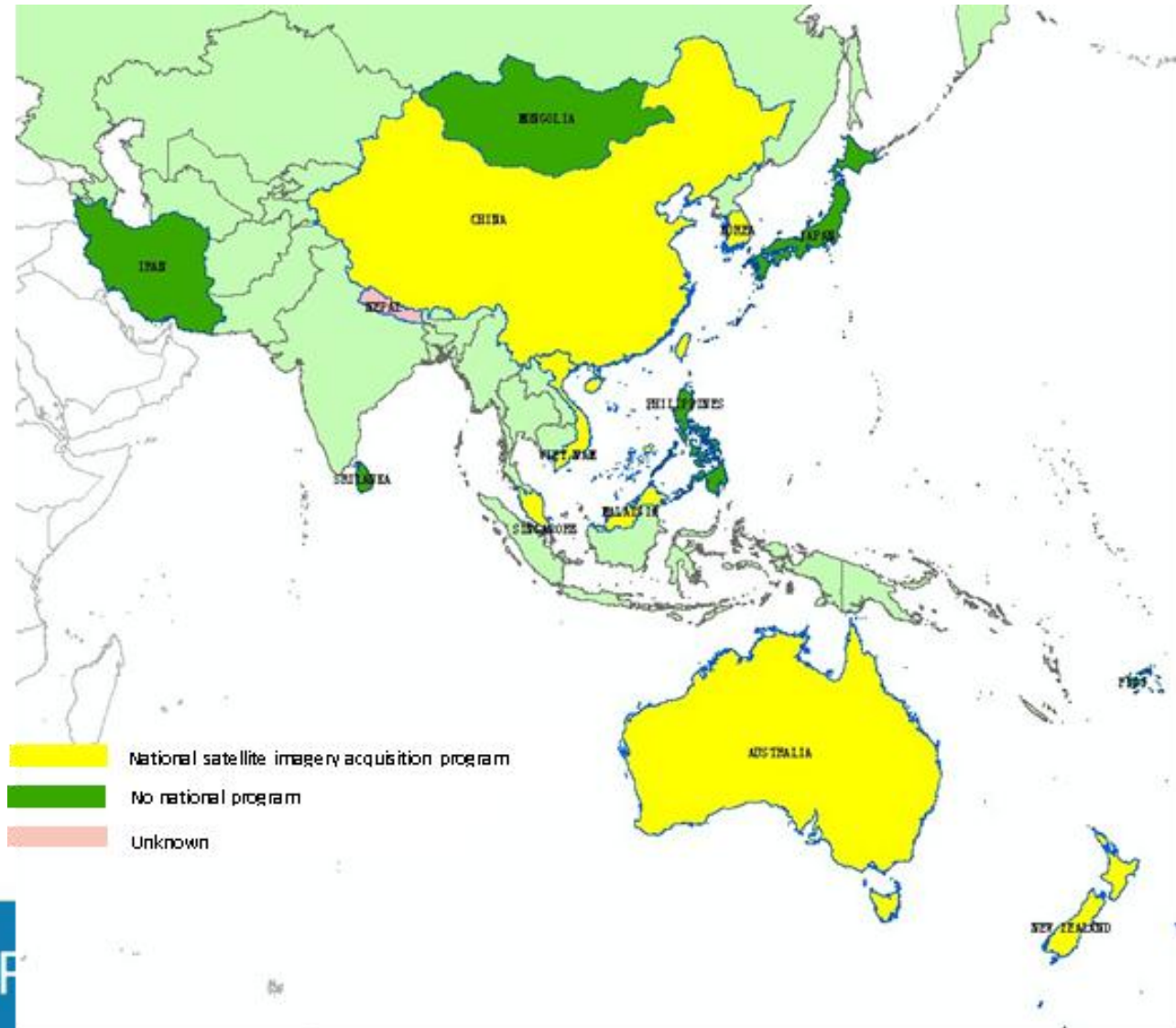
Web-based Map Services

- Eight of the countries provide web-based map services or meta-data service. Four countries (Fiji, Iran, Mongolia, Sri Lanka,) have not provide on-line services yet. Two countries (Nepal, Vietnam) have not submitted related information.



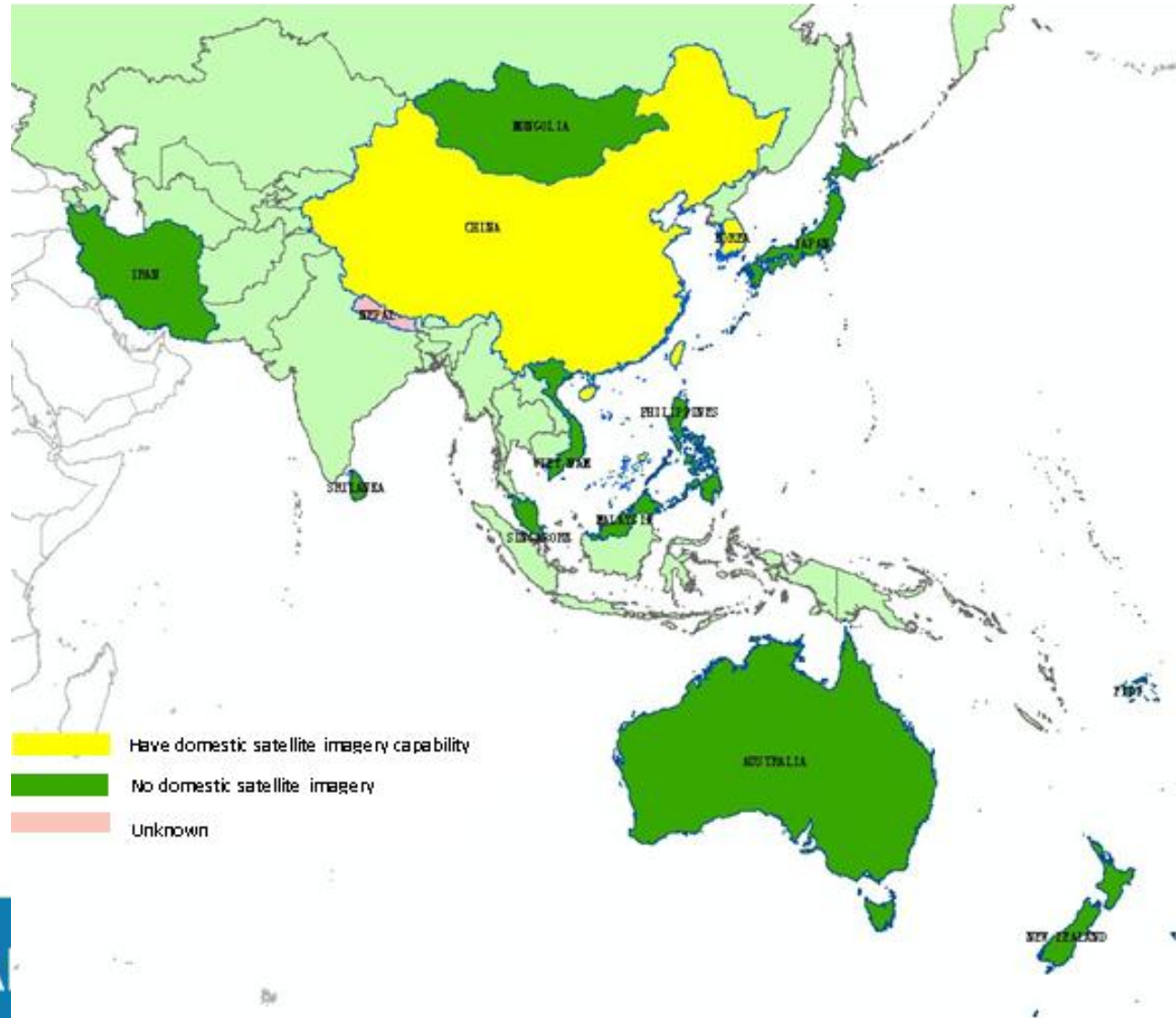
National Satellite Imagery Acquisition Program

- Six of the countries have national satellite imagery acquisition program (Australia, China, Malaysia, New Zealand, Republic of Korea, Vietnam). Seven countries (Fiji, Iran, Japan, Mongolia, Philippines, Singapore, Sri Lanka) have no such program. One country (Nepal) has not submitted related information.



Domestic Satellite Imagery Capability

- Three of the countries have domestic satellite imagery capability (China, Republic of Korea, Singapore).



Conclusions

- Based on the analysis, we know that governments around the world are not succeeding to complete or update their mapping requirements at the critical scales 1:5000 to 1:50 000;
- Imagery from satellites and digital aerial cameras offer a faster and more cost effective technology;
- more efforts should be done on web-based geo-information access and location-based services;
- Other sources have been used to obtain the mapping status during the investigation, including (1) International Map and Geospatial Data Vendors; (2) Geospatial Industry; (3) Military Agencies and UN Cartographic Section in peacekeeping operations; (4) Regional Bodies; (5) Regional UN Activities
- new mapping products (such as street view, indoor map and navigation map, etc.) should be added into the NSDI.
- We suggest UN-GGIM-AP request the member countries support the questionnaires by providing the information.



Pilot Studies on Acquisition and Maintenance of Place-based Information in Australia



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Use of LiDAR for rapid acquisition and update of authoritative geospatial information

Australia is currently undertaking the largest single LiDAR acquisition in the southern hemisphere, covering an area of 80,000 square kilometers. The LiDAR will be used in the modelling of water flow and vegetation canopies in areas of environmental sensitivity. Some early conclusions can be drawn.

- Large-area acquisitions of this type of information can be problematic due to the very large volumes of information acquired. This in turn makes processing of information very slow, and even more slow if the information requires reprocessing. Acquisition projects such as this should be designed to allow rapid production of initial elevation products, but be captured to allow later processing of more detailed land cover and building/vegetation structure products.
- Where possible, given that the majority of cost in such projects is in aviation, any airborne acquisition should include multiple sensors, including the acquisition of imagery. Imagery assists in the quality assurance of the lidar but if acquired correctly can also be a source of information in its own right.



Use of Volunteered Geographic Information for more rapid acquisition and update of authoritative geospatial information

- Whilst volunteered geographic information has been in use to a limited degree in the past in more developed nations via feedback to mapping authorities, it is now appearing to be a quick and relatively straightforward approach to collecting information where none exists.
- This has been demonstrated through work between Australia and Indonesia through the Australian-Indonesian Facility for Disaster Reduction and the local Indonesian Openstreetmap community. The challenge for more established mapping programs is working out how to make best use of volunteered geographic information to update already-established geographic information datasets. This is still an area for investigation.



Piloting and evaluating the usage of fundamental, multiple-use geospatial information for local, national and regional applications (1)

- Since 2004 Australia has been working steadily on an approach to the re-use of the best-available geospatial information for applications across multiple scales to:
 - Reduce the cost of acquisition and maintenance of fundamental geospatial information across the levels of government
 - Maximise the number of uses of the same fundamental geospatial information, nationally and regionally
 - Ensure that fundamental geospatial information meets the varied legal and policy needs of government, including public safety



Piloting and evaluating the usage of fundamental, multiple-use geospatial information for local, national and regional applications (2)

- The challenges Australia has faced in doing this include:
 - New uses of fundamental geospatial information are emerging. The current quality of fundamental geospatial information does not meet these needs.
 - Ensuring information meets international standards and that there are common or translatable taxonomies and ontologies, so that information can be transformed efficiently
 - Custodians understand how their information is being used
 - Custodians are supported financially, and have the appropriate technical expertise, to maintain a richer base of fundamental geospatial information
 - Different licensing and pricing regimes within states or provinces may inhibit the availability of potential multiple-use geospatial information
 - Difficulty in assessing the economic impact of fundamental geospatial information as a whole.



Piloting and evaluating the usage of fundamental, multiple-use geospatial information for local, national and regional applications (3)

- What Australia is now doing is:
 - Improving the organisation of grid-based or point-cloud based information to allow for easier generation of products, and more versatile applications particular monitoring change through time.
 - Undertaking a rigorous mapping of the dependencies between the different fundamental geospatial information datasets across different levels of government.
 - Evaluating a process for the maintenance of country-wide and regional vector products from higher-resolution datasets maintained by custodians (and possibly volunteered information).
 - Identifying more specific use cases which demonstrate how fundamental geospatial information has an economic, legal or policy effect.



Pilot Studies on Fast Acquisition and Update of Place-based Information in Malaysia



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Studies on Fast Acquisition and Update of Place-based Data in Malaysia

- The Department of Survey and Mapping Malaysia (DSMM) has planned to introduce Unmanned Aerial Vehicle (UAV) for rapid imagery acquisition.
- Challenges of the UAV implementation
 - ✓ Suitability of the area for taking off and landing is very crucial to the fixed wing UAV operation. It is quite challenging to find the area of at least 300 meters long and 150 meters wide that is near to the observation areas.
 - ✓ Weather is another factor that needs to be seriously taken into consideration while performing the mission planning. It is recommended the operation be carried out between 0900 to 1100 and 1400 to 1700 for better quality pictures. Wind speed also plays a significant role in the UAV operation and proper planning is required. Therefore it is important that the operator is always aware to the weather forecast so that the planning would be more effective.
- Conclusion
 - ✓ UAV is a new platform that can be used to capture imagery data and it is the alternative method to conventional aircraft platform. The UAV system contributed significantly to the rapid acquisition of imagery data to support various applications. The introduction of the UAV system would expedite the geospatial transformation programme in order to meet the demand of spatially enabled government and society.



Case Study I

- The UAV was investigated in generating an orthophoto mosaic for town map production. The traditional method of acquiring aerial photo through aircraft platform is costly and not economical for the map updating of small area.
- The specification for the accuracy requirement for the orthophoto production using normal aerial photo campaign was used to assess the accuracy of the orthophoto production using UAV. Mersing town was selected as a pilot project. A total of 399 still images and eight GCPs over Mersing Town with the size of 3.72 sq km were captured. The result using Pix4UAV software showed that the orthophoto production conform the accuracy requirement for town map production.



Orthophoto Map over Mersing Town



Case Study II (Logging Monitoring)

- Uncontrolled logging activity has negative impacts on the economic and ecological systems of optimal forest management. It is quite costly to monitor a small area and especially in highland area that always covered by cloud. Therefore, DSMM has been tasked by the government to capture imageries over the area using UAV.
- The deployed UAV has successfully captured imageries which in turn used to generate orthophoto over the logged areas. The orthophoto data was then overlaid with cadastre lots and this information was further utilized by the relevant government agencies in analyzing the impact of the logging activities.



Orthophoto Map over Logging Activities Area



Case Study III (Support for Humanitarian Activities)

- The UAV also played an important role to support humanitarian operation but was deployed in small scale due to its limitation in suitable areas for taking off and landing. The UAV team was tasked to capture imageries for orthophoto map production for critical areas during a post-flood operation.
- The aim was to assist relevant government agencies for the planning and project development over the areas. The orthophoto map was able to be produced within the time frame and able to serve the stakeholder for further decision making process.



Orthophoto Map over Flooded Areas



Case Study IV (Support for Monitoring National Development Project Progress)

- There are several government agencies requesting DSMM to provide the latest imageries over national project development areas for progress monitoring activities. It is not economical to conduct a conventional aerial photo mission due to the size of the Area of Interest (AOI) which is generally less than 1 km². Furthermore, the location of the AOI is normally far from the airport in which the operational cost would be high.
- DSMM has provided the UAV support selectively due to the limitation of department capability in terms of man power and time. The stakeholder of the project was very satisfied with the orthophoto provided.



the orthophoto of national development project over an area in Kuantan, Pahang



Survey Report on the Role of Volunteered Geographic Information

by UN-GGIM National Institutional Arrangements Task Group 3 on
Trends in National Institutional Arrangements



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Making Use of VGI

Figure 3: Does your organization make use of VGI?

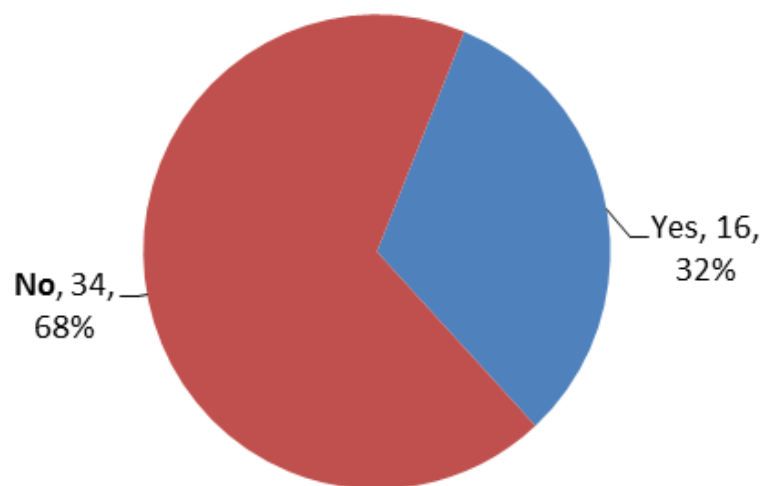
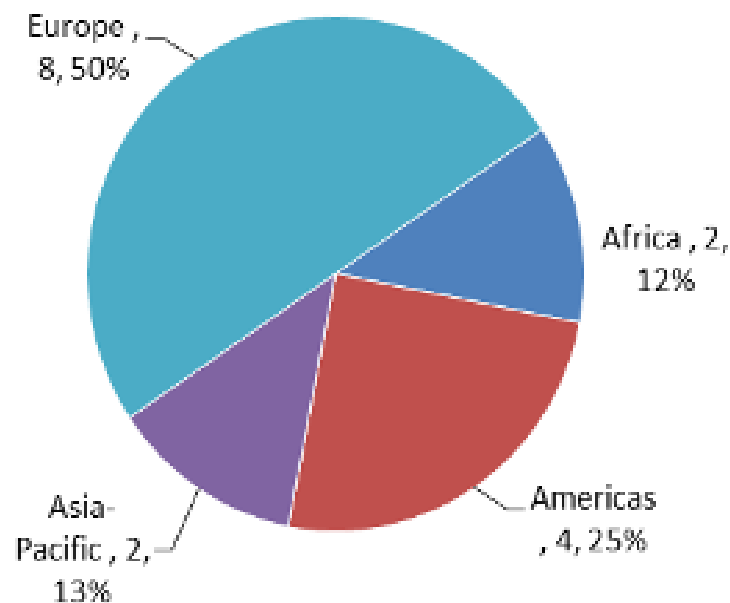


Figure 4: Making use of VGI by Region



Leading Contributors of VGI

Figure 5: Leading Contributors

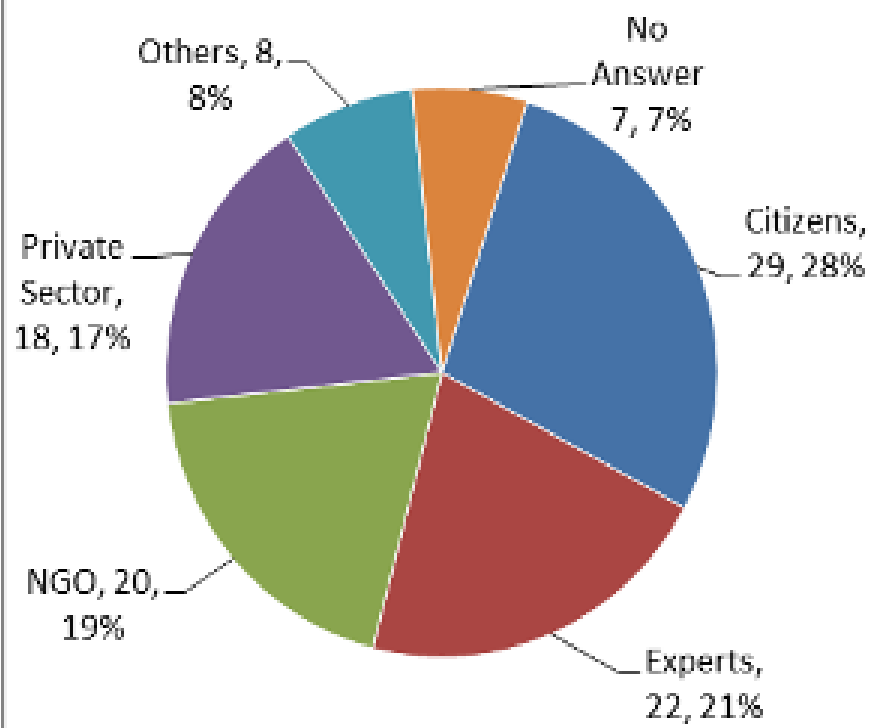
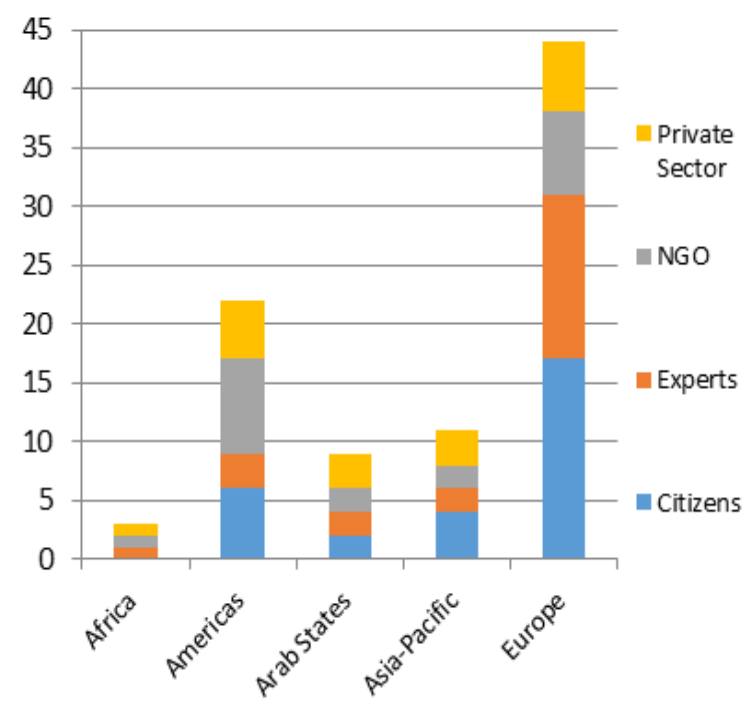


Figure 6: Contributors by region



Leading Users of VGI

Figure 8: Users by region

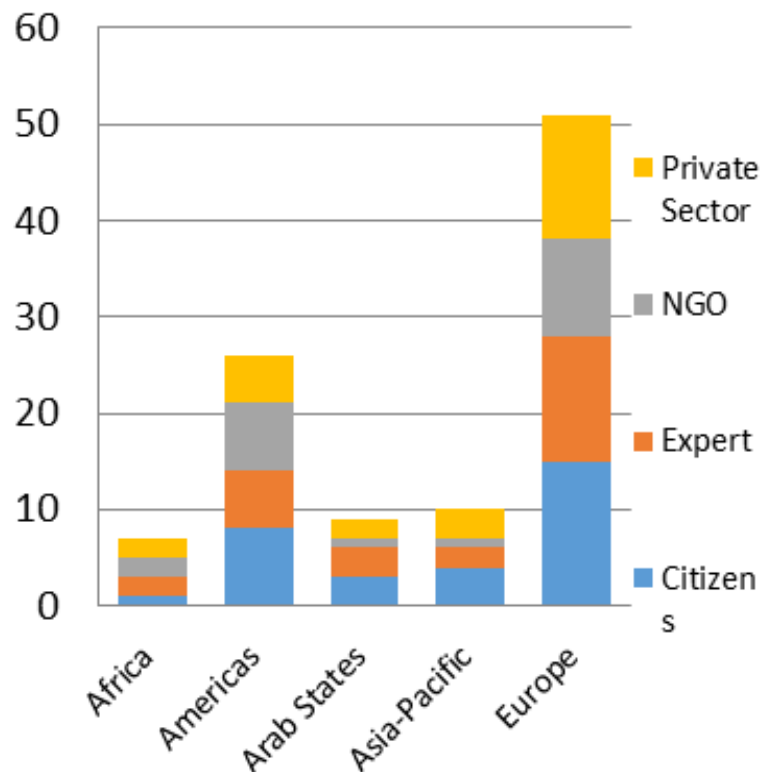
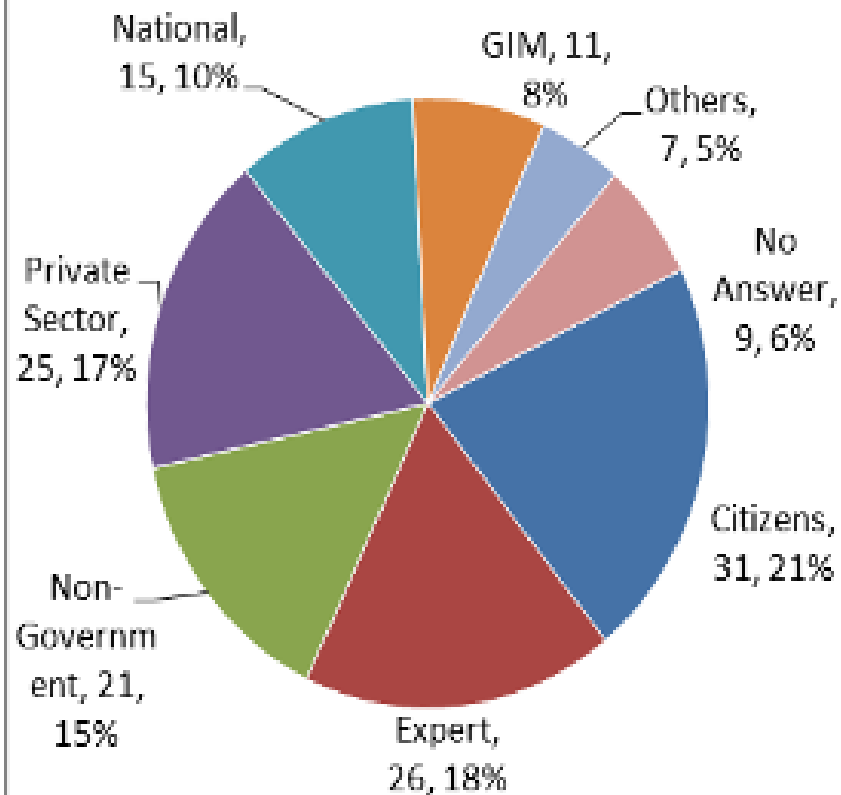
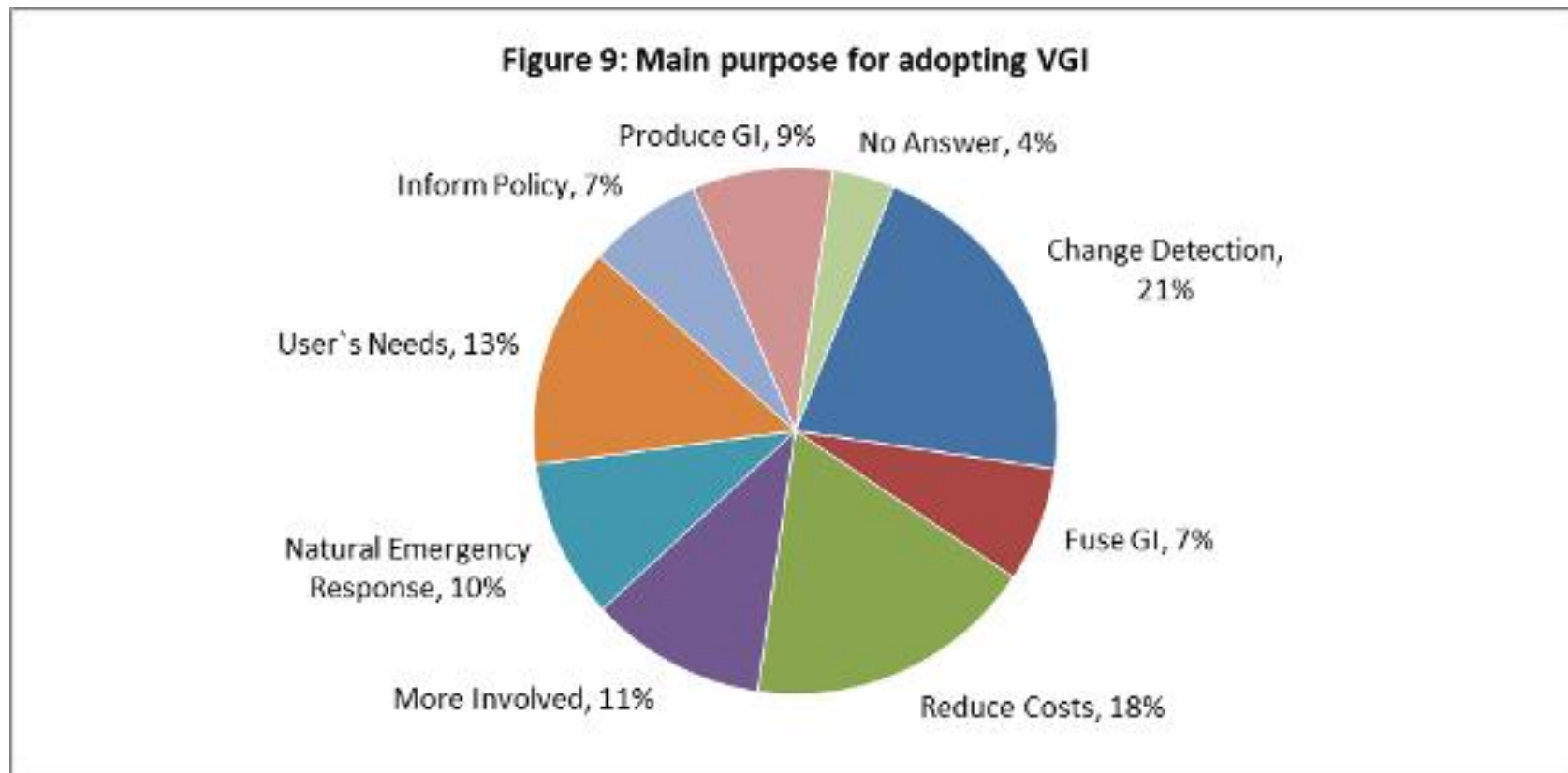


Figure 7: Leading Users



Main Purpose for Considering Adopting VGI



Importance and Advantages of VGI

Figure 11: Importance of VGI

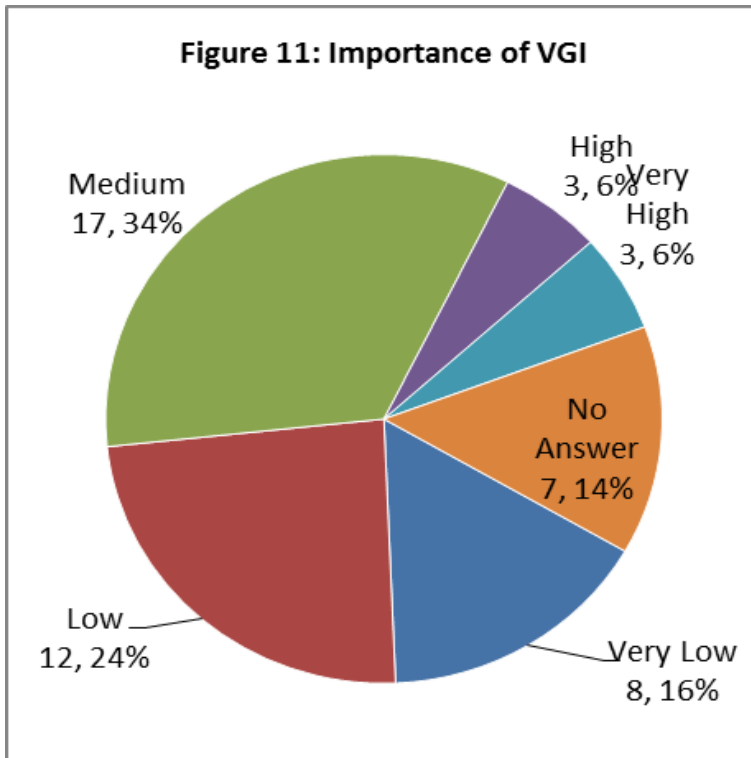
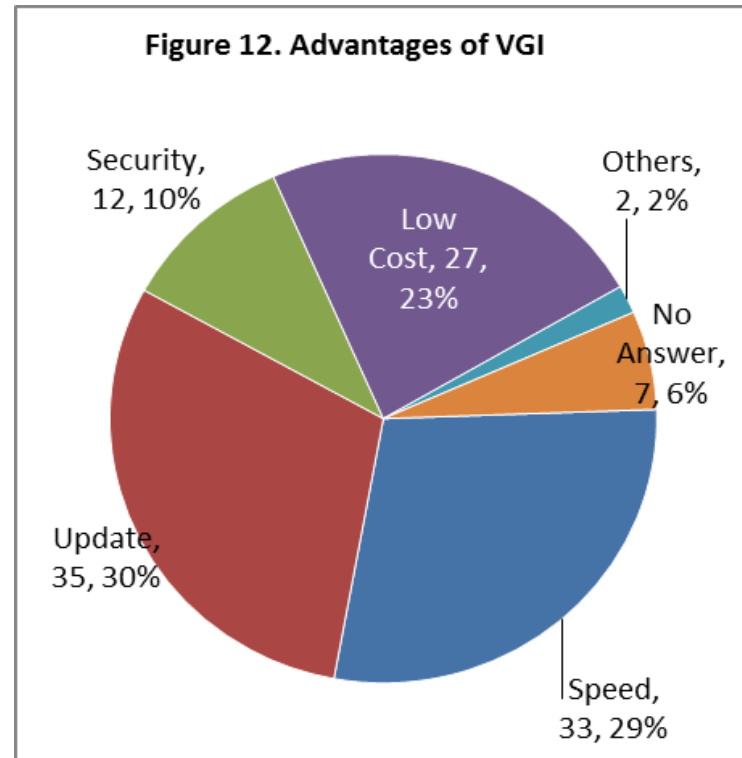
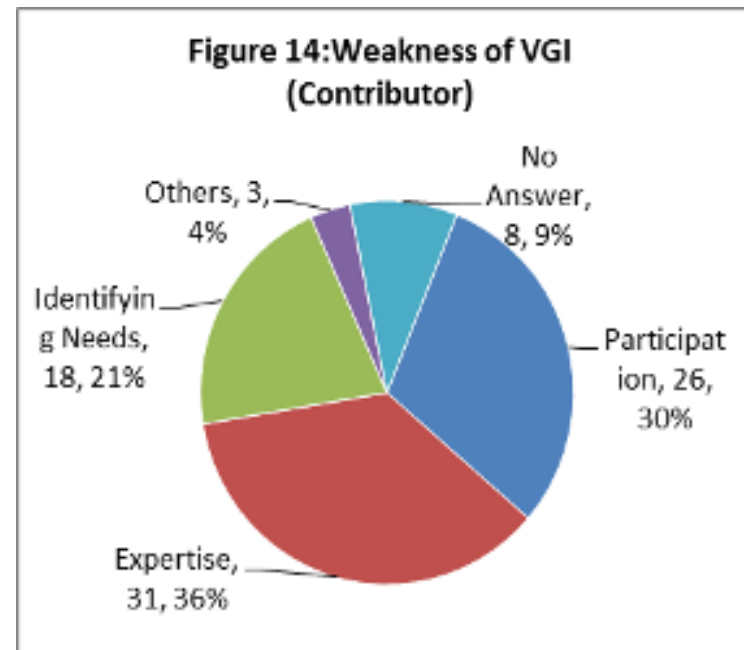
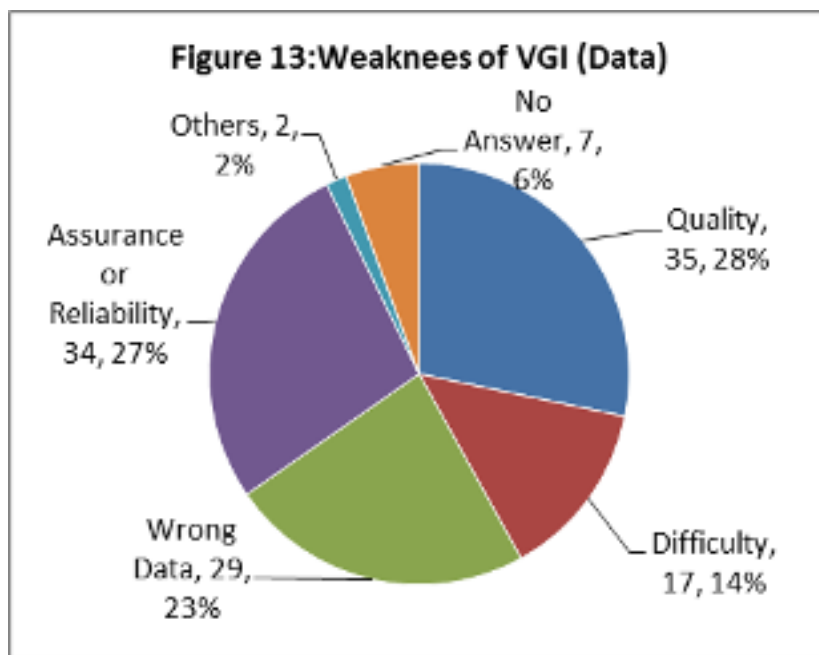


Figure 12. Advantages of VGI



Weaknesses of VGI from the Data and the Contributor's Perspectives



Conclusion

- NMOs are in the early stages of introducing and making use of VGI.
- Citizens are critical contributors and users of VGI. Domain experts, NGOs and the private sector also play major roles to contribute and use VGI.
- The main purpose for adopting VGI is in change detection and in reducing the costs of data collection. NMOs also need to consider using VGI to satisfy users' needs.
- The main advantages of VGI are to increase the speed of data collection and for updating datasets. However, VGI also has major weaknesses in areas of data quality and data assurance. Additionally, the shortage of expertise and participation in VGI are the main weaknesses in the contribution process.
- In tackling the weaknesses of VGI, NMOs can establish systems for verifying VGI data and provide programs to contributors for managing certified data. NMOs can also advertise and facilitate the understanding of VGI and provide communication channels between producers and VGI-users.
- VGI would likely be a major emerging source for rapidly collecting geospatial data in areas of change detection and in updating of datasets. The challenge is to identify the advantages and weaknesses of VGI across the data and contributor's perspectives, and to encourage Member States to develop the best-practices concerning the collection, quality-assurance and application of VGI.



Case study on web-based distributed geo-data management and on-line services in China



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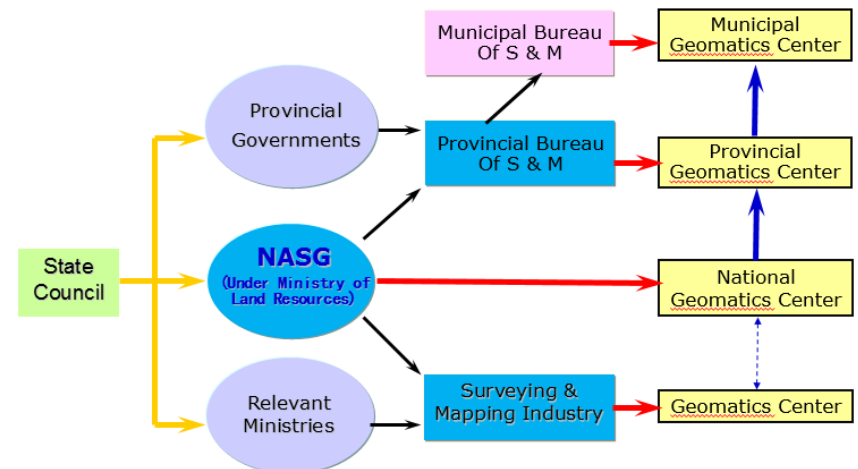
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Administration of GI in China

- The administration of geographic information in China operates under the principle of unified leadership and decentralized organization, including national level, provincial level, municipal level and county level.
- The National Administration of Surveying, Mapping and Geo-information of China (NASG) is the leading organization in the central government in charge of geographic information in the whole country. Under the unified administration of NASG, the national level, provincial level and municipal level geo-spatial databases are constructed and maintained with funding from the national, provincial and municipal governments separately.

Surveying and Mapping Agencies in China

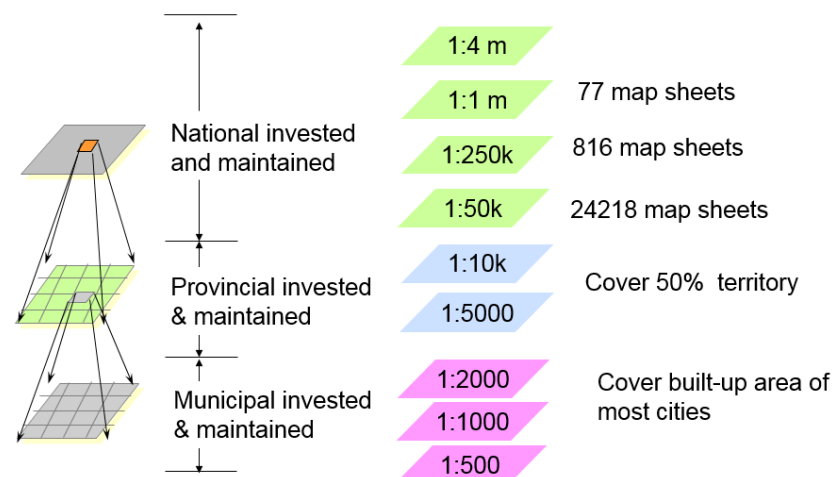


NASG: National Administration of Surveying, Mapping and GeoInformation



Datasets in China

- National Geomatics Center of China (NGCC) is the government agency for national level databases construction, maintenance and distribution. There is one similar agency in each province and municipal, responsible for the databases within the area.
- With decades efforts, the national level databases has covered the whole territories including 1:1 million, 1:250,000 and 1:50,000 scale. While the provincial database (1:10,000) covers more than 50% territories and larger scale data cover most of downtown areas. In the meanwhile, great volume of satellite images and aerophotos have been collected.
- Recently more and more images come from Chinese surveying. Most of the urban areas have been covered by high resolution images (higher than 1 meter).

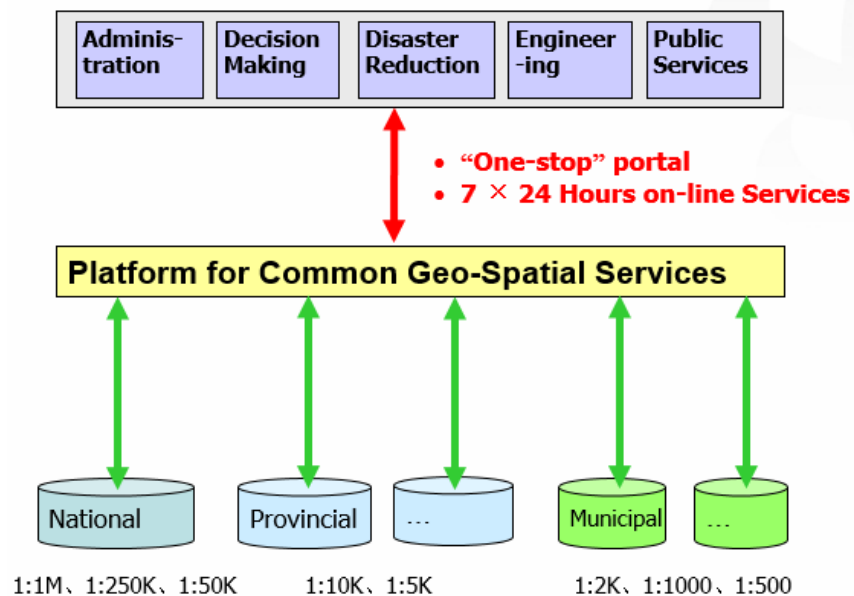


Multi-scale Topographic Data increase day by day



Solution for Better Services

- Challenges arise accompanying with the further and wider application of the place-based information. One of the most urgent challenges is the one-stop access and integrated-usage of the multi-scale and distributed databases.
- To solve this problem, a program was initiated by NASG in 2009 to establish the national platform for common geo-spatial services, with Chinese name TIANDITU which means Map World.

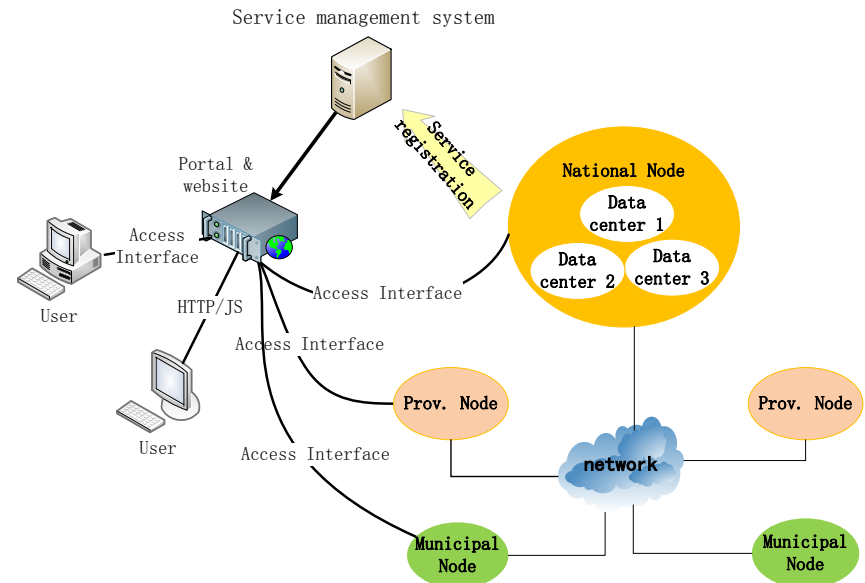
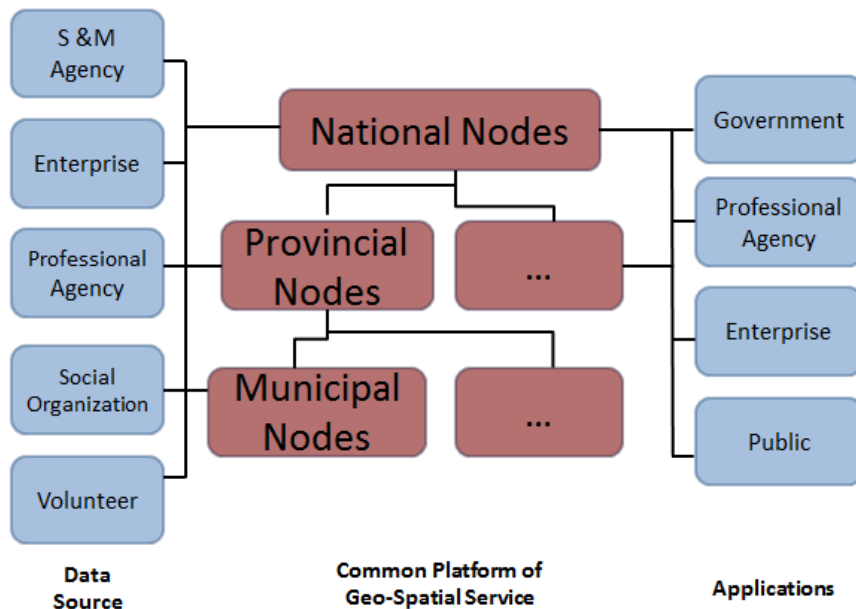


TianDiTu (Map World)
(<http://www.tianditu.com>)



Structure of the Platform

- The platform consists of national nodes, provincial nodes and municipal nodes (or data centers). The nodes are connected by Internet or Intranet.
- Data specifications have been defined according to the requirements of web services and all data should be processed to meet the specifications.
- Each node manages the data in his administrative area and publishes the corresponding services conformed to OGC standards. All services will be registered in the service management system and be accessed by the users via the unique portal and website . Users can access the services via website, APIs, and URLs.



Progress of the Platform (1)

- TIANDITU was first launched in October 2011 that marked significant progress of NASG on improvement of service manner, service ability and the industrial supporting.
- With 4 years progresses, 1 national node with 3 data centers, 30 provincial nodes and 168 municipal nodes have been established and connected.
- It now can provide abundant geo-spatial services including vector road network (in navigation data model) and 2.5 meter image covering the whole Chinese territory, building outlines and 0.5 meter image covering more than 450 cities/towns, and more than 20 million POIs. Full-scale data update has been down once a year and feature updating have been down every day.
- English beta version was launched in March 2013.
- TIANDITU also provide map services in the other part of the world, mainly based on 2.5-30 meter images from Chinese satellites.



Progress of the Platform (2)

- Serial standards have been published to regular the data processing and services interoperability, software have been developed for data processing, data management, and service publishing.
- Thousands of applications have been established based on the services of TIANDITU.
- TIANDITU has also gained international concern and full affirmation by Chinese government. Premier of China, Mr. Li Keqiang, stated that TIANDITU not only provides a valuable platform for non-profit government service, but also supports the development of domestic industry and the improvement of common people's lives.
- Further efforts will done to enrich data resources, improve service functionality, and expand application range. International cooperation based on TIANDITU for techniques and software sharing, staff training, service integration will also be promoted.





Large Scale Map in China



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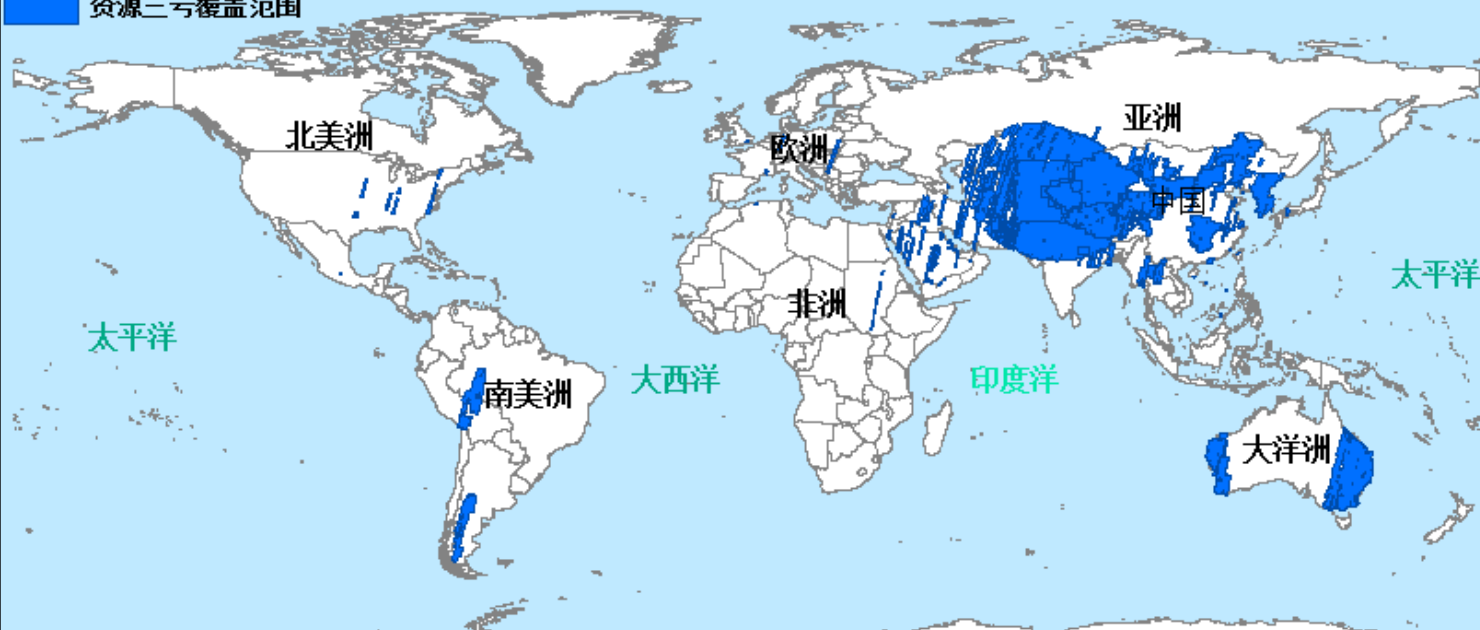
High resolution satellite/aero image in China

环境星覆盖范围



30 M image published

资源三号覆盖范围



2.1 M image published



UN-C



Vector Data from OSM , UK



2.1 M, Pakistan



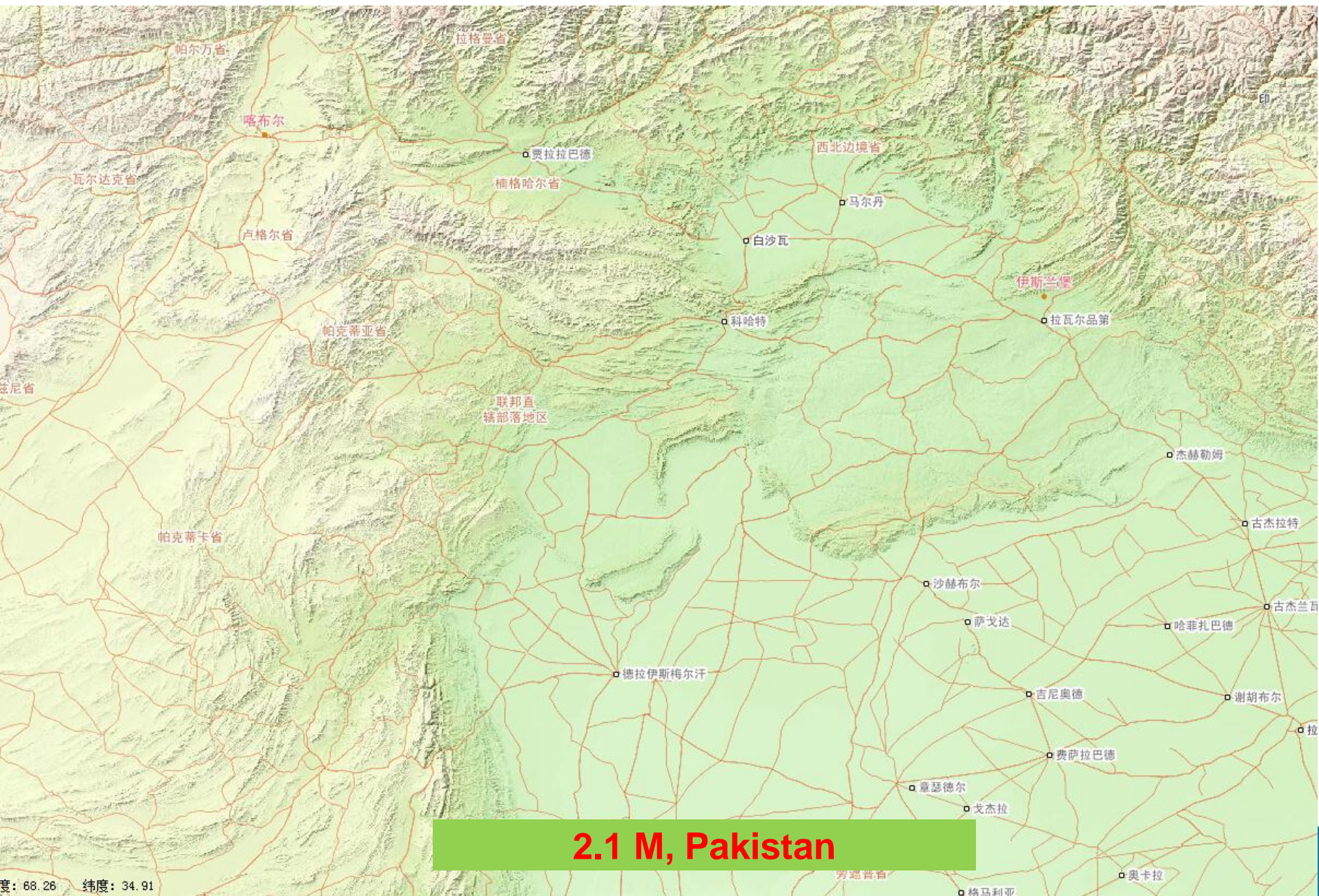
30M, South-east Asia



2.1 M, Tajikistan



2.1 M, Pakistan



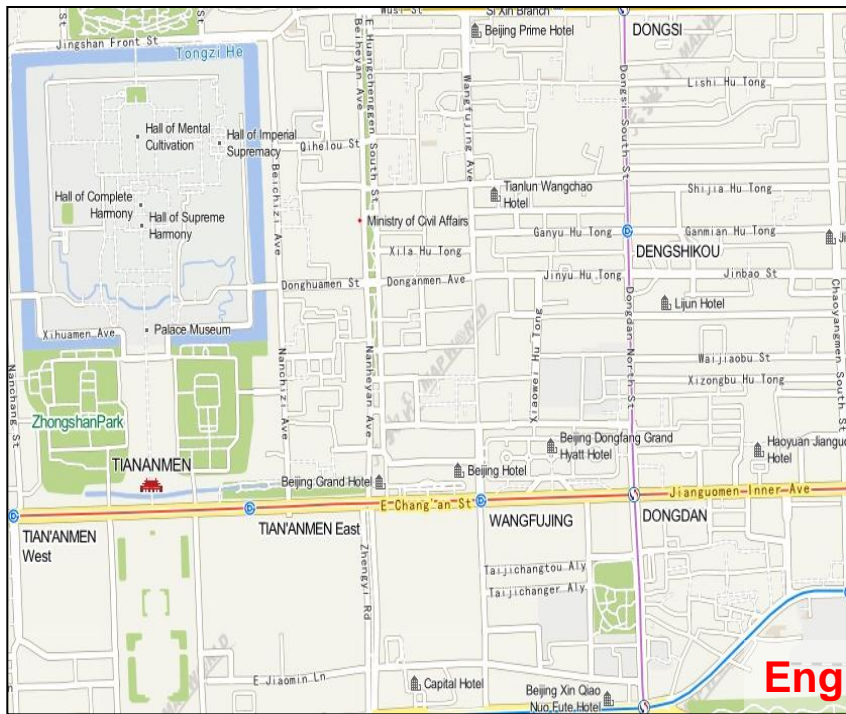
2.1 M, Pakistan

经度: 68.26 纬度: 34.91

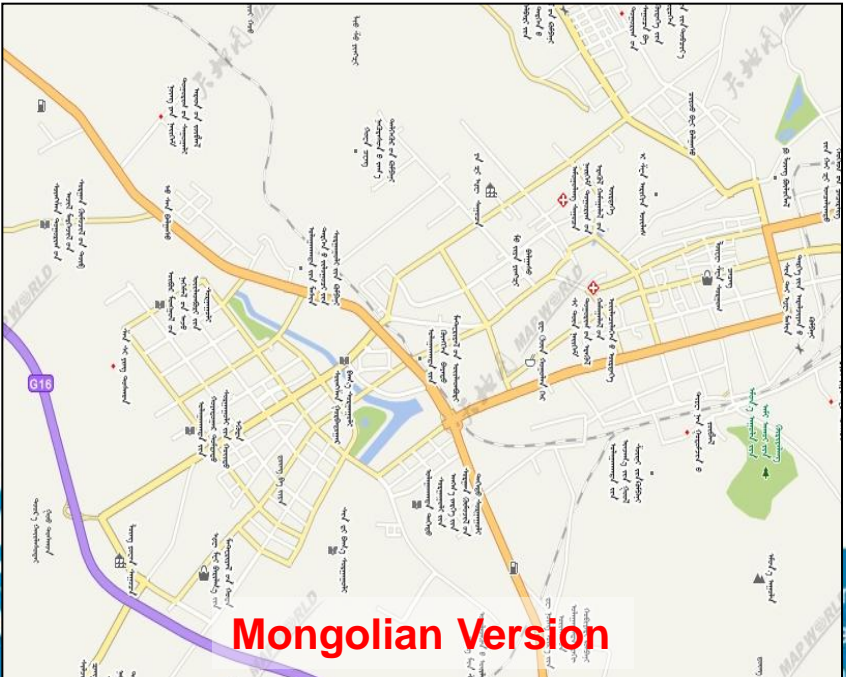
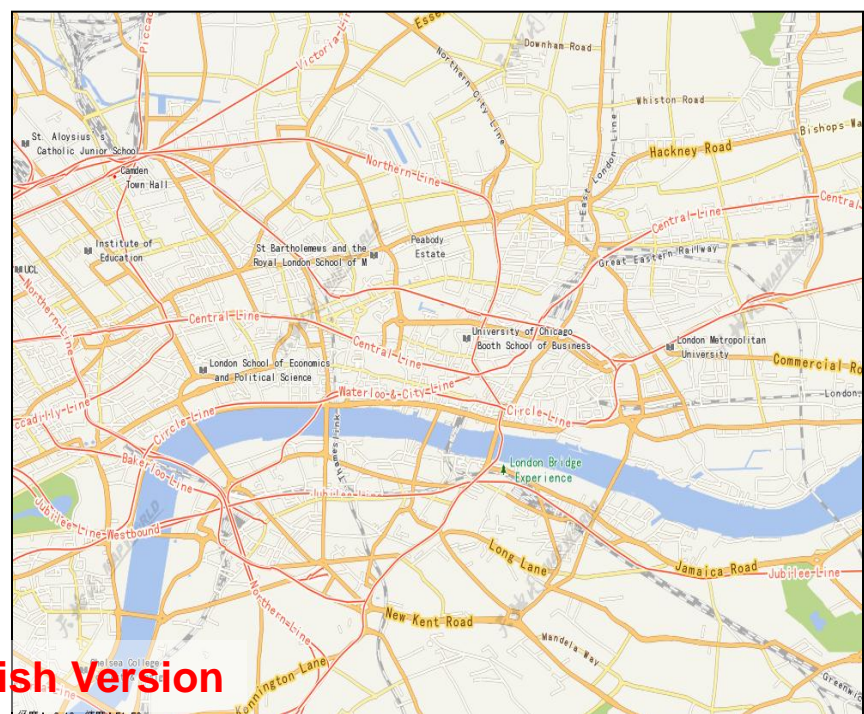


3D View, Pakistan

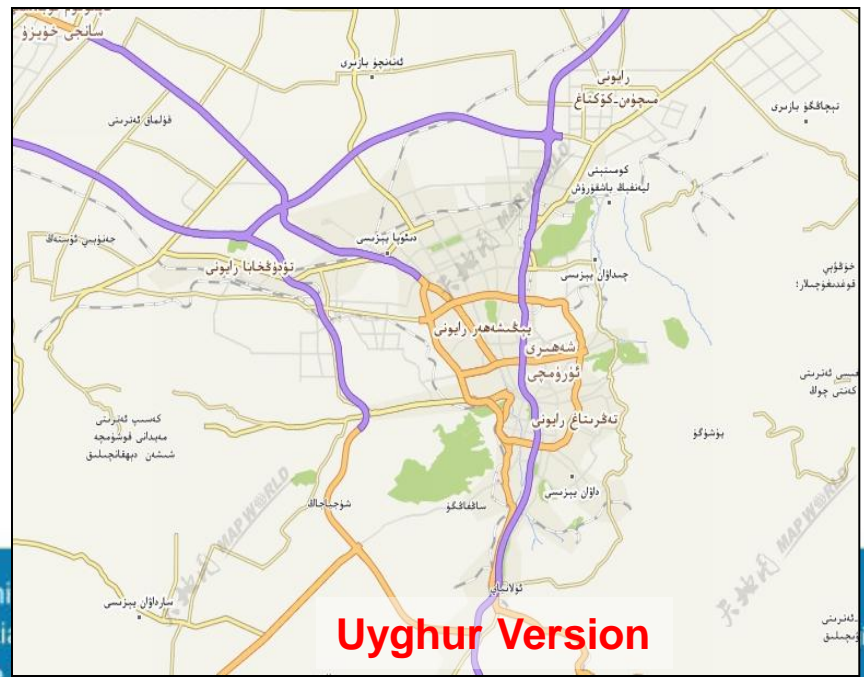
北纬: 38.47度
东经: 70.88度
距地面高度: 8052米
下载0/500



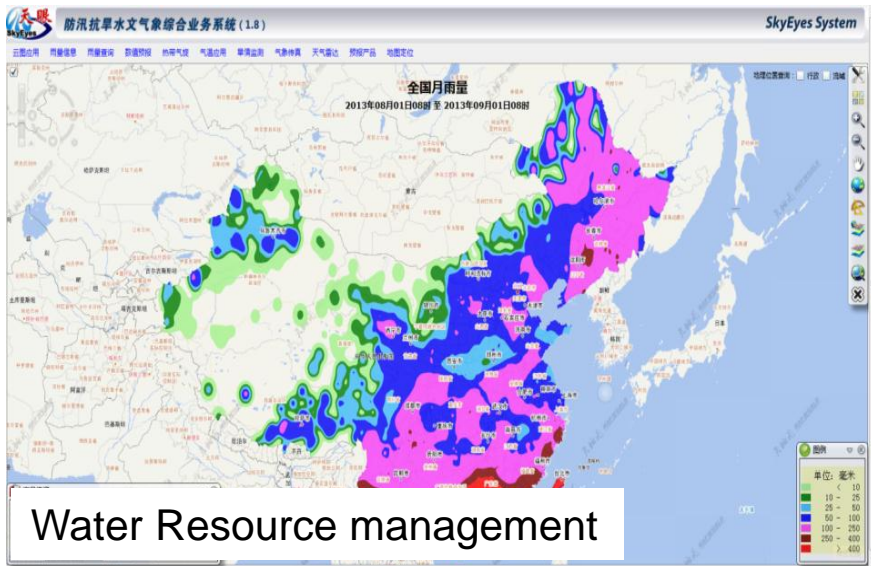
English Version



Mongolian Version



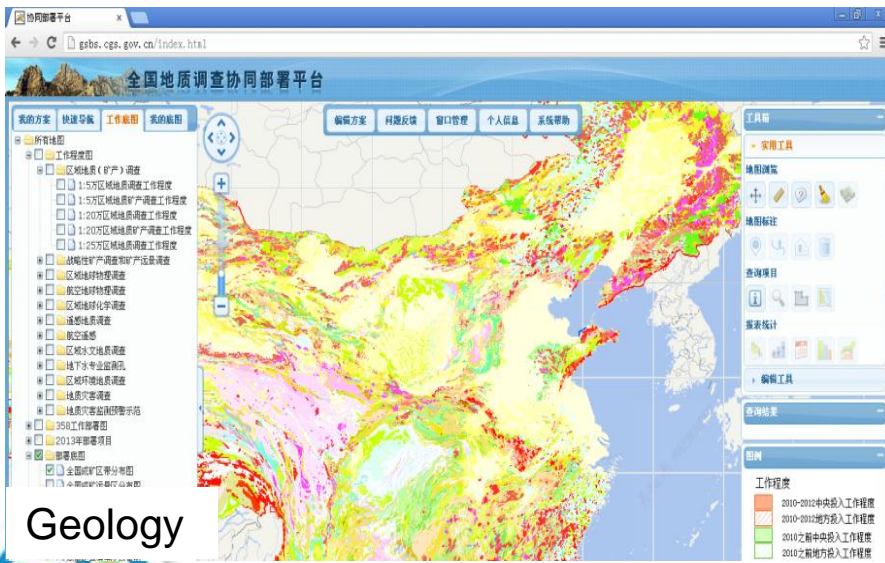
Uyghur Version



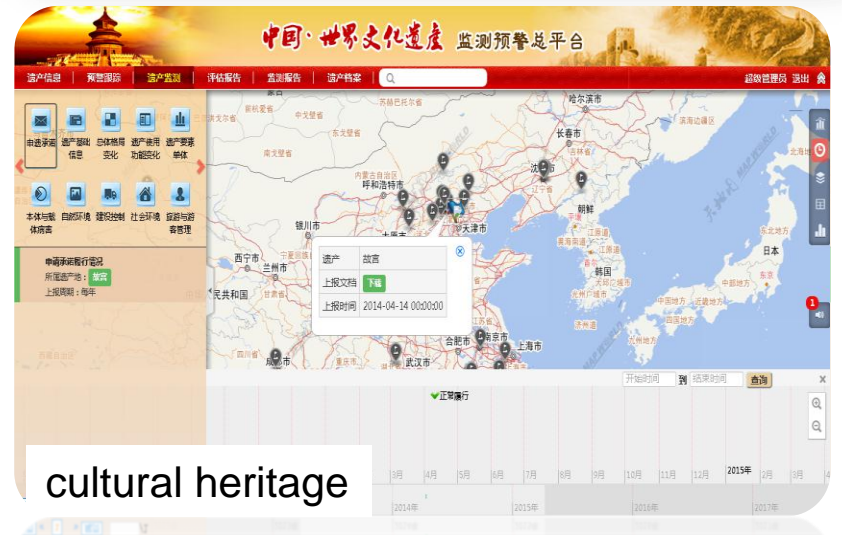
Water Resource management



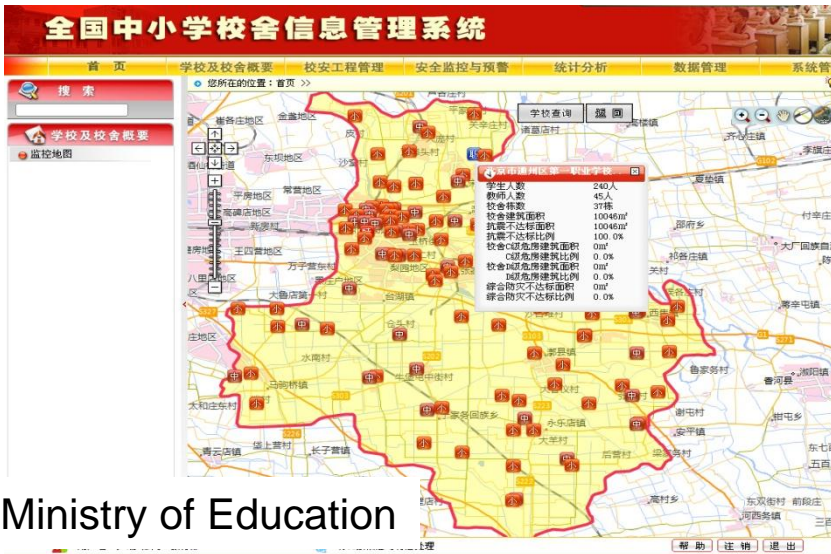
Mine Safety Supervision



Geology



cultural heritage



Ministry of Education



Land resource management



Environment proection



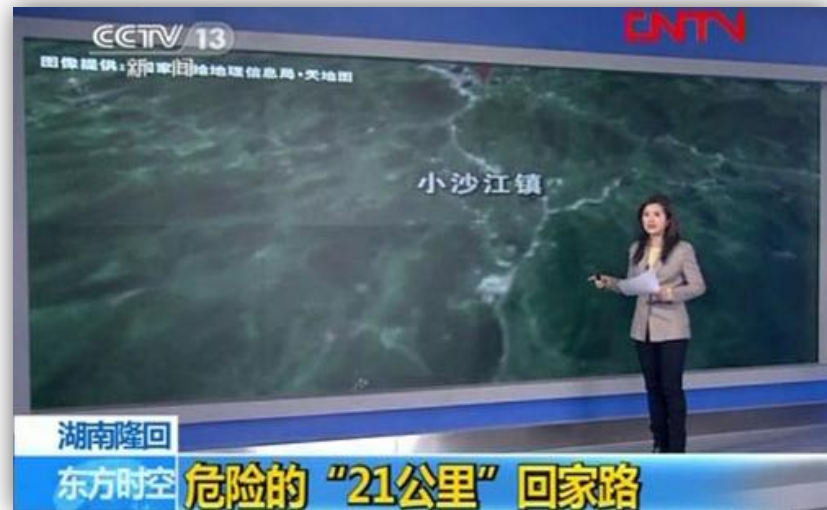
Traffic management



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News



TV Programs



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Case study on web-based distributed geo-data management and on-line services in Australia



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National Map--Globe-based Visualizing Platform

- Australia has been developing the *National Map* which is a globe-based visualising platform based on open standards. *National Map* is purposed to discover and visualise fundamental geospatial information available under unrestricted licensing – it is not a delivery mechanisms as such at this stage, but can refer users to access points to either download data or consume web services.
- This particular approach was chosen to showcase the use of open, low-cost approaches to the discovery and visualisation of fundamental geospatial information. The interface does not rely on proprietary software (and hence has minimised ongoing software costs). The web services are maintained separately, and can therefore be consumed by other portals (both proprietary and non-proprietary.)
- This approach would be recommended as a cost-effective means for establishing a mapping platform, which also supports open standards and approaches.



Capability to deliver and use geospatial information



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ISPRS TC IV Symposium on 'Geospatial Databases and Location Based Services'

May 14-16 2014, Suzhou, China



- total 320 registered participants from 17 countries and regions, among them 10 student volunteers and 49 free visitors from local universities and surveying & mapping agencies.
- Total 42 ISPRS officers, including 4 Council Members, 4 Honorary Members, 4 Technical Commission Presidents and 1 TC secretary, 28 Working Group chair/co-chair/secretaries, and the Editor of ISPRS Book Series.



ISPRS TC IV Symposium on 'Geospatial Databases and Location Based Services'

May 14-16 2014, Suzhou, China



- Eleven themes, including 10 on the Working Group topics and one ICA-ISPRS TC IV joint theme.
- 83 full papers published, including 68 papers in ISPRS Archives and 15 papers in the peer-reviewed ISPRS Annals.
- Nineteen Oral sessions with 86 presentations, including 1 keynote session, 2 plenary session and 16 oral technical sessions.
- 2 poster sessions with 43 presentations.
- Technical exhibitions and Social events were organized
- The symposium was a great success.

Seminar on Construction and maintenance of Web-based geographic Information Service Platform for Developing Countries in 2014

- Held in Beijing, 14-27 Oct. 2014
- 37 participants from 17 countries/regions;
- More than 10 lectures, 4 technical visits.



Further Work Plan

No	Activities/Steps
1	Investigation and evaluations the development, access, management, update and sharing of NSDI among the member countries.
2	Promote the generally accepted data specifications, metadata catalogues, and service interfaces, and interoperation of the SDIs among different member countries.
3	Pilot on developing interoperable Regional SDI by some of the member countries by using the unified specifications and the predefined rules;
4	Training courses on regional SDI, portal/platform and application. Workshops, seminars co-organized with other International organizations
5	Jointly organize the UNGGIM-ISPRS Special Session on National Mapping during the ISPRS 2016 Congress.



XXIII ISPRS CONGRESS



Prague, Czech Republic

“From human history to the future with spatial information”



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Where is the XXIII ISPRS Congress?



Europe - Czech Republic

Size	78 000 km ²
Alphabet	Latin
Language	Czech
Currency	Czech Crown

Prague Congress Centre



Details about the Congress



XXIII ISPRS CONGRESS

SECOND
ANNOUNCEMENT
and Call for Full
Papers & Abstracts

PRAGUE
CZECH REPUBLIC

12th July - 19th July 2016
www.isprs2016-prague.com

www.isprs2016-prague.com

XXIII ISPRS CONGRESS
Second Announcement
& Call for Papers



Regional Office
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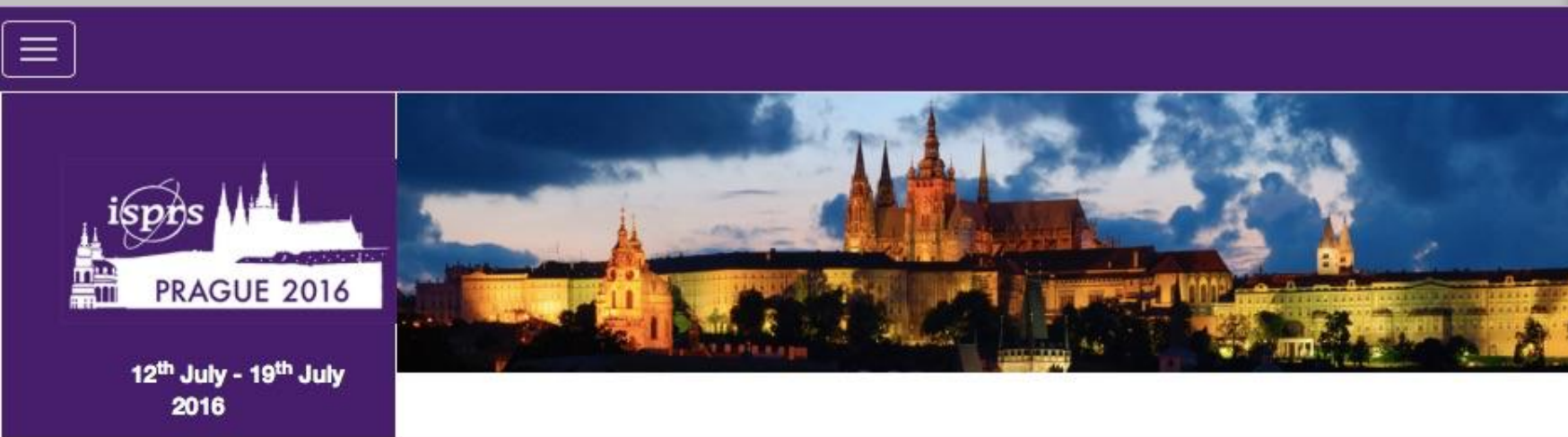
Program of the Congress, plenary, parallel, interactive, sessions, ...

Special Session: **Place based information management for economic growth (UNGGIM-AP and ISPRS)**

- Chair ISPRS: Gottfried Konecny
- Chair UN GGIM-AP : Jie JIANG
- Keywords: place-based information, rapid acquisition and integration, time-critical applications, data sharing, web/cloud-based services, capability to deliver and use of GI, usefulness and benefits of GI, ethical principles

	Monday 11 July	Tuesday 12 July	Wednesday 13 July	Thursday 14 July	Friday 15 July	Saturday 16 July	Sunday 17 July	Monday 18 July	Tuesday 19 July
8:30									Oral sessions
10:00									Tea Break
10:30									Oral sessions
12:00									Lunch
13:30									Closing ceremony
15:00									
15:30-16:30			Interactive Sessions	Interactive Sessions	Interactive Sessions	Interactive Sessions	Interactive Sessions	Interactive Sessions	Interactive Sessions
16:30-18:00		Opening Ceremony	Oral Sessions	Oral Sessions	Oral Sessions	Oral Sessions	Oral Sessions	Oral Sessions	Oral Sessions
18:00-21:30		Welcome Reception 19:00-20:30	Exhibitors Reception 18:00-20:30	Concert 20:00-21:30	Youth Meeting 19:00-21:30	Boat Trip 19:30-21:30	Theatre 20:00-21:30	Congress Gala Dinner 20:00-23:00	

Paper and abstract submission is open



-  [Submit paper](#)
-  [Registration](#)
-  [Accommodation](#)
-  [Exhibition](#)
-  [Optional Tours](#)
-  [Technical Tours](#)
-  [FAQ](#)

Quick links

- [Events attended by CD](#)
- [1st announcement](#)
- [2nd announcement](#)
- [Sponsorship book](#)
- [Information for Exhibitors](#)
- [Youth Activities](#)

International Society for Photogrammetry and Remote Sensing

XXIII Congress, July 12 - 19,
2016, Prague

Submission is open! [Submit paper](#)

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National Mapping and Cadastral Agency Forum & Space Agency Forum



ISPRS – UN-GGIM National Mapping and Cadastral Agency Forum 14 – 15 July 2016

An integral part of the XXIII ISPRS Congress in Prague



ISPRS – IAA Space Agency Forum 14 – 15 July 2016

An integral part of the XXIII ISPRS Congress in Prague



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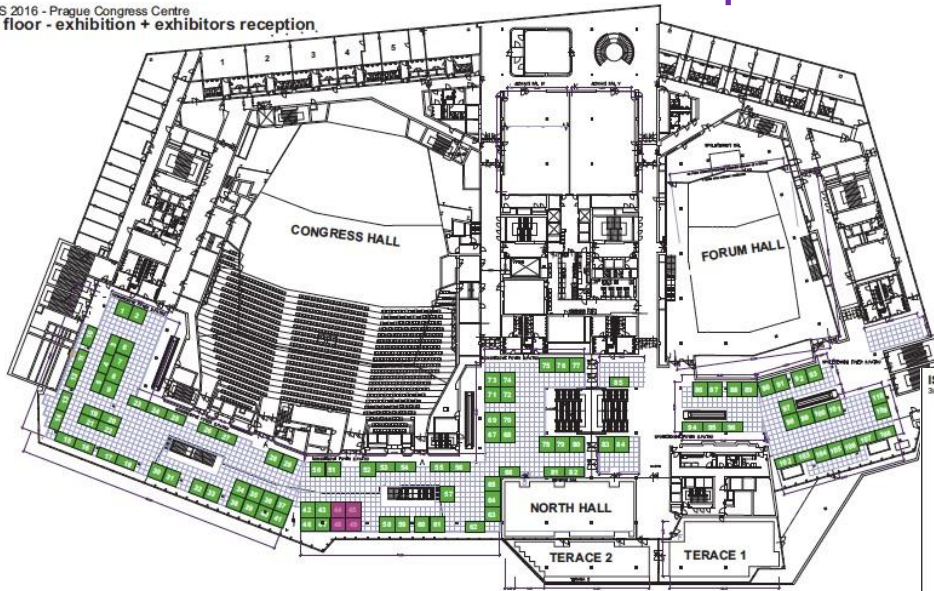
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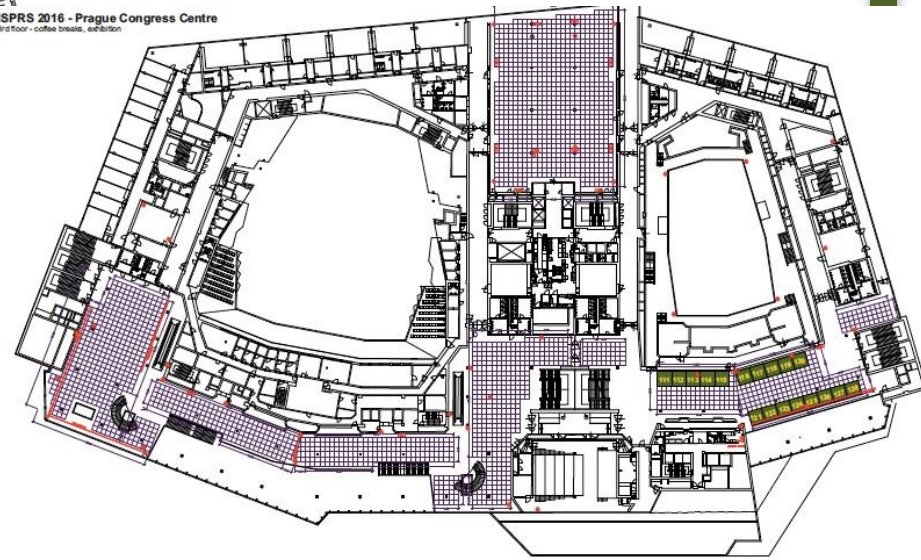
Exhibition at the Congress

Floor plan 2nd floor

ISPRS 2016 - Prague Congress Centre
2nd floor - exhibition + exhibitors reception.



ISPRS 2016 - Prague Congress Centre
3rd floor - coffee break, exhibition.



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Technical Tours

in the Czech Republic, Austria, Germany, Poland:



Czech Office for Survey,
Mapping and Cadastre



Germany



Krakov Universities and
Polish Science Academy,
Poland



Department of Geoinformatics,
Olomouc, **Czech Republic**



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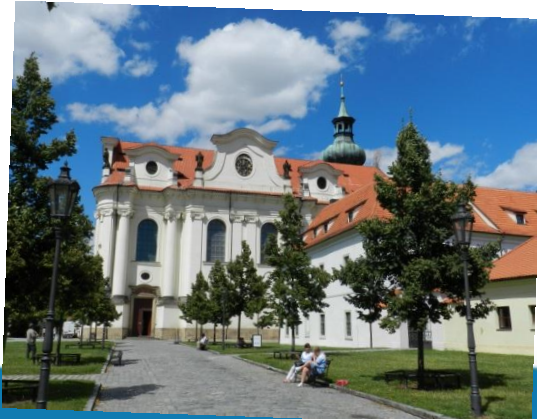
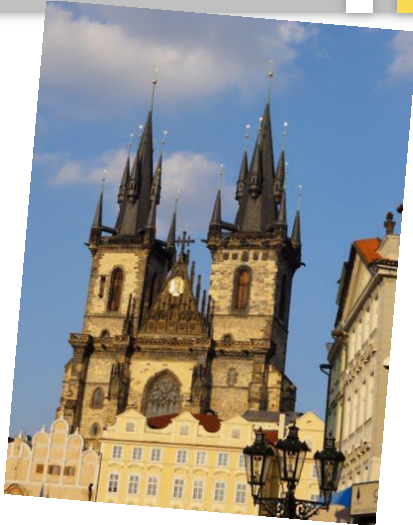
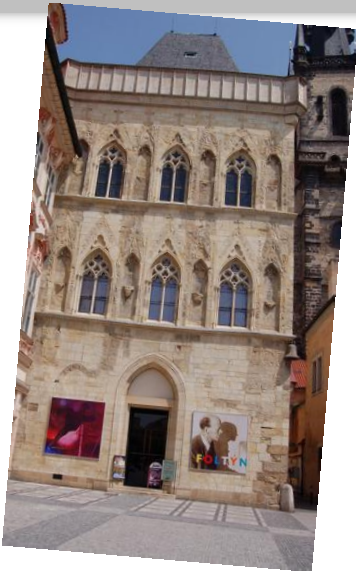
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Optional Tours: Kutná Hora, Konopiště, Karlovy Vary, Prague



Re
Glo
for

Prague, collection of many styles of the architectural history



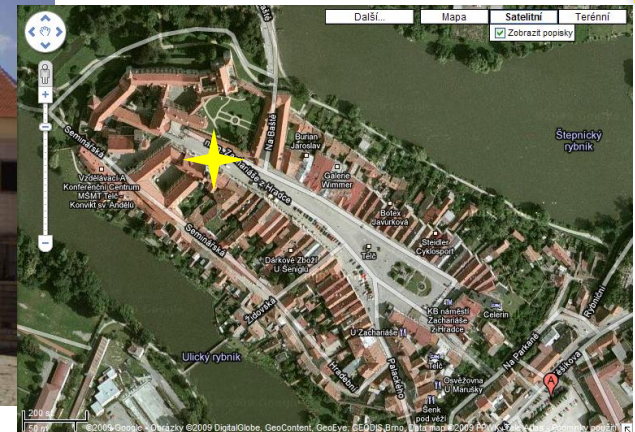
Prague views



XXIII ISPRS Congress Summer School



5 – 9 July 2016
Telč, Czech Republic



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Thanks for Attention!



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