



**Joint ISPRS Project with the United Nations  
Committee of Experts on Geospatial Information Management  
UN-GGIM Secretariat, New York**

# **The International Society for Photogrammetry and Remote Sensing Study on the Status of Mapping on the World**

**Paper and presentation prepared by  
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# 1. History

- 1.1. Studies by the UN Secretariat in 1968, 1974, 1980, 1987 on the Status of Mapping in the World
- 1.2. Report on the Studies by A. Brandenberger, Laval University, Quebec, Canada at UNRCC-AP 1987 in Bangkok
- 1.3. Last Publication of the Results in World Cartography XX, 1990 (status of data 1986)
- 1.4. Resolutions at UNRRCC-AP and recently at UNRRCC-AM 2009 with mandate to the Secretariat for a new study
- 1.5. Decision of ISPRS Council in November 2011 to offer cooperation to UNGGIM, approved by Dr. Cheung in Dec 2011

## 1.2. Report of Study 1987 and Publication in 1990



### ELEVENTH UNITED NATIONS REGIONAL CARTOGRAPHIC CONFERENCE FOR ASIA AND THE PACIFIC

Bangkok, 5-16 January 1987

Vol. I.—Report of the Conference



UNITED NATIONS  
New York, 1987

**Prof. Arthur Brandenberger  
at the ISPRS Congress 1980  
In Hamburg**

#### STATUS OF WORLD TOPOGRAPHIC AND CADASTRAL MAPPING

*Paper submitted by the Secretariat\**

#### RÉSUMÉ

Le Département de la coopération technique pour le développement de l'Organisation des Nations Unies procède régulièrement, tous les six ans (1968, 1974 et 1980), par l'intermédiaire du Groupe de la cartographie de la Division des ressources naturelles et de l'énergie, à des enquêtes sur la cartographie topographique et sur la cartographie cadastrale dans le monde (1980)

Les données présentées dans le présent document sont fondées sur les résultats de l'enquête de 1980 mais ont été mises à jour, dans la mesure du possible, jusqu'au milieu de 1986 à partir d'informations récentes contenues dans la banque de données du Département de cartographie de l'Université Laval. Il y a lieu toutefois de préciser que cette mise à jour de l'enquête de 1980 ne saurait être considérée comme remplaçant la nouvelle enquête de 1986 pour laquelle les données seront tirées des réponses aux questionnaires officiels envoyés par l'Organisation des Nations Unies au début de 1986.

\* The original text of this paper, prepared by A J Brandenberger and S K Ghosh, professors of Photogrammetry, Faculty of Forestry and Geodesy, Laval University, Quebec, Canada, appeared as document E/CONF 78/BP 7





## 1.3. Result of 1986 Study for the Status of Mapping

scale/range	1:25 000	1:50 000	1:100 000	1:200 000
Africa	2,9 %	41,4 %	21,7 %	89,1 %
Asia	15,2 %	84 %	56,4 %	100 %
Australia and Oceania	18,3 %	24,3 %	54,4 %	100 %
Europe	86,9 %	96,2 %	87,5 %	90,9 %
Former USSR	100 %	100 %	100 %	100 %
North America	54,1 %	77,7 %	37,3 %	99,2 %
South America	7 %	33 %	57,9 %	84,4 %
World	33,5 %	65,6 %	55,7 %	95,1 %



## 1.3. Result of 1986 Study on Map Updating Status

scale/range	1:25 000	1:50 000	1:100 000	1:200 000
Africa	1,7 %	2,2 %	3,6 %	1,4 %
Asia	4,0 %	2,7 %	0 %	1,9 %
Australia and Oceania	0 %	0,8 %	0 %	0,3 %
Europe	6,6 %	5,7 %	7,0 %	7,5 %
Former USSR	0 %	0 %	0 %	0 %
North America	4,0 %	2,7 %	0 %	6,5 %
South America	0 %	0,1 %	0 %	0,3 %
World	5,0 %	2,3 %	0,7 %	3,7 %



## 2. Design of the Questionnaire

### 2.1. National Topographic Mapping Coverage: 7 questions

- 1) the scales of mapping in use in 8 categories (1:1000, 1:5000, 1:25 000, 1:50 000, 1:100 000, 1:250 000, 1:500 000, 1:1 000 000 or similar)
- 2) coverage of the data in km<sup>2</sup> or in % of the national area
- 3) restrictions imposed on the availability of maps
- 4) maps for sale or for free
- 5) procedure of map updates by map sheet or by features
- 6) methodology for updating (field surveys, photogrammetry, satellite imagery, third party data, crowd sourcing)
- 7) inhouse or outsourcing operations



## **2.2. National Imagery Acquisition (7 questions):**

- 8) is there a national aerial photography program flown at regular intervals; are domestic services used; is the imagery analog or digital
- 9) is there a national satellite imagery acquisition program providing images at regular intervals; are these domestic sources
- 10) use of radar or lidar sensors
- 11) is Lidar used for DEM's and at which resolution
- 12) are orthophotos produced and at which scale
- 13) is there a national DEM
- 14) is there the intention or use of 3D information for urban and rural landscape models





## 2.3. National surveying and Cadastral Coverage (8 questions)

15) are there licensed surveyors

16) is there a national cadastral map coverage and is the NMA responsible for cadastral mapping

17) what is the use of cadastral maps (titles, tax)

18) are cadastral maps based on geodetic control

19) are property boundaries monumented in the field

20) updating methodology of property maps

21) number of employees or private surveyors engaged in cadastral operations





## 2.4. Organisation (6 questions)

22) is topographic mapping nationally funded

23) annual budget

24) number of staff (total and technical) in NMA

25) legal or regulatory mandate of NMA

26) products in % supplied as

- hard copy maps
- digital data
- online downloads
- web services

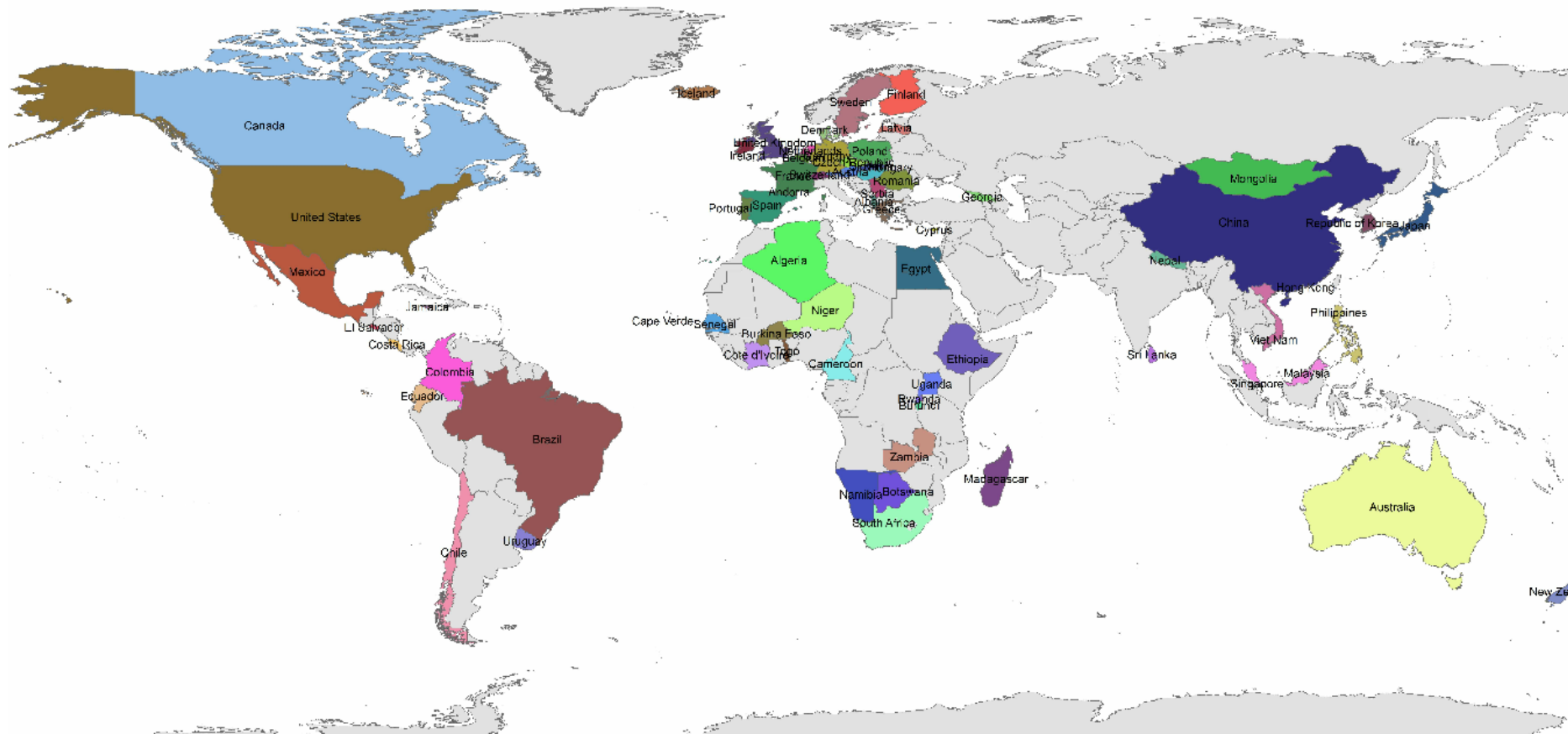
27) archival practices

### **3. Preliminary Results of the Study**

- 3.1. after the mailing of the questionnaire on April 27, 2012 by the GGIM Secretariat to UN Member Countries, 65 answers were received by August 1, 2012**
- 3.2. a preliminary analysis was made, after the design of a MS Access data base for the 27 questions**
- 3.3. the analysis was carried out on the first 62 replies received before July 27**
- 3.4. this data base is expandable to all UN Member countries and to other territories**

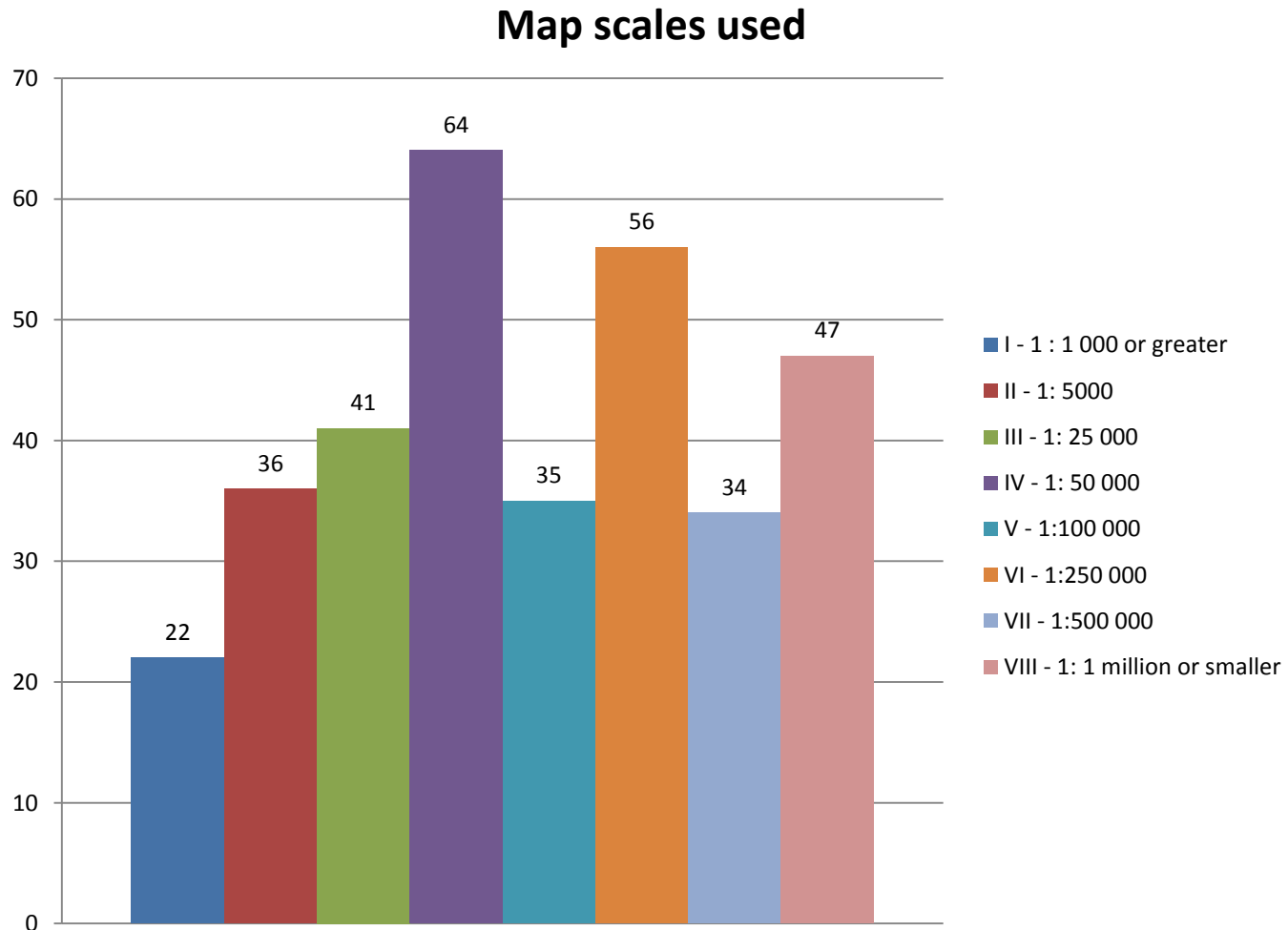


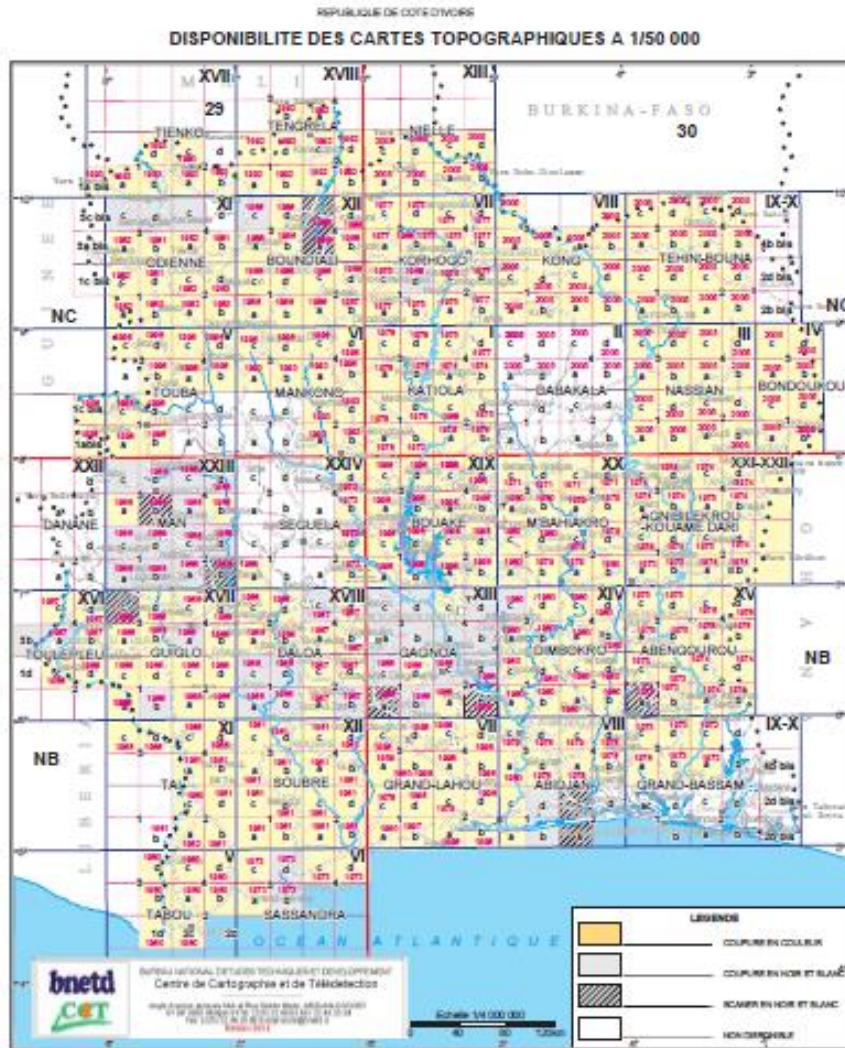
# first 69 replies to questionnaire





## National Topographic Map Coverage - Question 1 - Scales



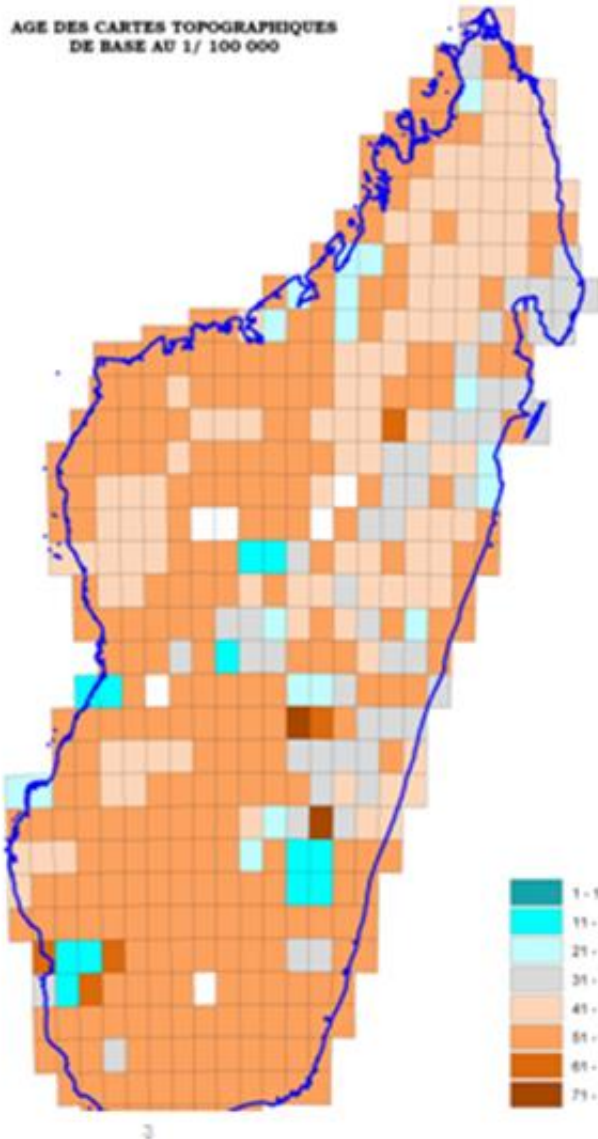


Question 1:

Example:  
Map Coverage 1:50 000  
of Cote d'Ivoire







## Question 2:

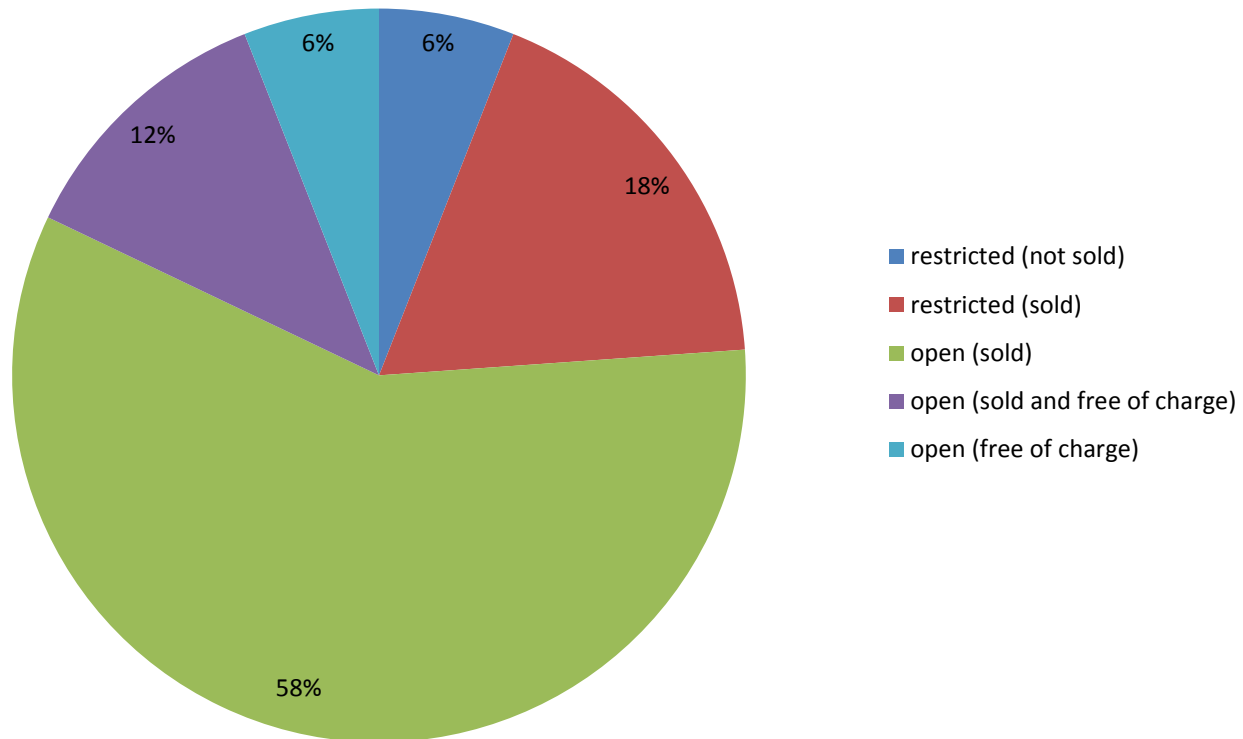
**Example:**  
**Age of Map Content**  
**Madagascar 1:100 000**





## Question 3 : restriction to map availability and Question 4 : maps for sale or free of charge

Availability of data  
(69 Samples)

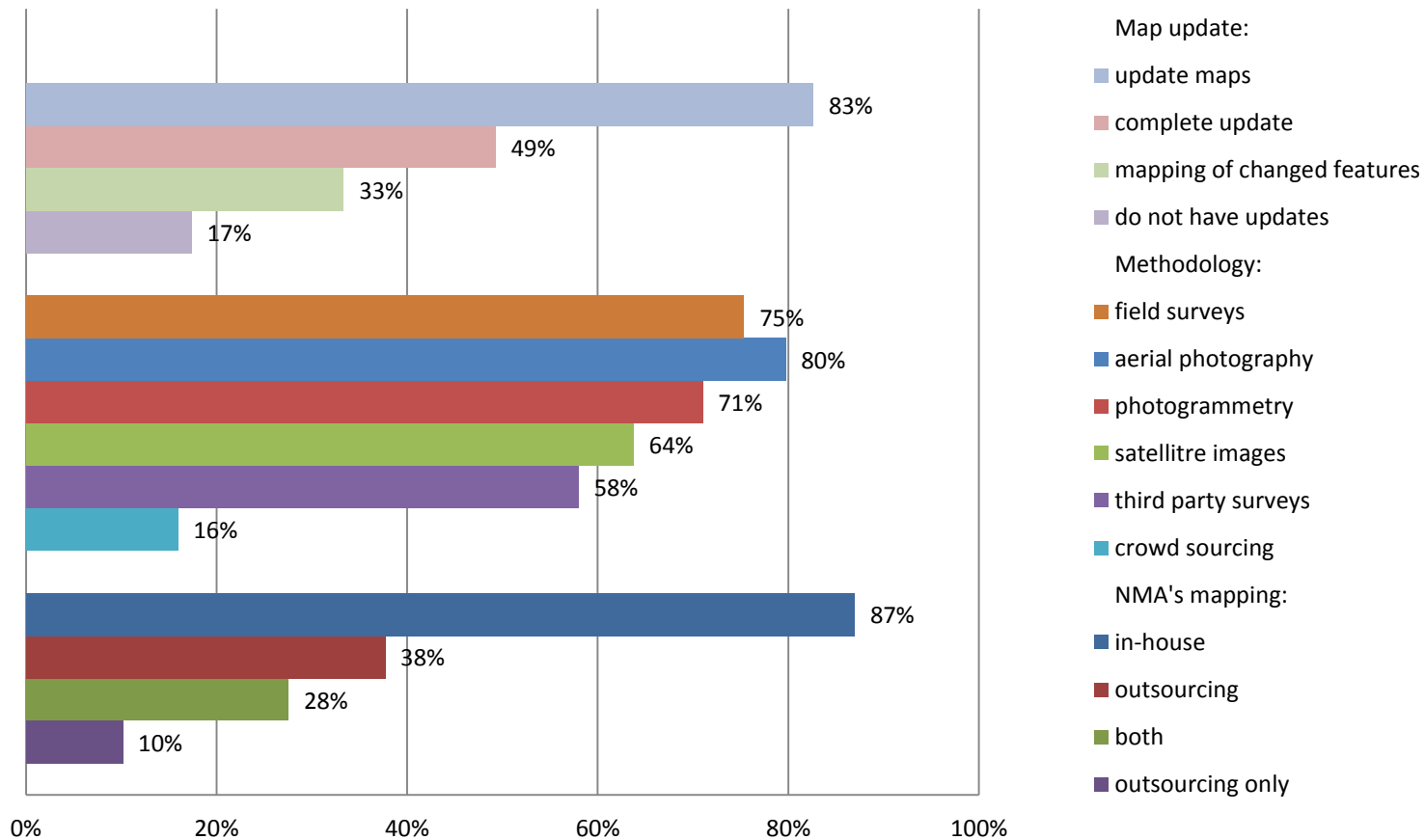




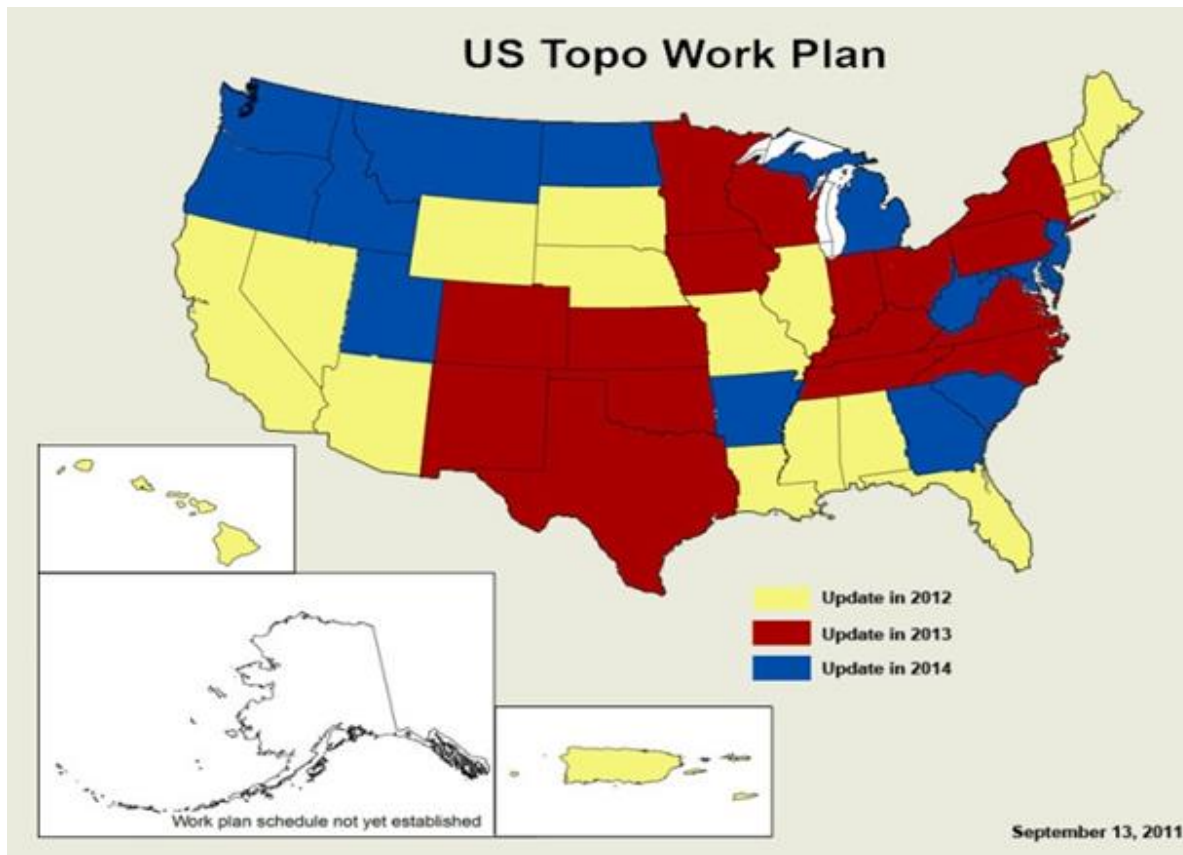
# Map Updating Methodology

## Questions 5 to 7:

**Mapping and Update**  
(69 Samples)



## Question 5: Map Updating



**Example:**

**Topo Map 1:24 000**

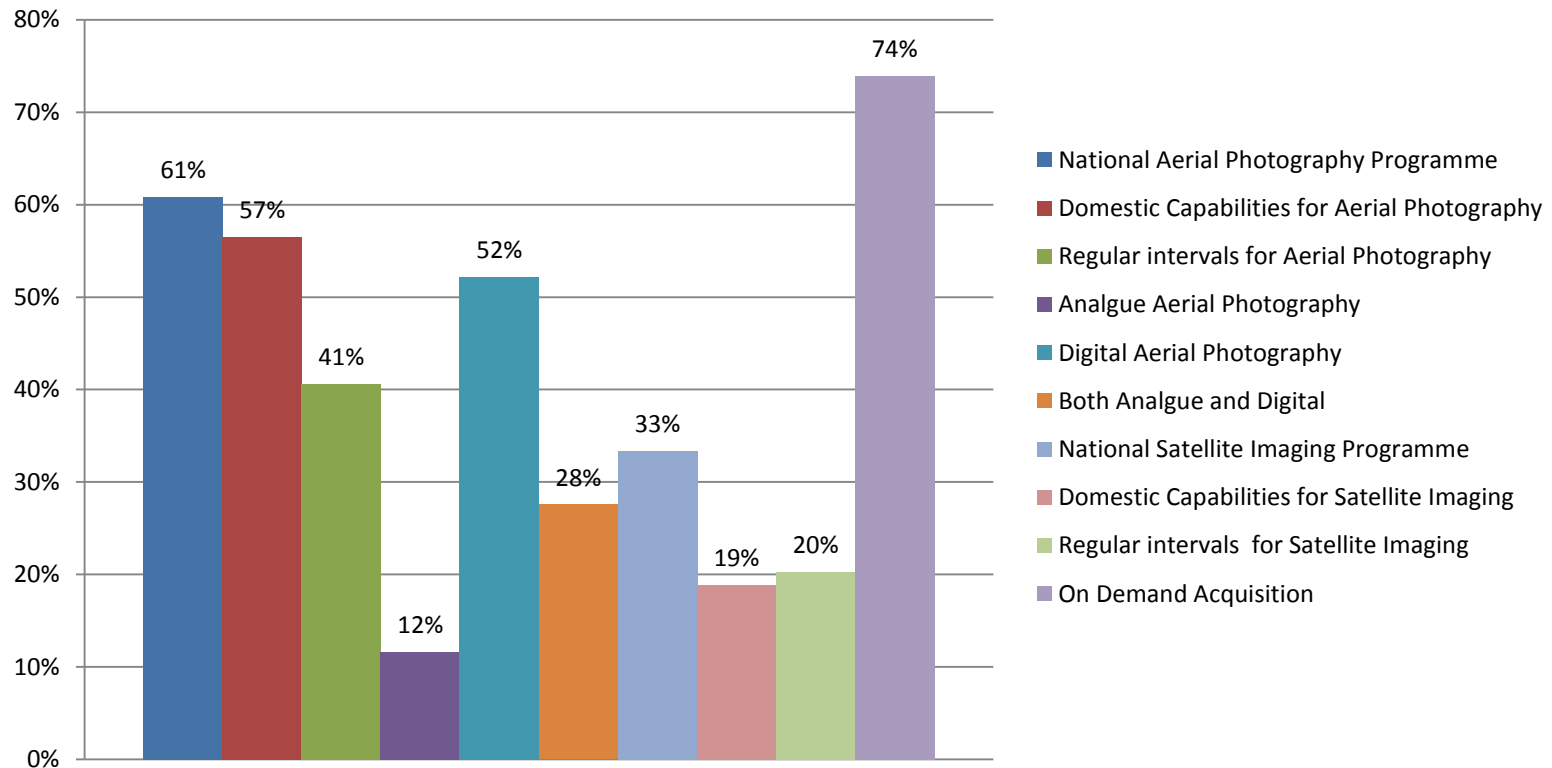
**USA (USGS)**



## Question 8: national aerial imagery acquisition

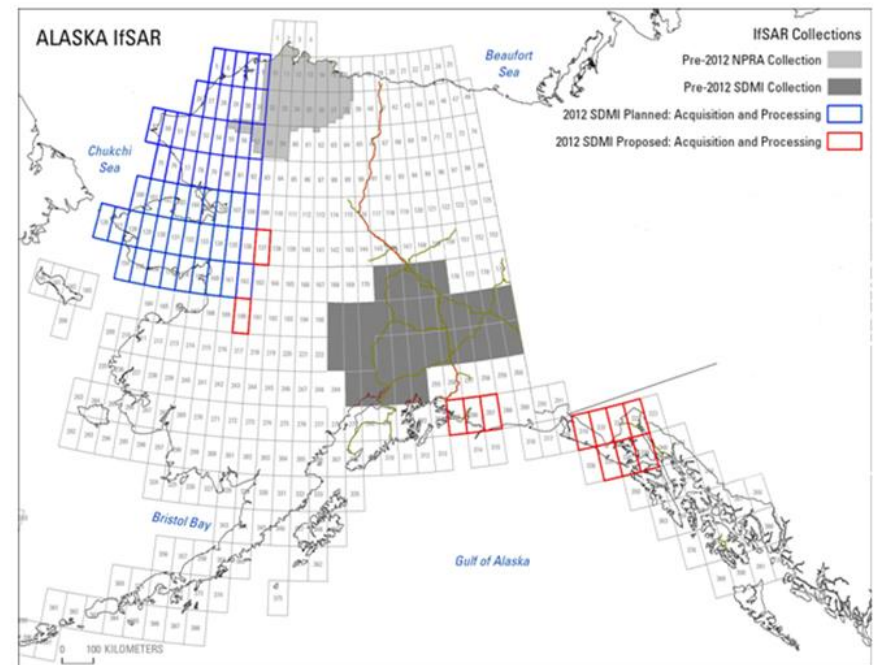
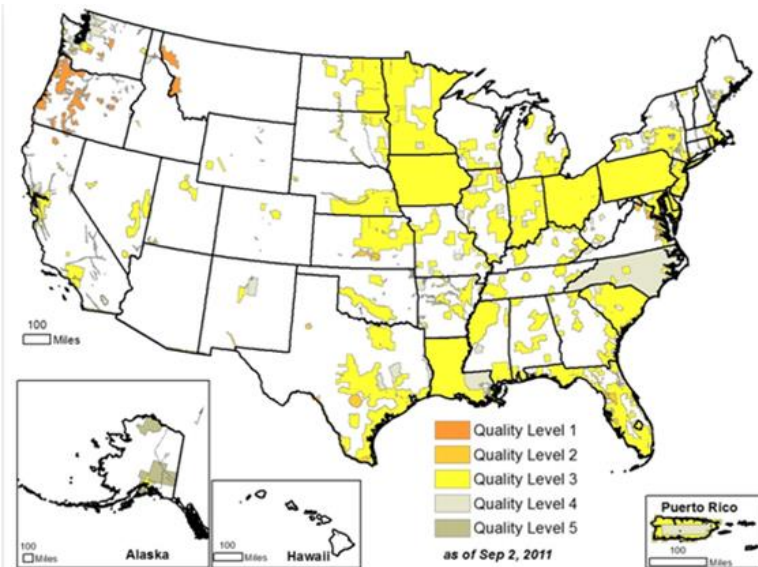
## Question 9: satellite imagery procurement

**National Aerial and Satellite Imaging Programs**  
(69 Samples)



## Question 10: Use of Lidar and Radar

Example:  
USA

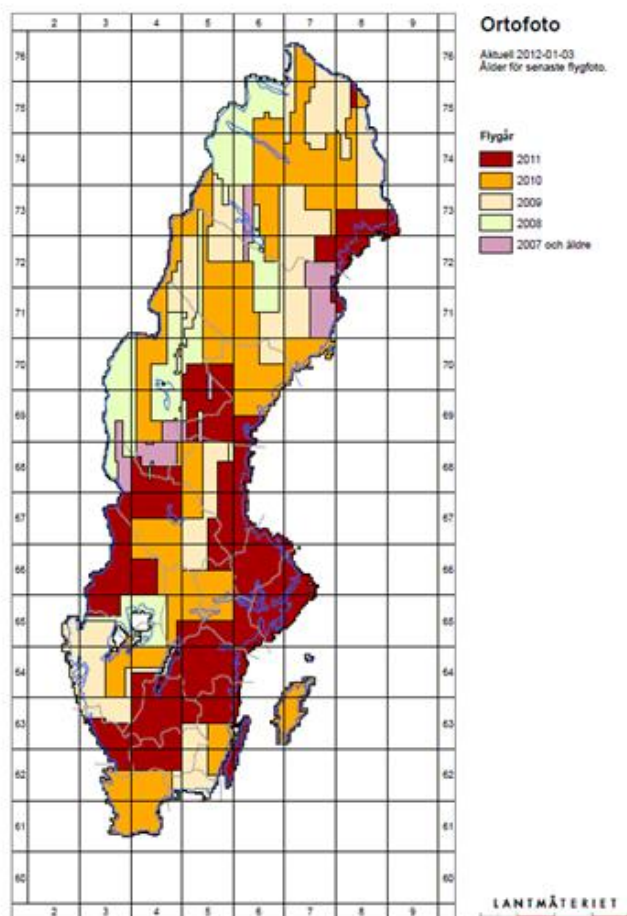


High accuracy DEM (questions 11& 13)  
coverage in (yellow and orange by Lidar)

Radar and Ifsar  
Alaska

## Question 12: Orthophoto Coverage

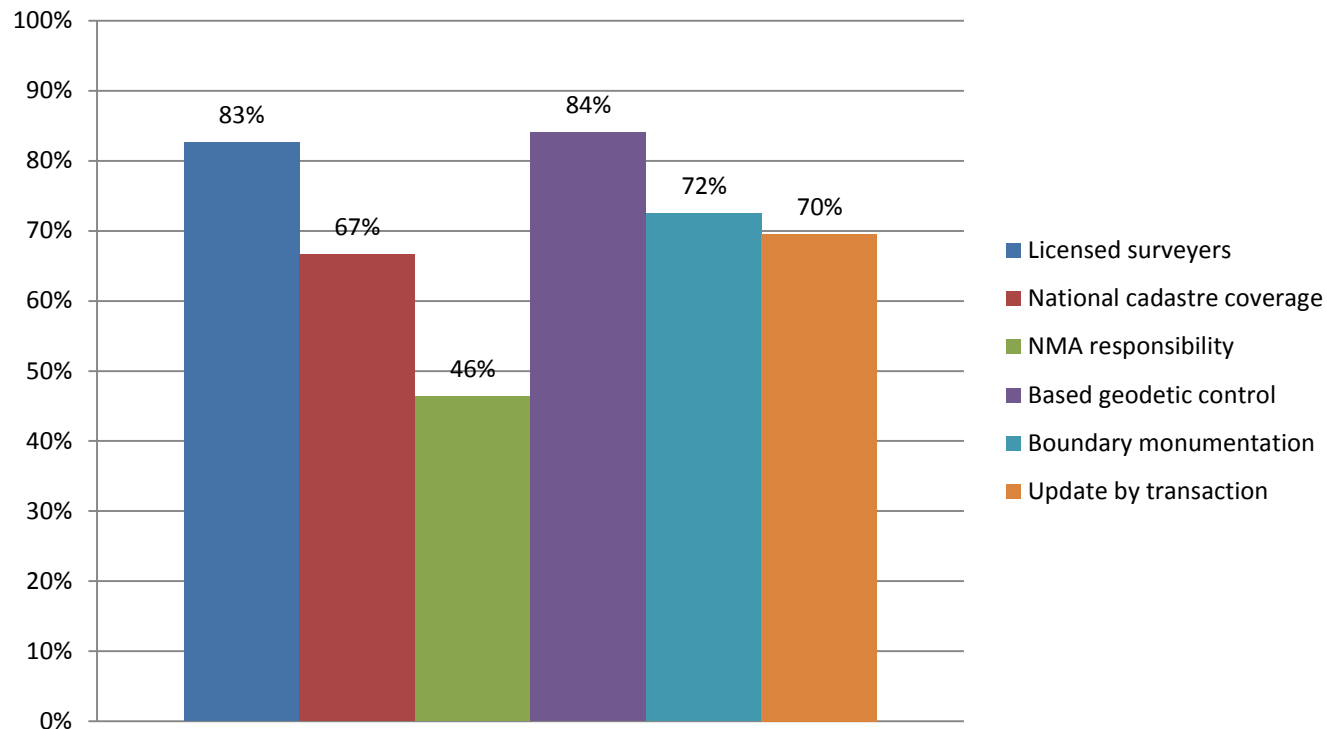
Example:  
Sweden 2007 - 2011





## Questions 15 to 20: National Surveying and Cadastral Coverage

**Property Cadastre**  
(69 Samples)

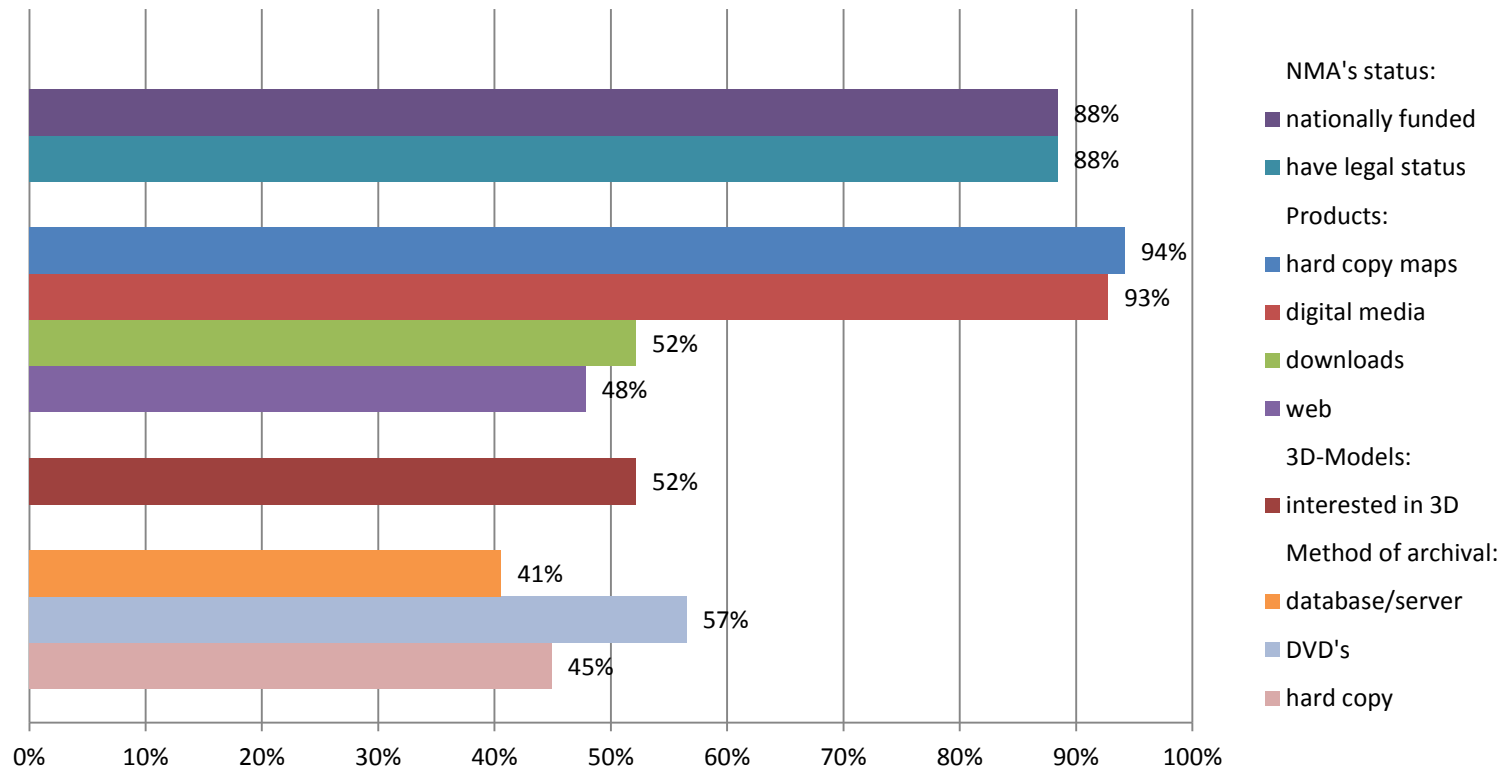






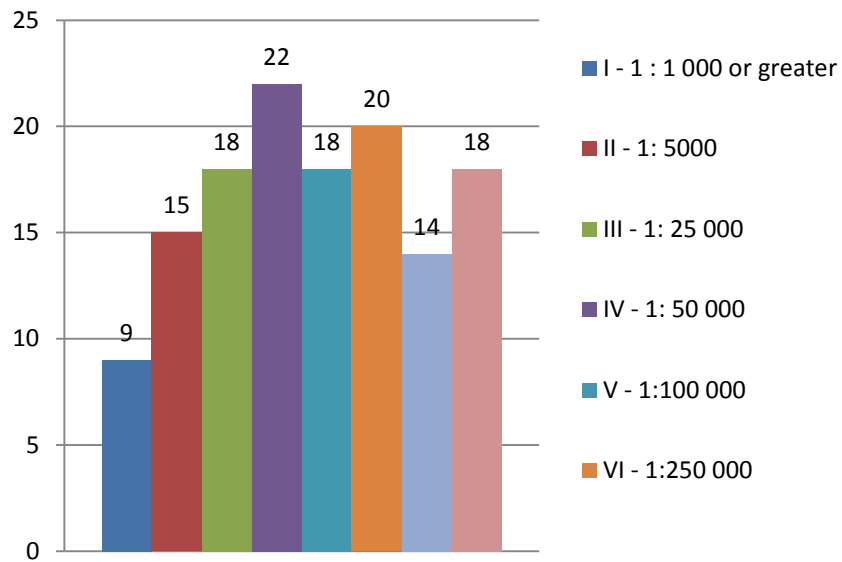
## Question 14: Interest for 3D Questions 22 to 27: Organization

### NMA's Status, Map Products and Method of Archival (69 Samples)

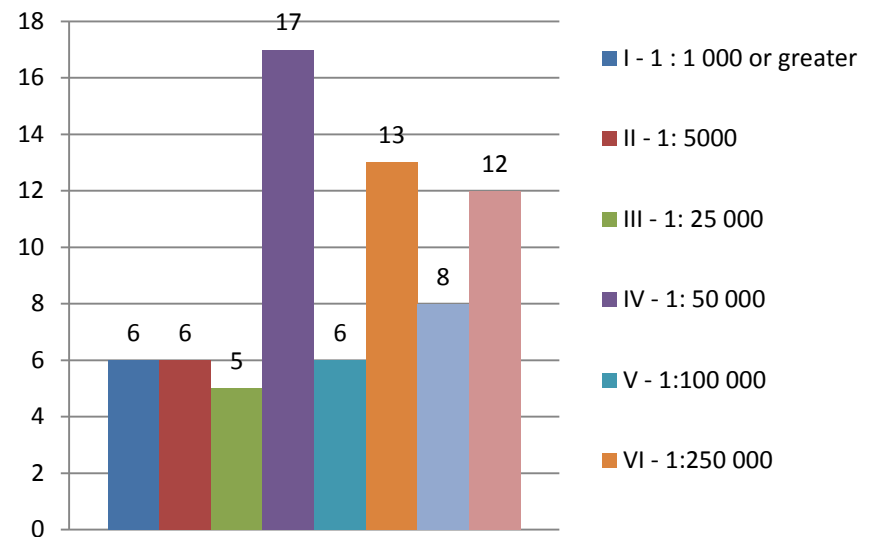




## Europe: Map scales used



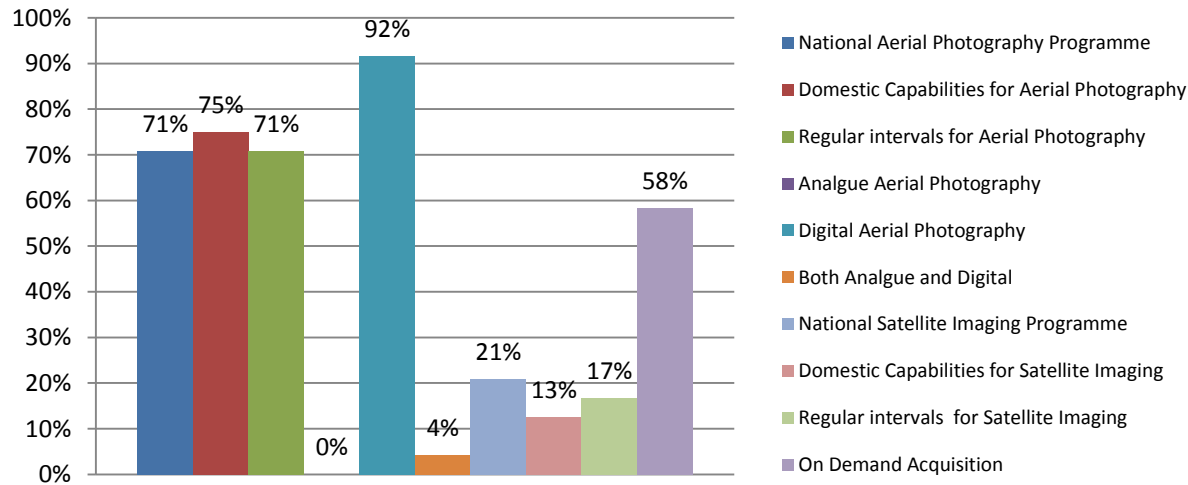
## Africa: Map scales used





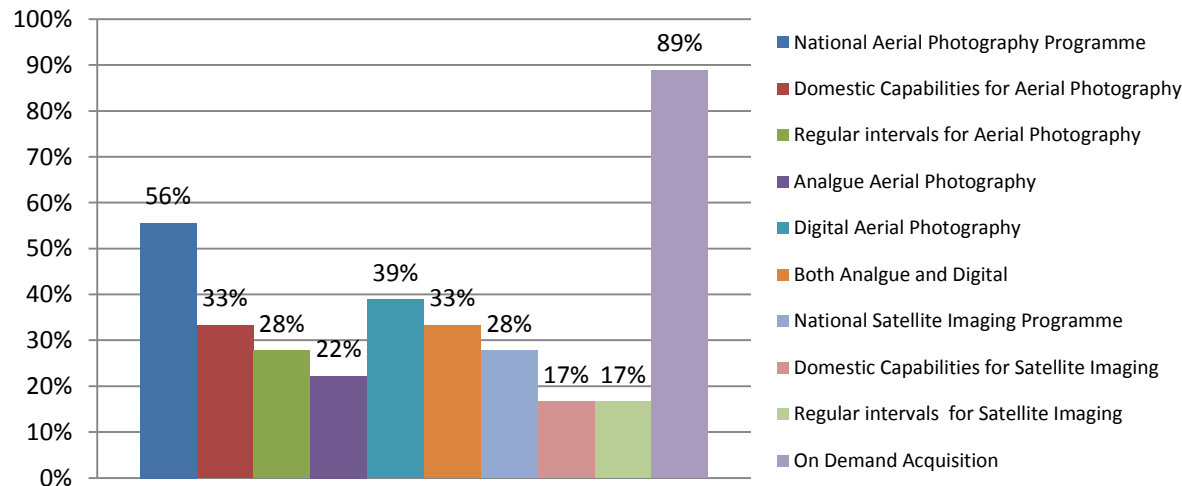
### Europe: National Aerial and Satellite Imaging Programs

(24 Samples)



### Africa: National Aerial and Satellite Imaging Programs

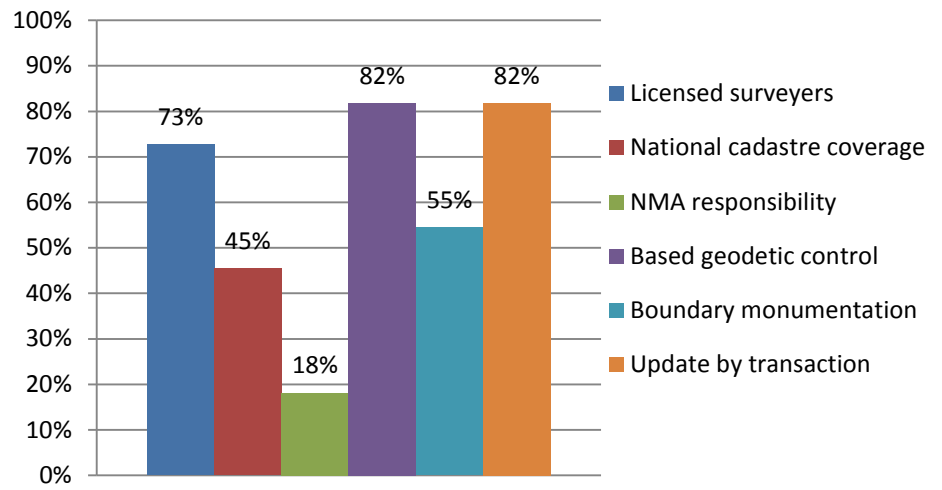
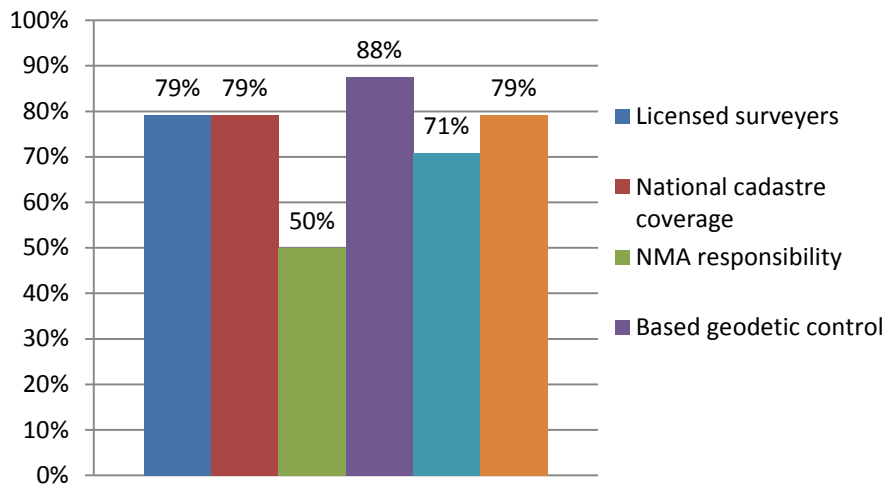
(18 Samples)





## Europe: Property Cadastre (24 Samples)

## The Americas: Property Cadastre (11 Samples)





## 4. Discussion:

### 4.1. how to increase the number of returned questionnaires ?

Options: reminders by GGIM, ISPRS contacts, map vendors

### 4.2. how to address the efforts of industry ?

Options: activity by GGIM or by ISPRS

### 4.3. how to incorporate missing information ?

Options: regional or other global sources

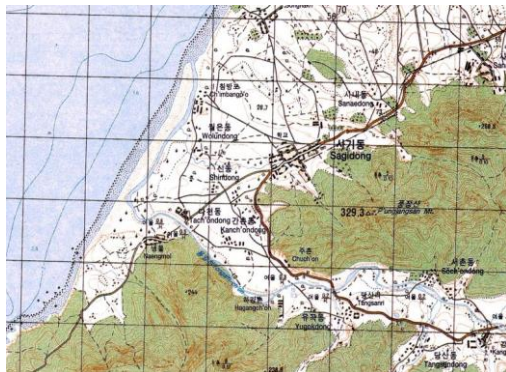
### 4.4. more questions ?

Options: extended questionnaire or direct contact ?

## 4.1. International Map Vendors



**East View Geospatial  
Minneapolis, MN, USA**



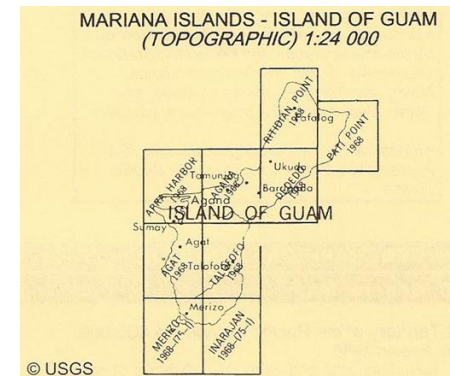
**Example:  
Supply of North Korean Maps**



**Internationales Landkartenhaus  
Stuttgart, Germany**

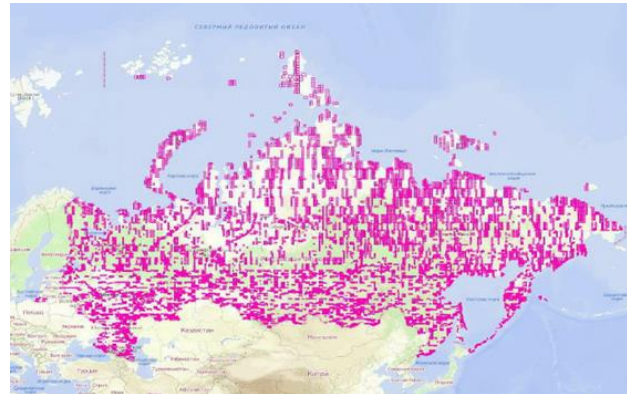


**Example:  
Catalogue with map coverages of Guam**



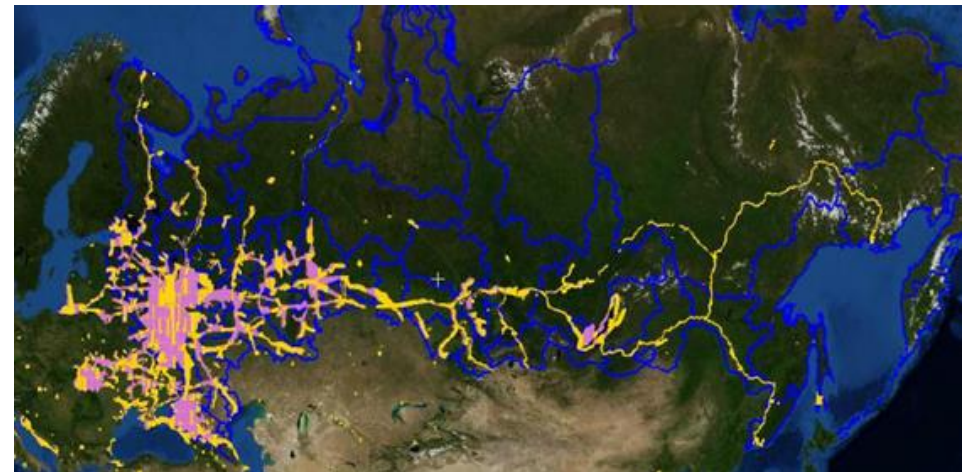
## 4.2. Industrial Efforts all data courtesy of Scanex

**GeoEye1 GSD 50cm  
Satellite Imagery for the  
Russian Federation**



**coverage 2011  
by Scanex for  
Rosreestr  
17M km<sup>2</sup>**

**61% coverage by GeoEye1 &  
World View 2 by Scanex 2012**

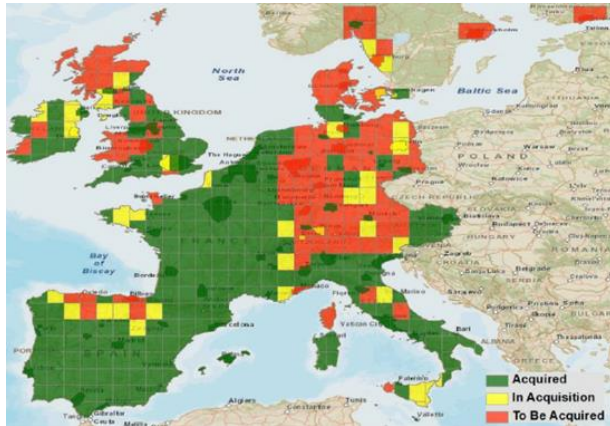


**Ikonos 0.8m GSD coverage for Scanex and Yandex  
in 2011**



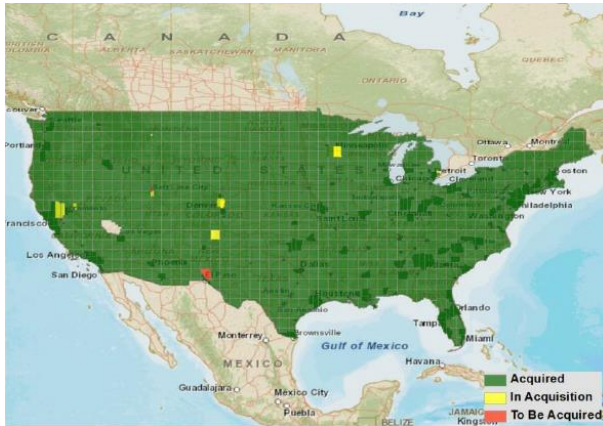
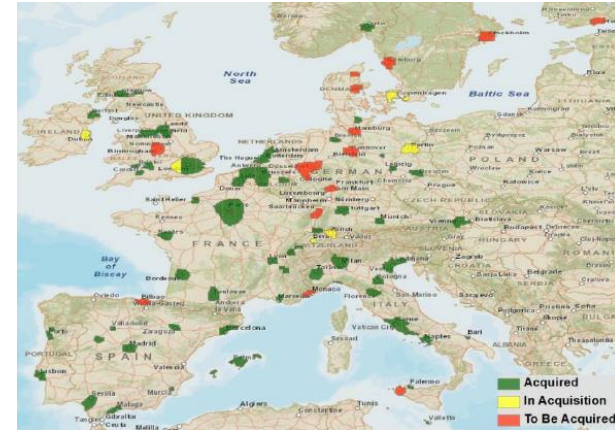
## 4.2. Industrial Efforts

### Microsoft Bingmaps GSD 50cm



## Ultracam Imagery 2012

### Microsoft Bingmaps GSD 20cm





## 4.2. Industrial Efforts: TomTom Road Navigation Coverage

