The European National Mapping and Cadastral Agencies and Higher Education

A Market for Geospatial Information – Myth or Reality

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1. Executive Summary

Access to core geospatial data sets (topographic digital map data, administrative units, hydrography, geology, etc) is critical for academic research and teaching in almost every discipline.

Between January and April 2009, EDINA National Data Centre[1], based in the United Kingdom, carried out two surveys to explore **'Access to Geospatial Data for the European Higher Education Community'**. The first survey targeted the network of National Mapping and Cadastral Agencies (NMCAs); the second surveyed the European Higher Education community.

The surveys explored four main themes relating to the provision of data by the NMCAs to the European Higher Education Community. These were: the level of demand for data, data availability, accessibility, and the licensing programmes in place to satisfy demand. The study revealed that:

- There is a 'healthy' demand for NMCA data from the Higher Education community.
- This demand is 'pan European' with many Higher Education users seeking to access data from countries other than the one in which they live and study or carry out research.
- The majority of the NMCAs surveyed had arrangements in place for Higher Education. However, for many, this arrangement is the provision of data at a discount and/or free samples of data rather than an agreement for access to national coverage.
- Around 50% of the Higher Education users found gaining access to NMCA data a problem, with the high cost, licensing and usage restrictions being the main barriers. The majority of users wanted access to data products with national coverage.
- The main datasets made available by the NMCAs are topographic data, aerial photography and historic maps. In some cases cadastre information is provided. However, there is a perception by the Higher Education community that a great many more types of data could be made available. This has the potential of leading to frustration especially when NMCAs are unable to meet requests for data they don't hold.
- Of the countries who responded, only four countries had national agreements in place: Denmark, Norway, Great Britain and Sweden.

There are many benefits for NMCAs to gain from taking the Higher Education market more seriously. It can provide an opportunity to gather feedback on fitness for purpose of data products, innovative applications and uses as well as unearthing new business areas and applications. It provides a potentially extensive, geo-literate and motivated user base. It is an under exploited market and a potential source of income. Finally, many academic users subsequently enter employment and thus are the customers of tomorrow. However, much more needs to be done to improve the availability of geospatial data for the Higher Education community both within and between countries.

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[1] This first phase work is being undertaken by staff at the EDINA National Data Centres, University of Edinburgh and is part funded by the Joint Information Systems Committee and the EU funded ESDIN project (http://www.esdin.eu/). It is also an Association of Geographic Information Laboratories for Europe (AGILE) Initiative supported by SADL/K.U. Leuven, Belgium and IACM, FORTH, Heraklion, Greece.

2. Introduction

The Higher Education sector in Europe with around 4,000 institutions, over 17 million students and 1.5 million staff should, in theory at least, be an important market for the National Mapping and Cadastral Agencies (NMCAs).

Higher Education has a long history of seeking to use geospatial data in teaching and research - a trend which is set to only increase in the future. One only has to look at the key strategic areas for scientific research in the coming years (e.g. climate change, population movement, human health, globalisation, and sustainability) to see how many relate to location.

By definition, researchers are often pushing the boundaries of knowledge and, in the process, will push the limits of datasets providing feedback on fitness for purpose of data products, innovative applications and uses, as well as unearthing fundamentally new business areas and applications.

It is also easy to forget that many students and researchers subsequently enter employment and are therefore the customers of tomorrow for NMCA data products. But just how real is the demand for data from this group? And how well do the NMCAs currently satisfy their needs?

In the autumn of 2008, EDINA[2] proposed a new Association of Geographic Information Laboratories for Europe (AGILE[3]) Initiative. This Initiative had two aims:

- To persuade NMCAs within each member state to make their data products available to the researchers within their own country at no, or minimal, cost;

- To encourage reciprocal arrangements to be put in place so that researchers from other member states can gain access to data across the European Community.

As a starting point AGILE recognised the need to develop an appreciation of the current issues surrounding access, by the Higher Education sector, to geospatial data sets offered by the NMCAs. Therefore, EDINA, with the support of AGILE and Eurogeographics[4] undertook two online surveys between January and April 2009.

The first of these surveys targeted the NMCA network, the second the European Higher Education Community.

The remainder of this report focuses on the background, approach and findings associated with these two surveys.

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[2] EDINA is one of two JISC National Data Centres located at the University of Edinburgh, UK. EDINA is home to the Digimap service which provides the Higher Education community in the UK with access to several national geospatial data sets – including OS data. www.edina.ac.uk

[3] http://www.agile-online.org/

[4] http://www.eurogeographics.org/

3. Background

The National Mapping and Cadastral Agencies (NMCAs) are the custodians (owners) of Europe's main source of high quality geospatial data. The datasets they manage are of critical importance to scientific investigation, education and evidence-based policy making, much of which takes place in Europe's Higher Education institutions (universities, colleges and research centres). Access to core (framework) geospatial datasets (topographic digital map data, administrative units, hydrography, geology, etc) is critical for academic research and teaching in almost every discipline. In the context of policy relevant research, one only has to look at the key strategic areas for scientific research in the coming years (eg, climate change, food and energy resource management, population movement, human health, globalisation, and sustainability) to see how many have a spatial dimension.

The growth in web-based geospatial applications has introduced a whole new generation of users to the power of maps and other spatial information, such as air photography and satellite imagery. The advances in geospatial technology mean that many more academics and students are discovering the power that lies in applying and using geospatial information to address a wide variety of scientific and policy questions.

However, researchers, teachers and students quickly become frustrated as their quest for spatial data comes up against the institutional, organisational, regulatory and licensing systems that currently govern access to this data across Europe. This can lead individuals to turn to the likes of Google and Microsoft, or even 'free' or 'open' data sources for their needs; but these can only ever act as second best alternatives to the definitive, quality-assured products that researchers and students need and demand[5]. Therefore, is there an underexploited business opportunity, for the NMCAs, to provide the European Higher Education community with access to national data products?

Consider the problem from the perspective of the ecologist seeking to identify and monitor changes in the habitat conditions of specific animal species, the civil engineering researcher trying to test a flood prediction model, or an archaeology student wishing to use spatial information to track and record the location and evolution of settlement sites across Europe.

- How easy would it be for these individuals to gain access to the geospatial data sets produced by the European network of NMCAs?
- Would their professor, or teacher, be able to help them locate and access the information they require?
- Would they even know where to look?
- Assuming they could find the data, would they be able to afford to use it and, if they could, would the licence conditions allow them to publish the findings?
- Would the licence conditions allow them to share data they had created with other researchers if it included some of the original NMCA data
- Generally, is a researcher able to undertake open science if they use NMCA data sets?

The task is challenging enough when data from a single country is required, but, as is the case in the examples above, what about when the data crosses national boundaries?

[5] See the following story on the UK Guardian News Paper's 'Libraries Unleashed' section of the web site. http://education.guardian.co.uk/librariesunleashed/story/0,,2275375,00.html

The research space for academics is not limited by borders and neither are the environmental, socio-economic, cultural and technical issues they seek to address. Data is the very lifeblood of science and research, yet how healthy is the current geospatial data flow?

3.1. The UK Experience

In the UK EDINA's Digimap Service has been providing researchers and students in Higher Education with access to key UK geospatial datasets (eg, Ordnance Survey Great Britain (OSGB)[6] products) for over 10 years[7]. With some 50,000 users, EDINA has demonstrated the benefits that can be gained from opening up national spatial datasets by making access easy and affordable.

One of the major benefits has been that researchers and students are no longer geographically constrained when it comes to doing their research or teaching. Prior to the development of the Digimap Service, Ordnance Survey GB (OSGB) provided access only to sample data sets unless the individual was able to pay the commercial cost. These data sets, whilst demonstrating the characteristics of the data available, did not provide users with the opportunity to explore the full range of questions of direct interest to them. By removing this barrier EDINA, in collaboration with the OSGB and with funding from the UK Joint Information Systems Committee (JISC)[8], has created the possibility for users to explore the use of spatial information in any number of creative ways, in turn stimulating a host of new spatial data applications and improvements to research methods.

Having recognised that it is in the national interest to provide preferential access for the academic sector to NMCA data, and on the basis of the experiences in the UK, a number of benefits can be identified for data providers. For example; the academic sector has provided not only an additional revenue stream, but also an extensive, geo-literate and motivated user base for:

- testing out the fitness for purpose of data products;
- creating innovative applications and uses; and
- discovering new business opportunities.

In addition, many academic users and students subsequently gain jobs in the public and private sectors and become ambassadors and customer of the NMCAs products. By providing affordable access to their data, the NMCAs are creating their customers of tomorrow. However, the Digimap service is not without its limits and, for a number of reasons to do with the terms and conditions of the data licence, users from institutions outside the UK are unable to access the service unless they are studying at a UK institution. However, if similar national agreements were in place within other European countries – in conjunction with initiatives like Digimap – they could be the catalyst for reciprocal arrangements to be put in place for Higher Education users across Europe.

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[6] The Ordnance Survey is the UK's National Mapping Agency www.ordnancesurvey.co.uk

[7] See **Sutton E. Medyckyj-Scott D., and Urwin T.** (2007) The EDINA Digimap service – 10 years on. The *Cartographic Journal* **44**(3): 268-275

[8] The Joint Information Systems Committee (JISC) is funded by the UK Higher Education and Further Education funding bodies to provide world-class leadership in the innovative use of ICT to support education and research. www.jisc.ac.uk

3.2. The European Position

The evidence gathered so far by EDINA suggests the UK is in a relatively privileged position - the situation across Europe is very diferent. Many countries appear to be where the UK was 15-20 years ago; academics and students have to buy data commercially or at unrealistic discount prices (which are beyond the financial resources available to the majority of university departments or research groups). In some cases the data is not available at all. Where data is available, it is often only for geographically and/or temporarily constrained areas or on an ad hoc case-by-case basis. Certainly, the data is not available to a large number of users in a way which is consistent, timely or transparent, yet the European Higher Education sector equates to around 4,000 Higher Education institutions, with over 17 million students and 1.5 million staff – a significant market for NMCA products.

Beyond individual countries, the absence of direct access to pan-European data or reciprocal agreements between countries is a major barrier to research and teaching. This restricts the nature of the geographical problems that can be addressed and hampers pan-European geospatial education and research. This is why many national science, research and teaching bodies are working towards national and international agreements on data access policy

4. The Surveys

Between January and April 2009, EDINA carried out two surveys to explore **'Access to Geospatial Data for the European Higher Education Community'**. The first survey targeted the network of National Mapping and Cadastral Agencies (NMCAs) and the second surveyed the European Higher Education community.

The aim of the two 'geospatial data access surveys' was to establish:

- The demand from the European Higher Education community for geospatial data held by the European network of NMCAs;
- The ease with which the Higher Education community is able to gain access to the data held by the NMCAs;
- The satisfaction of Higher Education users with both the data and the quality of the service provided by the NMCAs; and
- The main characteristics of the licensing programmes put in place by the NMCAs to meet the demand for data from the Higher Education community.

Both surveys were carried out online and open for a period of approximately 1 month. The country response rate for each survey is shown in table 1.

Table 1: NMCA Survey - Response rates by country

Country	NMCA and User Surveys	NMCA Survey	User Survey (Nos in brackets are individual response rates)
Austria		Yes	
Belgium			Yes (1)
Croatia		Yes	
Czech Republic			Yes (3)
Denmark	Yes	Yes	Yes (3)
Finland			Yes (4)
France	Yes	Yes	Yes (4)
GB	Yes	Yes	Yes (19)
Germany	Yes	Yes	Yes (19)
Greece	Yes	Yes	Yes (11)
Hungary	Yes	Yes	Yes (3)
Ireland	Yes	Yes	Yes (21)
Italy			Yes (13)
Latvia		Yes	
Netherlands	Yes	Yes	Yes (27)
Norway	Yes	Yes	Yes (4)
Poland	Yes	Yes	Yes (4)
Portugal			Yes (5)
Romania			Yes (8)
Russia			Yes (1)
Serbia		Yes	
Slovakia		Yes	
Slovenia	Yes	Yes	Yes (2)
Spain	Yes	Yes	Yes (11)

Sweden	Yes	Yes	Yes (8)
Switzerland	Yes	Yes	Yes (4)
Ukraine			Yes (1)
Total	**13**	**19**	**22 (168)**

4.1. The NMCA Survey

The NMCA survey was carried out in January 2009 and targeted senior staff in 52 National Mapping and Cadastral Agencies from 43 countries across Europe. Eurogeographics assisted in the promotion of the survey. The survey asked questions on what data the NMCA supplied to Higher Education, under what arrangements, whether national agreements had ever been considered, what benefits the NMCA saw from providing geospatial data to Higher Education and whether they had encountered any problems as a result of providing data. There were also questions relating to the provision of data to students and researchers in other countries. Eighteen NMCAs completed the survey, which was lower than hoped for (and may say something about the views of NMCAs regarding the Higher Education community) but included Austria, Denmark, France, Great Britain, Germany, Greece, Netherlands, Spain, Sweden and Switzerland. The full list of counties whose NMCAs responded to the survey is shown in table 1 above.

4.2 The Higher Education Users Survey

The Higher Education Users Survey was carried out in April 2009 and focused on gathering the experiences of Higher Education users in each country. In this survey we wanted to hear the story from the other side, i.e. the experiences of academic users in each country. This survey asked questions relating to what data was needed and what was supplied, how easy it was to get access to the data, their experiences in using the data, whether the licence and terms and conditions of use presented any barriers to use, and the need for access to data from other countries. 168 responses were received from 22 countries. Some countries had more respondents than others, e.g. the Netherlands, Ireland, Germany and Great Britain. This has meant that for some analysis we have focused on the responses from these countries. We also had a number of instances where users responded from countries where the NMCAs had not responded. See table 1 for a summary of user responses by country.

There was a good spread of responses in terms of both the types of institutions represented (see table 2) and the roles played by respondents, e.g. researcher, teacher (see figure 1). Forty percent of the respondents were geographers or working in geoinformatics but a wide range of other disciplines were represented including planning, civil engineering, earth sciences and ecology (figure 2). Table 3 provides a breakdown of this by country and shows that, despite the spread of disciplines in which GI is now used, geography still remains the dominant subject area. Analysis at the country level (see table 4) revealed that it is still predominantly researchers who are requesting data from the NMCAs, with only Hungary, Norway, Poland and the Netherlands having a greater portion of individuals involved in teaching responding to the survey.

Table 2: User Survey – Response rates by country				
Activity	We do a lot of this	We do some of this	We do very little of this	We do not do this at all
Undergraduate Teaching	79%	8%	4%	9%
Postgraduate Teaching	66%	26%	3%	4%
Research	74%	23%	3%	0%
Other	36%	52%	11%	2%

Figure 1: User Survey - Responses broken down by activity

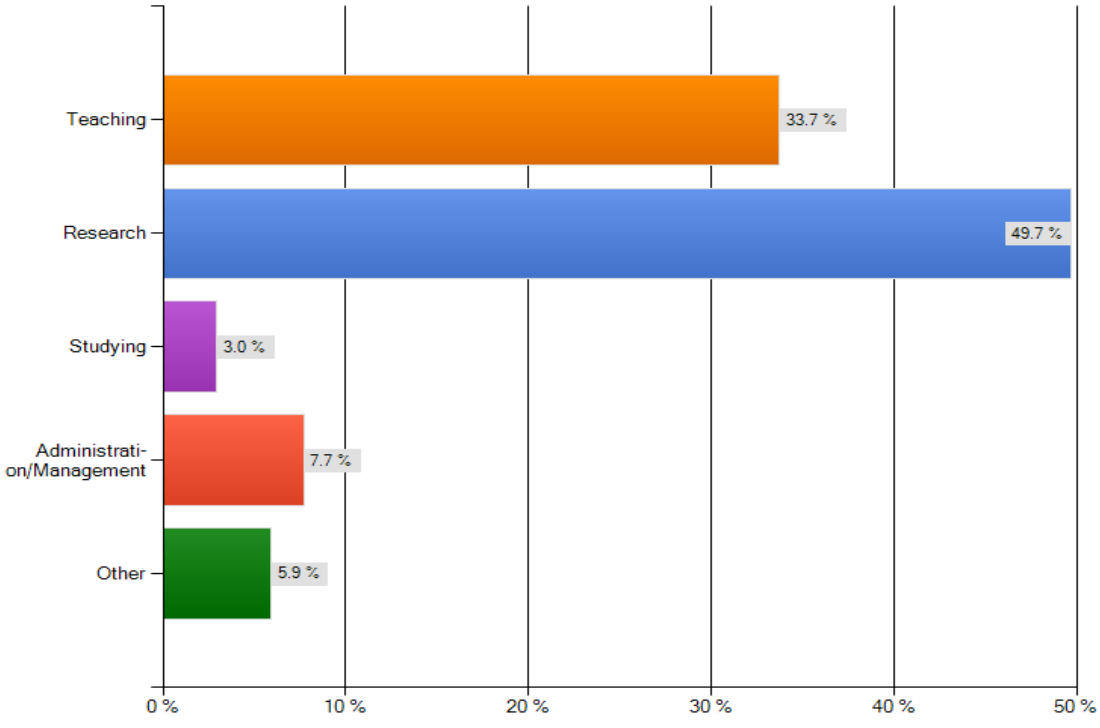
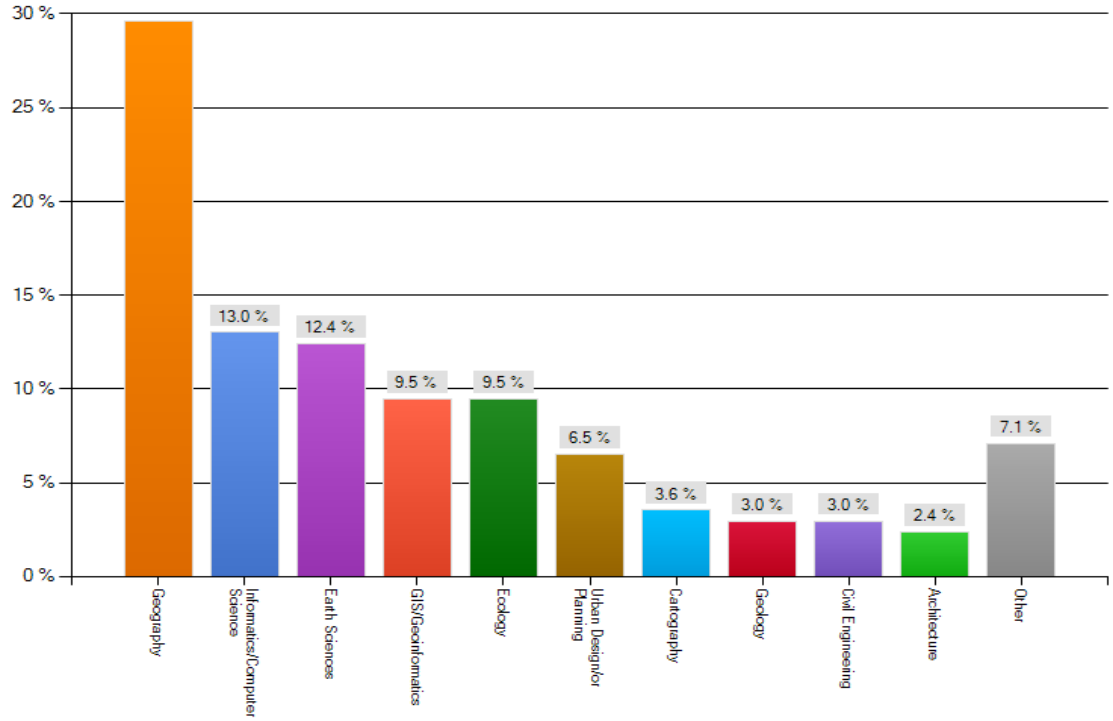


Figure 2: User Survey – Disciplines in which respondents are working



4.3 Data Analysis

The data collated from the two surveys was analysed at a number of different levels.

Level 1: An holistic analysis was carried out of both surveys to explore overall trends in the data at the pan European level.

Level 2: A more detailed analysis of the Higher Education user survey was carried out for those countries where it was felt there were sufficient responses to make valid judgments from the data collated. Fourteen countries were used in this analysis. The countries included in this analysis had responses to both the NMCA and Higher Education surveys. To simplify the analysis the counties were organised into three groups, based on the response rates from the user survey.

1. **Group 1:** Germany, Ireland, the Netherlands, Spain and Great Britain. This group was predominantly made up of Western European countries.
2. **Group 2:** Denmark, France, Norway, Sweden and Switzerland. This group was, with the exception of France, made up of predominantly Scandinavian countries
3. **Group 3:** Greece, Hungary, Poland and Slovenia. This group consisted of countries from eastern and southern Europe.

A comprehensive cross tabulation analysis was undertaken for each of these groups to explore if there were any major differences in survey responses according to geography and jurisdiction.

Level 3: A further detailed analysis was carried out at the country level for those countries where it was felt there was sufficient data to be of value. This analysis was carried out for Great Britain, Ireland, Germany, Spain, the Netherlands, Greece, Sweden and France.

This report focuses on the information gained from the first and second level analysis. The information gained from the individual country analysis can be found in the Appendix.

The main findings are discussed under five main themes:

- The demand for NMCA data by Higher Education.
- The extent to which this demand is satisfied including an appraisal of availability, accessibility and training.
- The licensing agreements in place to service this demand including a review of the different structure, agreements and user satisfaction.
- The extent of the demand for NMCA data from other countries.
- The market opportunities open to NMCAs interested in targeting Higher Education.

The picture is first presented from the perspective of the NMCA and then from the perspective of the Higher Education users. In each case, the pan European perspective is discussed followed, where appropriate, by a review of issues pertaining to specific geographies drawing on the level 2 analysis outlined above.

Table 3: User Survey - Disciplines in which respondents are working (country level)

Group	Country	Discipline
Group 1	Germany	Geography (42%)
	Great Britain	Geography (32%)
	Ireland	Ecology (29%) & Geography (24%)
	Netherlands	Geography (26%)
	Spain	Geography, Geology & Earth Science (all =18%)
Group 2	Denmark	Informatics/Computer Science (67%)
	France	GIS, Earth Science, Ecology & Informatics (all =25%)
	Norway	Geography (75%)
	Sweden	Geography (38%)
	Switzerland	Geography (75%)
Group 3	Greece	Geography (50%)
	Hungary	Cartography (67%)
	Poland	Geography (50%)
	Slovenia	Earth Science (50%)

Table 4: User Survey - Areas of work undertaken by respondents (country level)

Group	Country	Discipline
Group 1	Germany	Research (58%)
	Great Britain	Research (47%)
	Ireland	Research (48%)
	Netherlands	Teaching (44%)

	Spain	Research (46%)
Group 2	Denmark	Research (67%)
	France	Research (75%)
	Norway	Teaching (75%)
	Sweden	Research (63%)
	Switzerland	Research (75%)
Group 3	Greece	Research (50%)
	Hungary	Teaching (67%)
	Poland	Teaching (50%)
	Slovenia	Research (100%)

5. The Demand for Data

The NMCA Perspective: The survey revealed that there is a healthy demand for NMCA data from the Higher Education community. All the NMCAs who responded to the survey received requests for data from Higher Education users, with 33% of the NMCA recording demand in excess of 100 hundred requests per year (see figure 3). Perhaps, surprisingly, 66% of the NMCAs had received requests for data from academics working in other European countries.

The User Perspective: At the pan European level the users survey mirrored the trends shown in the NMCA survey with 73% of respondents requesting data more that once a year (figure 4) and over 72.6% of respondents indicating that it was important or very important for them to have access to geospatial data from their own NMCA.

This was significantly higher than their desire to have data provided by any commercial organisation, eg, NAVTEQ, TeleAtlas (58.8%) (see figure 5). At the country level only four countries indicated that it was of equal importance to have data from another organisation; these were Denmark, Sweden, Switzerland and Hungary.

At the pan European level, in line with the NMCA survey, 49.4% of users said it was also important or very important for them to have access to geospatial data for another European country. However, users were less concerned that the data be provided by the NMCA (see figure 6). This response was mirrored at that country level.

Figure 3: NMCA Survey - Geospatial data request by the Higher Education community

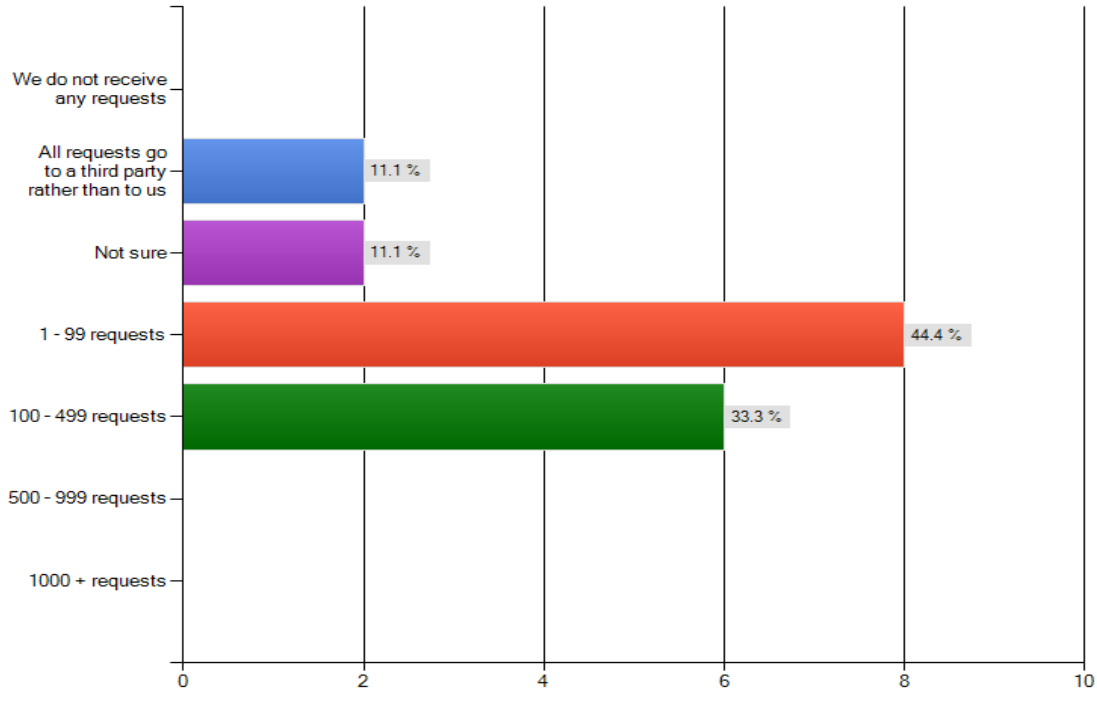


Figure 4: NMCA Survey: The frequency of data requests made by users

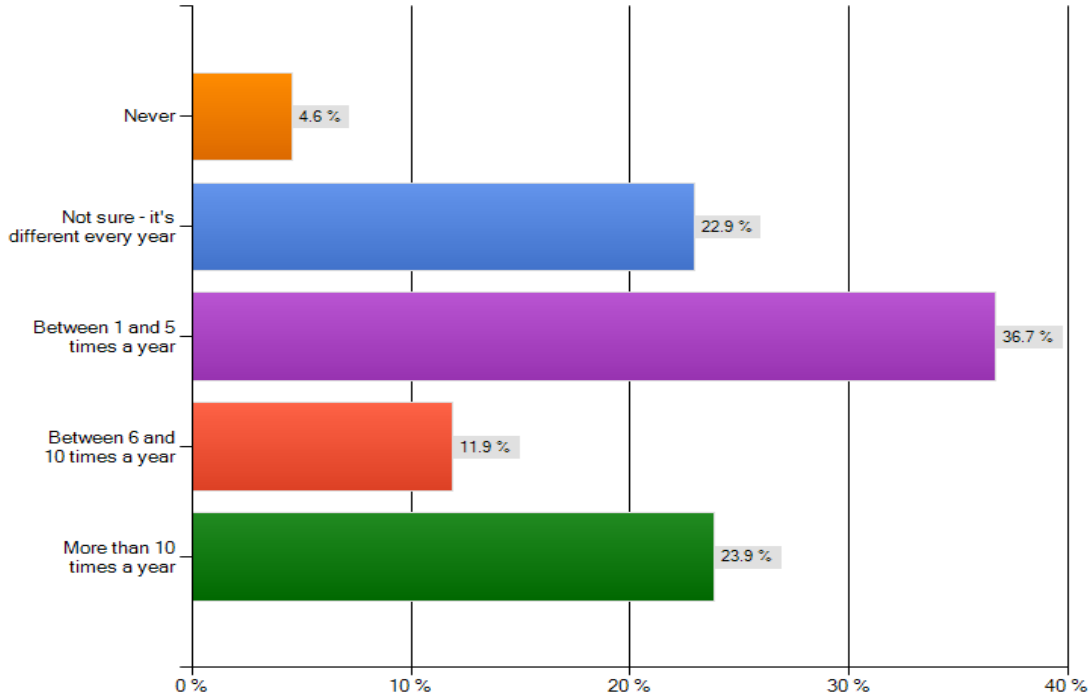
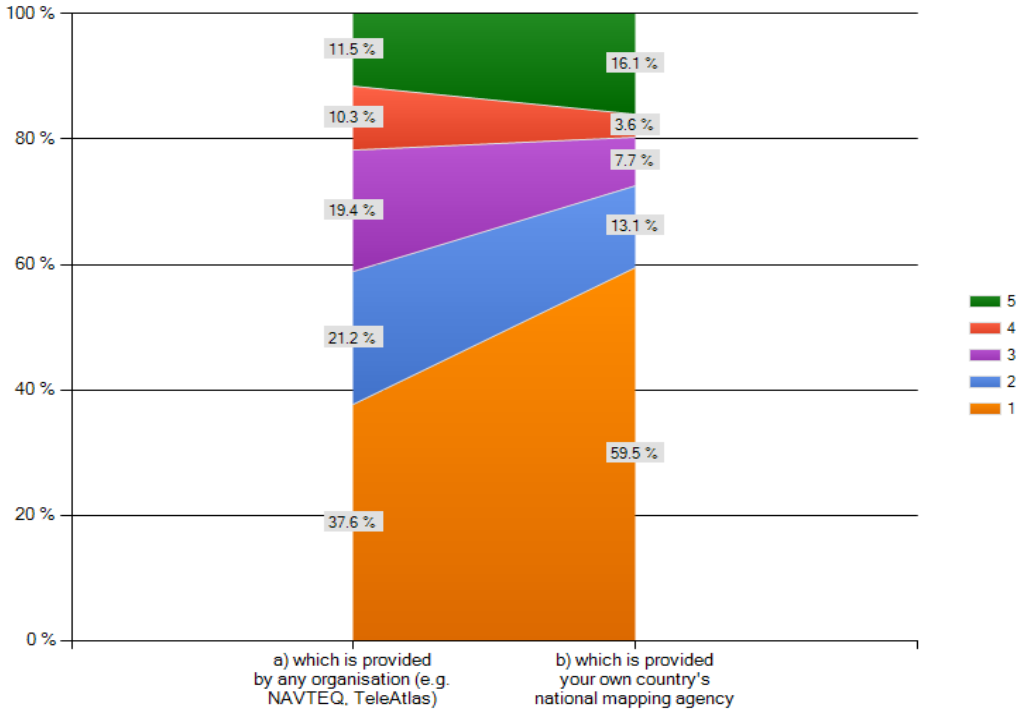
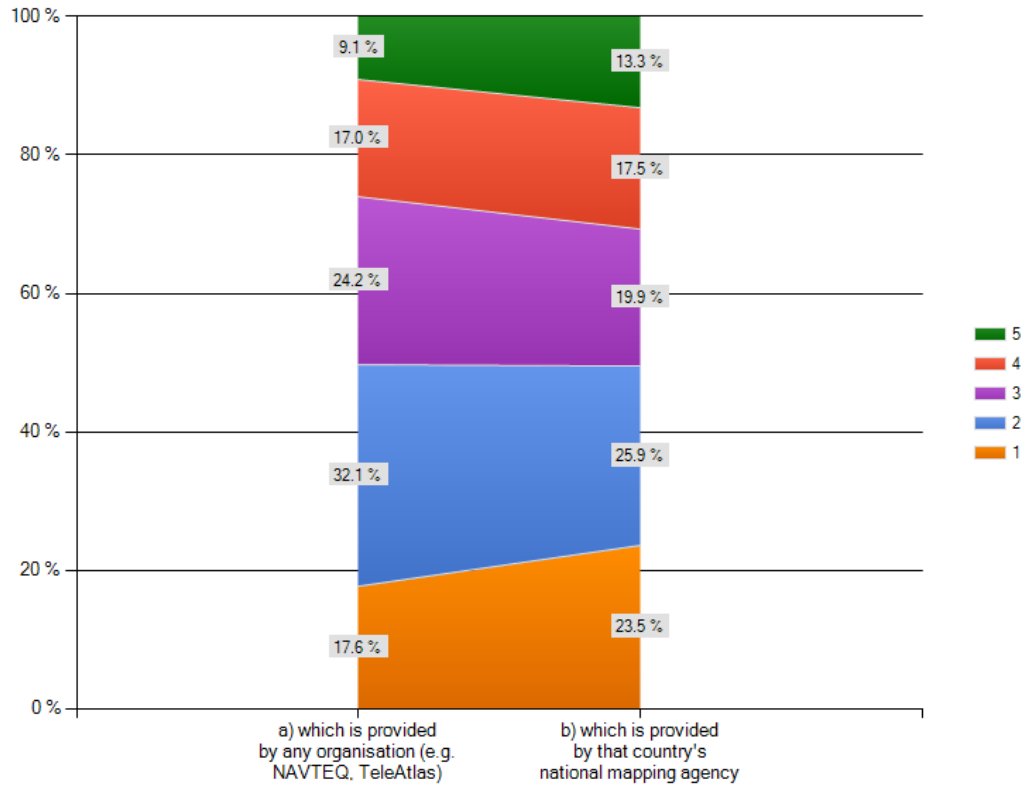


Figure 5: User Survey - The importance of access to data for the home country



Notes: In the legend 1 = very important; 5 = not important at all

Figure 6: User Survey - The importance of access to data for other EU Countries



Notes: In the legend 1 = very important; 5 = not important at all

6. Satisfying Demand

6.1. Data Availability

The NMCA Perspective: Topographic data is provided by most NMCAs; cadastral data is more restricted but other data sets are available too, including aerial photography and historical map data (see figure 7). The majority of the NMCAs surveyed made the most recent version of their datasets available to users. When this was not the case the data was usually between 3-5 years old. In most cases (85%) the geospatial data available represented over 50% of the data held by the NMCA, with over 64% of the NMCA making more than 80% of the data they hold available to Higher Education users.

Only one country, Greece, acknowledged security restrictions as a reason for the data being unavailable.

It is also important to note that the NMCAs are not the only organisations providing core geospatial data. As an illustration of this, consider the spatial data themes listed in the three Annexes of the INSPIRE Directive[9]. As an example, the "transport network" theme, for any one member state, it is likely that the NMCA holds some of the data necessary to meet the requirements of this theme, but to be complete, its is also likely that some data will be provided by the equivalent of a highways agency, or a local authority, etc. Twelve of the NMCAs surveyed acknowledged that there are other organisations in their country which provide additional core geospatial data sets (see table 5).

Table 5: NMCA Survey - Countries where there are more than one provider of "core" geospatial data

Country	NMCA Survey
Austria	Yes
Denmark	No
France	Yes
GB	Yes
Germany	Yes
Greece	Yes
Hungary	Yes
Ireland	yes
Latvia	yes
Netherlands	no response
Norway	yes
Poland	Yes
Serbia	no
Slovakia	No
Slovenia	No
Spain	Yes
Sweden	Yes
Switzerland	no

[9] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:108:0001:0014:EN:PDF

The User Perspective*:* Respondents reported that topographic data is the main data set available to users in Higher Education. However, beyond the availability of topographic data there is considerable confusion about what other data products are available (see figure 8). Higher Education users also believe that NMCAs hold more types of data than is in fact the case. This picture is mirrored at the country level. This is show by the greater variety of data sets users believe their NMCA holds (compare figures 7 and 8)

6.2 Data Access

The NMCA Perspective: The NMCAs make their geospatial data available on a number of different media (see figure 9); the most popular being CD (77%) and DVD (85%), with only 38% of the NMCAs surveyed making their data available online. Some also provide data online through a third party.

Figure 7: NMCA Survey - Geospatial data sets available from the NMCAs

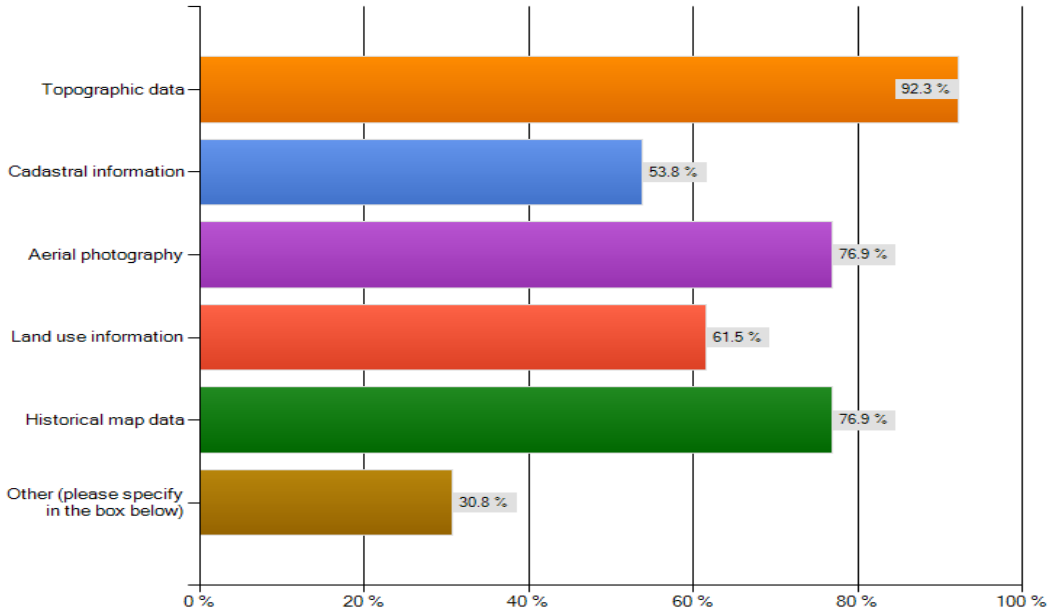


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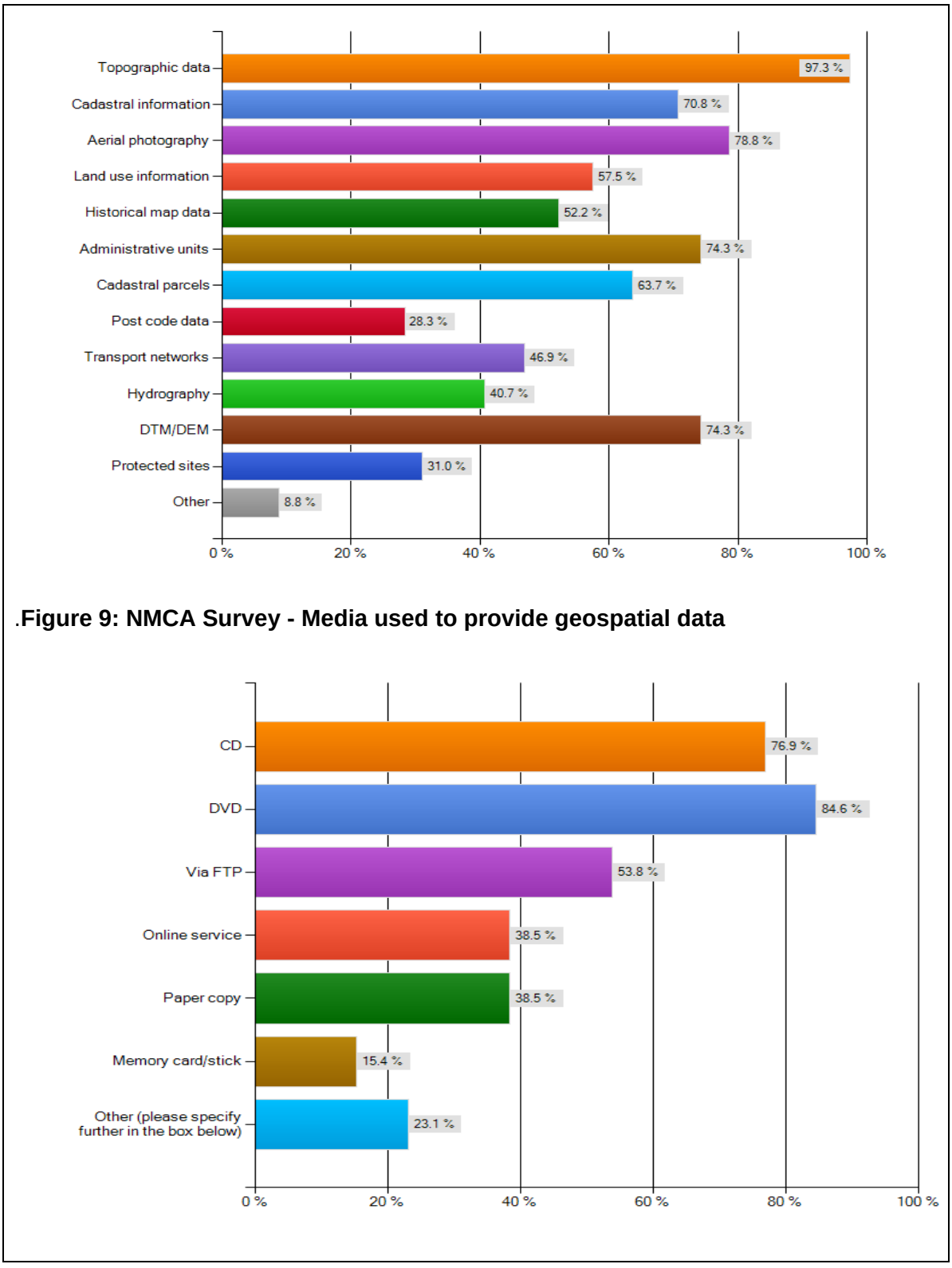
Figure 8: User Survey - Perceptions of data available from the home country's NMCA



.Figure 9: NMCA Survey - Media used to provide geospatial data

The User Perspective: Access to data, despite its availability, is still a problem for many Higher Education users with just under 50% of the Higher Education users surveyed finding it either difficult or very difficult to get access to data provided by the NMCAs (see figure 10).

Even topographic data, the most sought after, and available, data set saw 30% of users struggling to get access to the data. Other types of data were even more problematic;

88% needed access to aerial photography but 54% were unable to access it; 92% needed access to height data but 42% couldn't access it and 73.5% needed access to hydrographic data but 53% couldn't get it (see table 6).

Topographic data appears to be readily available across all three country groupings (see table 7), however, beyond these data access issues appear to increase in complexity, with group 1 (consisting predominantly of the western European countries) encountering the most difficulties in accessing data. It is interesting to note that it is the eastern and southern European countries that appear to have been able to source a greater number of datasets. However, this would appear to contradict the information provided in table 8 which suggest that it is these same countries that are having the most difficulties accessing the data. One possible explanation for this apparent contradiction is that, whilst it might be possible for these countries to access more data sets, the bureaucracy associated with actually obtaining the data is more complex.

Respondents to the survey were asked to comment on the main barriers preventing access to the geospatial data held by the NMCAs. By far the greatest barriers seem to be the cost of the data and licensing complexities or restrictions. Other issues cited included the lack of metadata to assist with the task of finding appropriate data, the data coverage available and issues with quality of the data. This pattern is mirrored at country level.

Figure 10: Users Survey - Perceptions of access to geospatial data held by the NMCA

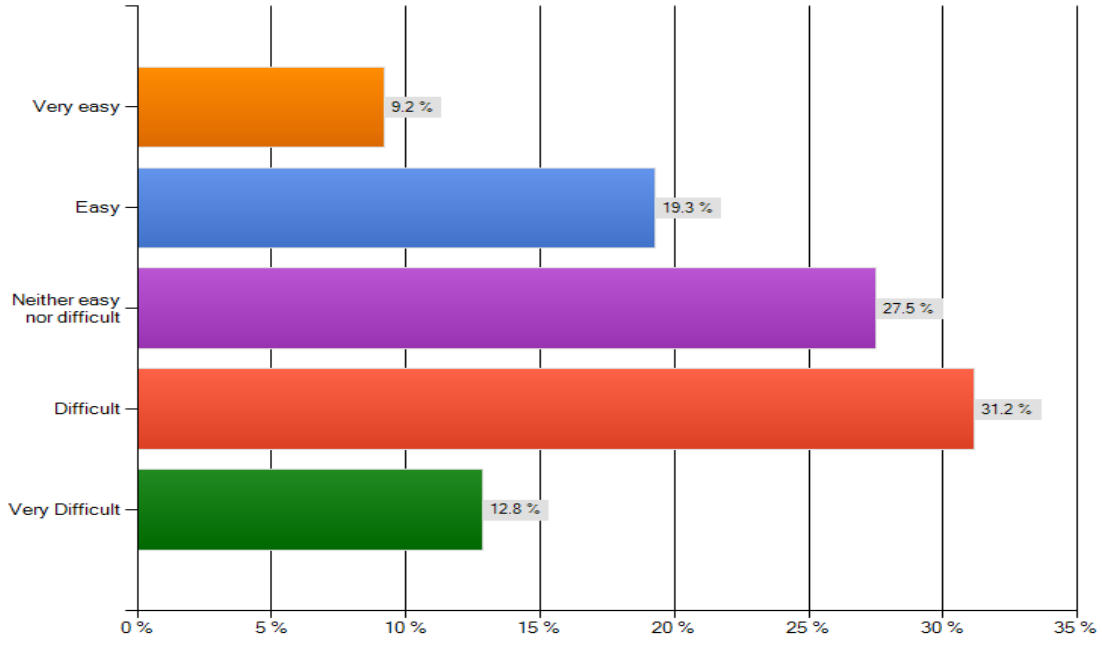


Table 6: User Survey – Accessibility of geospatial data held by the NMCA in the home country		
	I need this data set (%)	*I can't access this data set (%)*
Topographic data	*96*	*29*
Cadastral information	*64*	*67*
Aerial photography	*88*	*54*
Land use information	*95*	*49*
Historical map data	*74*	*63*
Administrative units	*91*	*19*
Cadastral parcels	*63*	*61*
Postal delivery data	*48*	*66*
Transport networks	*79*	*45*
Hydrography	*74*	*53*
DTM/DEM	*92*	*42*
Protected sites	*75*	*46*
Other	*62*	*76*
Note: The cells shade green = where 50%+ users need the data. The cells shaded orange = where 50%+ users are unable to access the data		

6.3. Training

The majority of the NMCAs (73%) do not provide any training specifically for the Higher Education community but do provide access to their generic training programmes and materials. Forty four percent of the NMCAs make training materials available for teachers in Higher Education to use with their students, with the most popular delivery medium being as online materials.

Table 7: User Survey - Access to data held by the NMCA in the home country

Data Set	*I need this data set (%)*			*I can't access this data set (%)*		
	Group 1	Group 2	Group 3	*Group 1*	Group 2	Group 3
Topographic data	97	94	100	27	19	29
Cadastral information	62	56	50	73	60	25
Aerial photography	86	93	83	64	36	20
Land use information	94	100	100	55	23	50
Historical map data	75	69	100	60	77	80
Administrative units	87	100	67	17	13	25
Cadastral parcels	61	54	50	68	62	0
Postal delivery data	55	33	0	54	83	67
Transport networks	73	92	71	45	23	25
Hydrography	59	92	100	66	31	33
DTM/DEM	87	100	100	47	24	33
Protected sites	74	67	60	61	42	40
Other	64	44	0	80	78	0

Notes:

1. *The cells shade green = where 50%+ users need the data. The cells shaded orange = where 50%+ users are unable to access the data*
2. *Group 1* = Germany, Ireland, The Netherlands, Spain and Great Britain
3. *Group 2* = Denmark, France, Norway, Sweden and Switzerland
4. *Group 3 = Greece, Hungary, Poland and Slovenia*

Table 8: User Survey -The ease with which Higher Education can access data in the home country						
Group	**Country**	**Very easy**	**Easy**	**Neither easy nor difficult**	**Difficult**	**Very Difficult**
Group 1	Germany				53%	
	Great Britain		36%			
	Ireland				46%	
	Netherlands			47%		
	Spain			50%		
Group 2	Denmark		67%			
	France			33%	33%	33%
	Norway		50%			
	Sweden		60%			
	Switzerland			68%		
Group 3	Greece			50%	50%	
	Hungary				67%	
	Poland				100%	
	Slovenia		50%	50%		
Note: Cells have been shaded based on the most popular response						

7. Licence Agreements

7.1 Licensing Arrangements

The NMCA Perspective: Fourteen of the NMCAs had special arrangements in place for Higher Education, a higher number than expected. However, for many this arrangement was the provision of data at a discount (77%) and/or free samples of data (61%) rather than an agreement for access to national coverage. Four countries had national agreements in place: Denmark, Norway, Great Britain and Sweden. The majority of these nations made 80% or more of their data available. The various agreements have been in place for a differing number of years with 35% of those countries surveyed having agreements in place for more than 10 years (see table 9). Only two NMCAs had more than 5,000 Higher Education users with the majority of NMCAs having less than 500 users.

Table 9: NMCA Survey - The Time period over which NMCA Data has been made available to the Higher Education community	
Country	NMCA Survey
Austria	3 years
Denmark	10 years
France	10 years +
GB	9 years
Germany	15 years
Greece	20 years
Hungary	Not known
Ireland	3 years
Latvia	3 years
Netherlands	Not know
Norway	2 years
Poland	Not know
Serbia	Not known
Slovakia	15 years
Slovenia	Not know
Spain	Not known
Sweden	6 years
Switzerland	10 years

The User Perspective: It is clear that there is no single dominant approach in place to the licensing of geospatial data for use in Higher Education across Europe (see figure 11). This is because agreements are still structured at country level with approaches varying between countries and lack of clarity between users and NMCAs over data access and licensing arrangements (see table 10). Table 10 also serves to illustrate that there is considerable confusion over the nature and character of the license agreements that are actually in place, with Higher Education users perceiving that there are many more forms of agreements in place than are acknowledged by the NMCAs.

Figure 11: User Survey - Perspectives on the license agreements in the home country

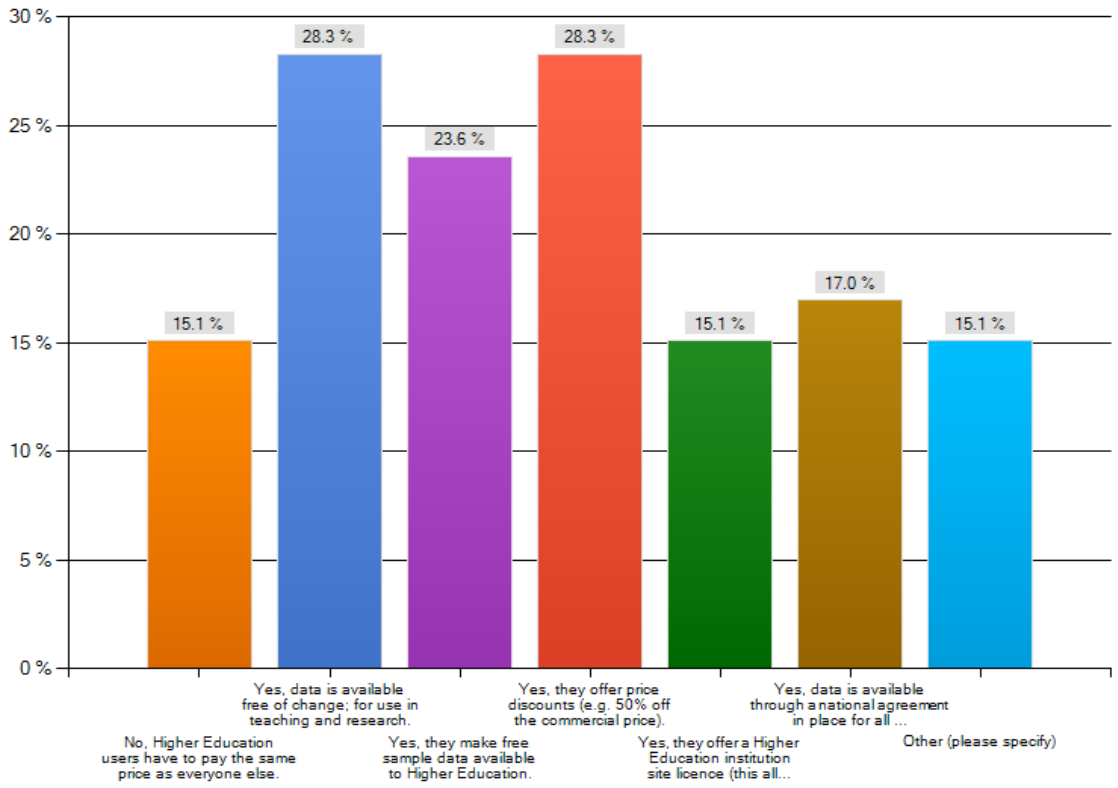


Table 10: NMCA and Higher Education perspectives on the type of geospatial data agreements in place in the home country

Group	Country	Case by Case	Free data	Sample Data	Price Discounts	Site Licence	National Agreement
Group 1	Germany						
	Great Britain						
	Ireland						
	Netherlands						
	Spain						
Group 2	Denmark						
	France						
	Norway						
	Sweden						
	Switzerland						
Group 3	Greece						
	Hungary						
	Poland						
	Slovenia						
	NMCA and users agree this is how data can be accessed						

	NMCA only suggests this is how data can be accessed
	Users only suggests this is how data can be accessed

7.2 Licensing Suitability

The NMCA Perspective: The main conditions under which data is made available to the Higher Education community include:

1. Not passing the data to a third party.
2. Not allowing use of the data for commercial purposes.
3. Not permitting the reproduction or publication of images derived from the data.
4. Not distributing datasets derived from the original data.
5. Not publishing material without permission and/or acknowledging copyright.
6. Not publishing maps above a certain size.

In some countries there are also restrictions on the amount of data an individual can access (often over a given time period) and the length of time for which an individual may use the data.

The majority of NMCAs (75%) indicated that they had not encountered any problems when supplying Higher Education users with data. Where problems had occurred it was usually with regard to the use of the data for commercial purposes. Three examples cited included:

- Students on work placements using the data for commercial purposes;
- Researchers undertaking commercial contracts; and
- Higher Education institutions carrying out commercial training.

However, it should be stressed that the majority of NMCAs responding to the survey had not encountered any problems when making their data available to the Higher Education community.

The User Perspective: The majority of users (78%) recognise that their license agreement will normally only permit them to use the geospatial data available from their NMCA for teaching or research. They also recognise that it should not be used for commercial purposes (66%) or passed on to a third party (62%) (see figure 12). However, only just over half (54%) of users believe that the conditions of use attached to the licence allow them to use the data in the way they want or need to. When this is explored at country level we see that for the majority of countries the license agreements appear to be meeting the needs of the users. The only counties where this is not the case are Great Britain, France and Hungary (table 11).

To explore in more detail Higher Education users' satisfaction levels with access to NMCA data we looked at the relationship between data accessibility and the type of license agreements in place in the 3 country groups. Figure 13 shows the results. This figure tells a slightly different story from the picture portrayed in table 11. Figure 13 shows that where national licensing agreements are in place, users find access to data much easier and satisfaction levels are higher. Where various agreements, or no agreement, are in place users find it more difficult to access data and satisfaction levels are lower. The countries which come out of this analysis most favourably are the Scandinavian countries and the UK. In all these cases there are national agreements in place with the NMCAs in these countries.

Figure 12: User Survey - Perceptions of 'terms of use' associated with the NMCA license agreement in place in the home country

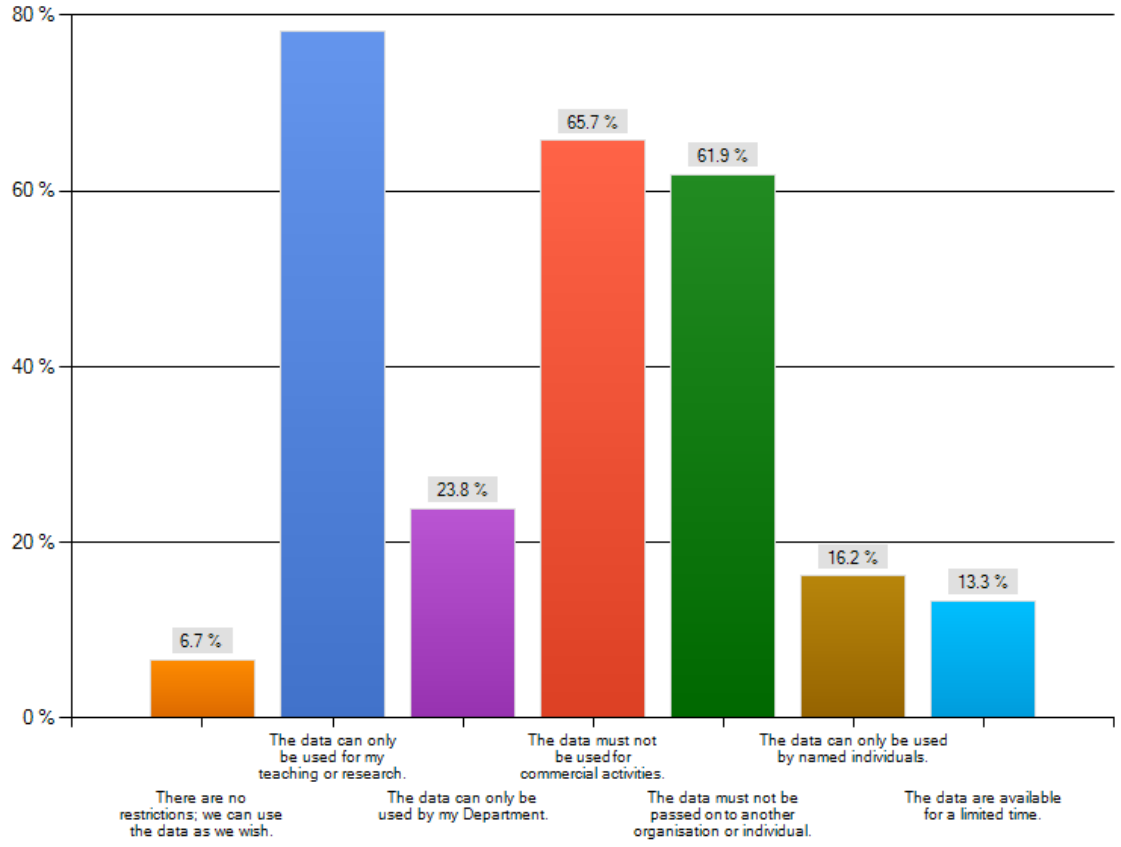


Table 11: User Survey - Country perspectives on the flexibility of NMCA license agreements

		The licence allows me to use the data in the way I need	
Group	**Country**	**Yes**	**No**
Group 1	Germany	57%	43%
	Great Britain	31%	69%
	Ireland	50%	50%
	Netherlands	62%	38%
	Spain	50%	50%
Group 2	Denmark	50%	50%
	France		100%
	Norway	67%	33%
	Sweden	80%	20%
	Switzerland	100%	
Group 3	Greece	67%	33%
	Hungary	33%	57%

	Poland	100%	
	Slovenia	100%	

Note: Cells have been shaded based on the most popular response	
	Over 50% of respondents perceive the licence agreement to meet their needs
	There is an equal split between respondents who believe the licence agreement meets their needs and those respondents who do not believe the agreement meet their needs.
	Over 50% of respondents perceive the licence agreement does not meet their needs

Figure 13: User satisfaction with access to NMCA data products contrasted with the type of licence agreement provided by NMCA

User satisfaction			
Easy	Slovenia		Denmark Norway Sweden Great Britain
Nether easy nor difficult	Spain Netherlands	Switzerland	
Difficult	Greece	Poland Hungary France Ireland Germany	
	No agreement?	**Various agreements**	**National agreement**
	Type of agreement		

7.3 Licensing Negotiations

Only three of the NMCAs Spain, Great Britain and the Netherlands had a dedicated department or section of the organisation responsible for Higher Education. Several other NMCAs commented that the size of the market was too small for them to provide Higher Education with a dedicated resource.

Most Higher Education respondents (75%) felt it was the responsibility of each academic institution to negotiate with the NMCA for access; this was also the view of the NMCAs. This may be because the idea of a nationwide agreement has not been considered either by academics or by NMCAs but equally it could be that there is no obvious national body with which to negotiate; 80% of the NMCAs felt that there was either no national body they could negotiate with or were unsure which organisation could take on this role.

The only country where users acknowledged that there was a national body, the Joint Information Systems Committee (JISC), specifically its content negotiating company, JISC Collections, in place to represent them was the UK.

JISC Collections negotiates with publishers and owners of digital content for licence for universities to access digital resources at affordable rates and with special terms and conditions. This helps to ensure staff and students can make best use of the resources. JISC Collections then works with its data centres, of which EDINA is one, to provide online services by which the content can be delivered to students and staff. Content is provide either for free or through institutional subscriptions but, and critically, free at the point of use. In 1998, discussions began regarding the establishment of a national service providing access to Ordnance Survey GB maps and data. JISC negotiated on behalf of the UK Higher Education Sector with OS, with the result that a national licence was agreed and a service, Digimap, launched in January 2000. JISC and subsequently renegotiated the licence on two other occasions with additional data being added to the agreement on each occasion. All those involved consider the deal and the service a huge success.

8. Data for Other Countries

The NMCA Perspective: Over 68% of the NMCAs survey had received request for data from outside their own country with the majority of the request being made once every few months. Only 27% of the NMCAs consistently provided data in response to these requests. Fifty five percent of the NMCAs have a formal process in place for dealing with these requests. The countries from which the NMCAs had received requests for data are show in table 12.

Table 12: NMCA Survey - data request from other countries

NMCA	Country requesting data
Austria	Germany, sometimes over EU countries
Denmark	Sweden, France, Norway, Germany & England
France	No data provided
GB	No data provided
Germany	Most EU countries
Greece	Most EU countries
Hungary	No data provided
Ireland	Northern Ireland
Latvia	No data provided
Netherlands	No data provided
Norway	Sweden, Denmark & Germany
Poland	No data provided
Serbia	No data provided
Slovakia	No data provided
Slovenia	No data provided
Spain	Most EU countries
Sweden	No data provided
Switzerland	No data provided

The majority of the requests came from researchers with 89% of the NMCAs who had received requests for data receiving approaches from this group. Sixty seven percent of the NMCAs had received requests from teachers and lecturers. See figure 8.1 for a fuller breakdown of the groups the requests came from.

The User Perspective: 40% of the users who answered this question had requested geospatial data for a country other than their home country, with France and the United

Kingdom being the two most popular countries for which data is requested. This is closely followed by requests for the whole of Europe, Germany, Spain and Italy with a smaller number of requests for data from the Netherlands, Austria, Switzerland and Denmark.

In total, the survey revealed 88 requests for data from a survey population of 168. It should be noted that this represents a higher figure that the 40% referred to above due to several respondents making request for data from more than one country. Table 13 provides a full summary of the data request by country.

The majority of users (60%) who had requested data from another country were successful in obtaining it - this was much higher than expected. Where problems were encountered when trying to gain access to geospatial data from another country, the main issues were the cost of the data and the scale and resolution of the data available (see figure 14). The survey also revealed that there is a latent demand for NMCAs to provide data to Higher Education users outwith their own country, with 82% of survey respondents indicating they would like to access this data if it was made available (see figure 15).

Table 13: User Survey -Frequency of request for data from other European countries

Country	Requests
United Kingdom	13
France	10
All Europe	8
Germany	7
Spain	7
Italy	6
Austria	4
Netherlands	4
Switzerland	4
Denmark	3
Norway	2
Poland	2
Belgium	1
Bulgaria	1
Estonia	1
Finland	1
Finland	1
Greece	1
Greece	1
Hungary	1
Latvia	1
Moldova	1
Norway	1
Portugal	1
Romania	1
Romania	1
Russia	1
Serbia	1
Slovakia	1

Slovakia	1
Total number of requests	**88**

Figure 14: User Survey - User problems encountered when trying to obtaining data from NCMAs in other European countries

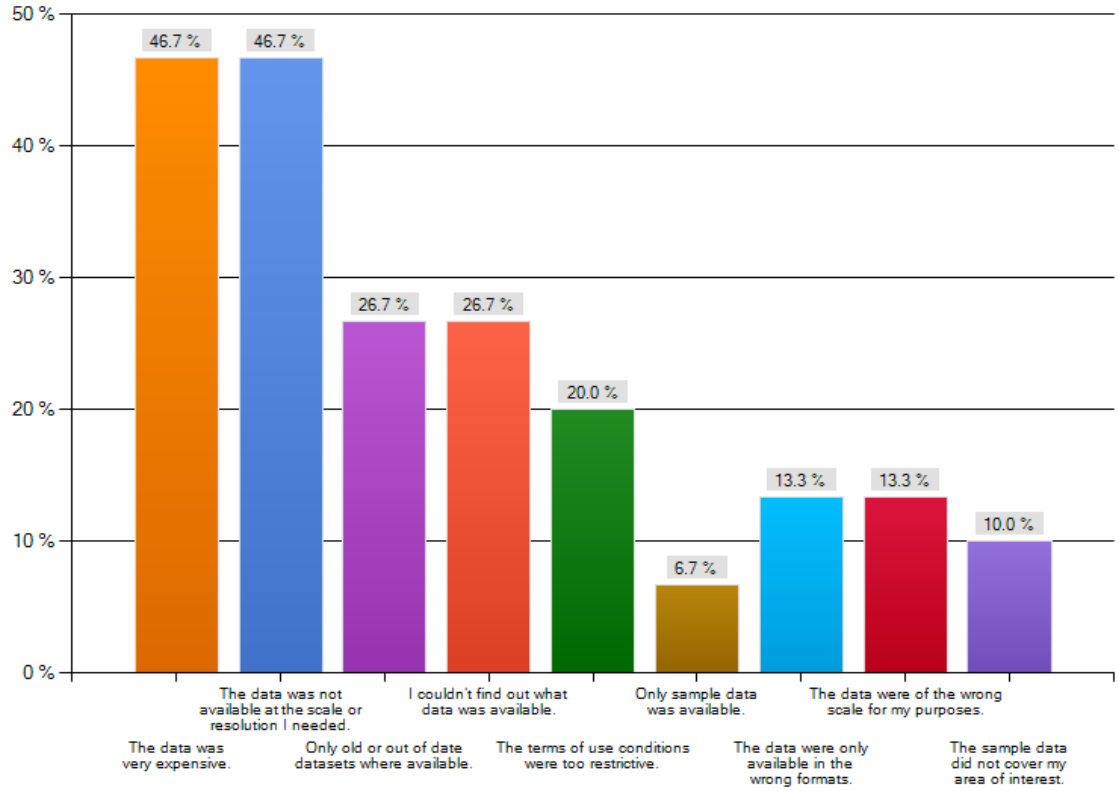
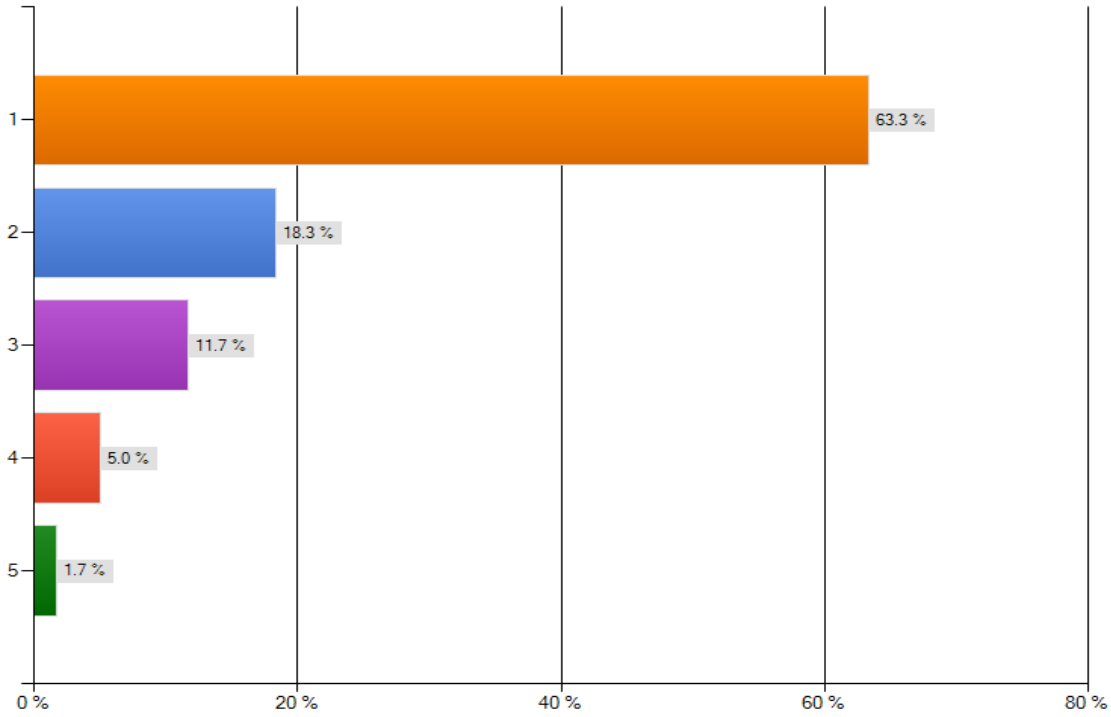


Figure 15: The demand for geospatial data by users from other European countries



Note: 1 = Very useful; 5 = Not useful at all

9. Market Opportunities

The NMCA Perspective: The majority of the NMCAs (67%) surveyed are interested in making their data products available to Higher Education. The majority also believe that their organisation could benefit from providing geographical data to Higher Education. The three most popular reasons for NMCAs wish to do this were:

- Increasing awareness amongst their existing, and future, customer base about their geospatial data products and services;
- Generating new business opportunities; and
- Ensuring the provision a skilled workforce for the future.

Other reasons provided included helping the NMCAs shape new products and services, ensuring NMCAs can maintain market share and helping the NMCAs improve data quality (see table 14).

The Majority of the NMCAs also acknowledged that there was a demand for the data beyond Higher Education users from their home country and that, in principle at least; they would be interested in looking at how they could satisfy this demand. Those who answered this part of the survey (67%) did not believe that there were any major barriers that would prevent this happening. However, only 9 out of the 18 survey respondents answered this question and a detailed review of the responses revealed it to be those countries - Denmark, Norway, Austria, Switzerland, Germany and Spain - who already appear to be active in making their data available to Higher Education users outwith their home country.

The User Perspective: Geography remains the dominant discipline using geospatial data within Higher Education. However, there are a growing number of other disciplines now making use of geospatial data. This widening user base means that there is a healthy demand for the geospatial data provided by the NMCAs. The evidence for this demand is reflected by the 70% of respondents to this survey who suggested that it is either important or very important for them to have access to the data held by the NMCA in their home country.

This local demand would appear to be being serviced to some degree by the NMCA network. However, there still remains concern over affordability, accessibility and usability in some countries. The Scandinavian countries would appear to have the best balance between accessibility and licensing conditions. In the UK accessibility is good but the conditions of the license limit the usability of the data and is seen as a problem by some users. In other countries the variety of licensing arrangements, whilst not preventing the use of the data, appear to affect accessibility.

All of this would suggest that if licensing agreements can be simplified 'home' country users should be a growing market for the NMCAs.

The present research also suggests that there is a healthy demand from Higher Education for geospatial data from other countries, with just under 50% of the Higher Education users who responded to this survey showing an interest in accessing NMCA data from countries other than the one in which the live, study or work. Given that the NMCAs indicated their interest in supplying this market this would seems a potential market opportunity that is not yet being realised. This survey would suggest that the main reasons why this is the case are that:

- The existing licensing agreements are too complex;
- Information about the availability of data, and how it can be accessed, is unclear; and
- Pricing and usage policies are difficult to obtain and understand.

If these issues could be resolved then the pan European demand by Higher Education for the geospatial data held by NMCAs could be substantial.

Table 14: NMCA Survey - The benefits of providing geospatial data to Higher Education	
The table below provide a summary of the main benefits identified by the NMCAs participating in the survey and includes:	
Austria	• Increasing awareness of our data, • generating more business, and • helping to identify and shape new products.
Denmark	• generating more business.
France	• increasing awareness of our data, • generating more business, • helping to identify and shape new products, • developing the use of geospatial data,• • helping student learning how to work with GIS and data, and • helping us maintain our position as the main geo data operator.
GB	• increasing awareness of our data, • generating more business, • helping to identify and shape new products, and

	• maintaining good relations with the academic community.
Germany	• increasing awareness of our data, • generating more business, and • helping to identify and shape new products.
Greece	• helping scientific research, and • by generating more business.
Hungary	• No response
Ireland	• increasing awareness of our data, • generating more business, and • helping to identify and shape new products
Latvia	• Increasing awareness of our data.
Netherlands	• no response
Norway	• increasing awareness of our data, • Up-skilling students in the use of our data is a good source of future staff, and • engaging with the research community creates potential partners for future projects.
Poland	• no response
Republic Serbia	• providing better education for future professionals, • increasing awareness of our data, and • increasing demand for products and services in future.
Slovakia	• increasing awareness of your data
Slovenia	• increasing awareness of our data, • increasing the use of data in future, • getting ideas how to use data in new way, and • checking the data quality
Spain	• increasing awareness of our data, and • bringing new knowledge.
Sweden	• increasing awareness of our data, and • generating more business.
Switzerland	• increasing awareness of our data.

10. Conclusions

In an ideal world Europe would have an academic Spatial Data Infrastructure (SDI) under coordinated development closely allied to the SDI's being established in association with the EU INSPIRE directive (licensing permitting). However, while the European academic SDI comes into being (for example, in association with initiatives such as the AGILE, EuroSDR, OGC, European Persistent Geospatial Test-Bed for Research and Teaching[10]), more pragmatic solutions to data supply need to be considered.

EDINA believes that with a mutual willingness for NMCAs and academics to collaborate, it would be possible to put in place a pan-European system that would allow researchers, teachers and students across Europe the opportunity to benefit from easier access to data.

[10] http://sdi-testbed.eu/

For this to happen there is a need to organise the sharing of information about the initiatives, policies and procedures that are currently in place across Europe to help the Higher Education community access geospatial data. If the European NMCA network is prepared to share such experiences it may be possible to agree some common ground rules, and put in place reciprocal arrangements that will allow users at European Higher Education institutions the opportunity to work creatively with the rich geospatial data resources managed by the NMCAs.

This study has revealed that:

- There is a 'healthy' demand for NMCA data from the Higher Education community and consequently a latent, untapped market..
- There is demand for local reference data, at relatively large scales.
- This demand is also 'pan European', with many Higher Education users seeking to access data from countries other than the one in which they live and study or carry out research.
- The majority of the NMCAs surveyed had arrangements in place for Higher Education. However, for many this arrangement is the provision of data at a discount and/or free samples of data rather than an agreement for access to national coverage.
- The majority of users wanted access to data products with national coverage. Approximately 50% of the Higher Education users found gaining access to these data a problem – with the high cost, licensing and usage restrictions being the main barriers.
- The main data sets made available by the NMCAs are topographic data, aerial photography and historic maps. In some cases cadastre information is provided. However, there is a perception, by the Higher Education community, that many more types of data could be made available. This has the potential of leading to frustration especially when NMCAs are unable to meet requests for data they don't hold.
- Of the countries who responded, only four countries had national agreements in place: Denmark, Norway, Great Britain and Sweden.

There are many benefits for NMCA's to gain from taking the Higher Education market more seriously. It provides a potentially extensive, geo-literate and motivated user base. It can provide an opportunity to gather feedback on fitness for purpose of data products; innovative applications and uses as well as unearthing new business areas and applications. Finally, many academic users subsequently enter employment and thus are the customers of tomorrow. However, much more needs to be done to improve the availability of geospatial data for the Higher Education community both within and between countries.

11. Recommendations

- Future work should consider that the various types of data required are wide ranging and should form part of any agreement.
- Delivery mechanisms need to also be considered
- The NMCAs should carefully study well known examples, eg, Digimap in the UK, where the market for NMCA reference data has extended well beyond traditional disciplines, eg, Digimap has shown less than 20% of users of OS GB maps and data accessed through the service are not geographers
- Licences need to be flexible enough to allow users to do their business whether for teaching or research.
- Negotiating on an institution by institution basis is neither cost or time effective, national agreements are the way to go.

- Reciprocal licences are required for cross border access and sharing but also requires a European wide authentication and authorisation scheme to be in place.
- The academic sector has not received enough attention under INSPIRE – whether universities are designated public bodies in member states or not could be important. The importance of academia as users of the outcomes of INSPIRE needs to promoted to those leading INSPIRE at a European Level.
- Champions need to be found in each country and given assistance through a pan European body in getting national stakeholders together to thrash out a deal.
- Best practice from those countries that have national agreements and infrastructure in place need to be published for the use of others.
- The importance of access to geospatial data from NMCAs needs to be made clear to organisations such as the European Research Council and others.
- Organisations like EuroGeographics, AGILE, EuroSDR, SPARC Europe, etc, need to come together to push through change.

12. Next Steps

The most obvious next step is to organise a workshop with representatives of NCMA's and academic users to discuss the above recommendations. We would hope to progress the initiative with the aim of persuading NCMA's to make available more of their data products to the Higher Education community within their own country. Following on from this, we would hope that reciprocal arrangements could be made for access to data between member states across the European Academic Community.

13. Appendix – Country Reports

Detailed analysis was carried out for seven countries where there were sufficient responses from the User Survey to make the analysis worthwhile. In each case the pictures portrayed by the NMCA were contrasted with responses provided by the Higher Education Users from the same country. In addition, we sought the views of an independent observer, some one who was familar with both the NMCA and use of NMCA by researchers and students in thier country, to validate the research findings and add additional clarity and context. The following pages provided detailed country reports for:

- France
- Germany
- Great Britain
- Greece
- The Netherlands
- Spain
- Sweden

FRANCE Country Report

Survey Questions	Survey Answers		The independent observer told us: *No observer available*
	The NMCA in your country told us:	**The Higher Education users from your country told us:**	
Geospatial Data Demand			
How important is it for the Higher Education Community in your Country to have access to the geospatial data held by the NMCA in your country?	Your NMCA told us that they have special arrangements in place for providing geospatial data to the Education Community.	100% of the Higher Education users in your country, who responded to the survey, told us that it was important for them to have access to the geospatial data provided by the NMCA in their country.	***Does this seem about right?***
What is the demand for NMCA geospatial data from Higher Education users in your country?	Your NMCA told us they don't know how many requests for geospatial data they receive, per year, from the Higher Education community.	The Higher Education users, who responded to the survey, told us 50% of users download data more than 10 times a year. The remainder are not sure.	***Does this seem about right?***
Would Higher Education users in your country benefit from having access to geospatial data from NMCAs in other countries?	This question was not asked in the NMCA survey.	100% of the Higher Education users, who responded to the survey, said this would be very valuable.	***Do you agree?***
What is the demand for NMCA geospatial data from Higher Education users from other countries?	Your NMCA told us they receive request once every week from Higher Education users from other European countries.	The Higher Education users who requested geospatial data from the NMCA in your country came from: • Germany • UK • Spain • Portugal • Romania	***Do you have any idea why these countries would be interested in geospatial data from your NMCA?***
Geospatial Data Availability			
What geospatial data does the NMCA in your country provide?	Your NMCA told us: • They provided topographical data	The Higher Education users in your country, who responded to the survey, told us the NMCA provided: • Topographic data • Cadastral information	***Which list is the most accurate?***

	• Topographic data • Cadastral information • Aerial photography • Land use information • • They make all of their data available. • This is the most up to date data.	• Aerial photography • Land use information • Administrative units • Cadastral parcels • Transport networks • Hydrography • DTM/DEM • Protected sites	
Geospatial Data Accessibility			
Are there any issues associated with the supply of geospatial data from the NMCA to Higher Education users?	Your NMCA told us there had been no problems or issues in providing data to the Higher Education Community.	68% of the Higher Education users in your country, who responded to the survey, told us that it was either difficult or very difficult to access data from the NMCA. Higher Education users in your country said: • Data is expensive • Difficult to access • It is difficult to find and provision is very disorganised • There is a lick of consistency in spatial boundaries (even for political boundaries).	***Which perspective is most accurate?***
Who is responsible for championing better access to geospatial data for the Higher Education in your country?	Your NMCA told they are not sure who this would be.	The Higher Education users in your country told us: • There is a national body which represents colleges and/or universities; CNRS • It is role of each HE institution.	***Do you have an opinion?***
Geospatial Data Licensing			
What arrangements are in place to provide the Higher Education community with access to the geospatial data held by the NMCA?	Your NMCA told us: • They provide free sample geospatial data. • They offer price discounts.	The Higher Education users in your country, who responded to the survey, said the NMCA provides: • They offer site licences • Free sample geospatial data • Higher Education users have to pay the same price as everybody else • They offer price discounts	***Which perspective better reflects the licensing arrangements in your country*?**
Do the terms of the NMCA end user licence agreements with the	This question was not asked in the NMCA survey.	100% of the Higher Education users in your country, who responded to the survey, told us that the licence allowed them to use the geospatial data in the way	***Would you agree with this? Are there particular issues?***

NMCA allow Higher Education users to use the geospatial data the way they want to?		they needed.	
Are there any restrictions on how Higher Education users can use the geospatial data provided by the NMCA in your country?	Your NMCA told us: • The data should not be passed to a third party or commercial organisation. • There are publication restrictions on the data.	The Higher Education users in your country, who responded to the survey, told us that the main restrictions were: • The geospatial data must only be used in teaching and research. • The geospatial data must not be used for commercial purposes • The geospatial data must not be passed on to another organisation or individual. • The data can only be used by named individuals • The data may only be used by my department.	***Which view do you believe is more accurate?***

GREAT BRITAIN Country Report

Survey Questions	Survey Answers		The independent observer told us:
	The NMCA in your country told us:	**The Higher Education users from your country told us:**	
Geospatial Data Demand			
How important is it for the Higher Education Community in your country to have access to the geospatial data held by the NMCA in your country?	Your NMCA told us that they have special arrangements in place for providing geospatial data to the Education Community. This is through a national agreement with JISC and data is made available via EDINA and the Digimap service.	74% of the Higher Education users in your country, who responded to the survey, told us that it was important for them to have access to the geospatial data provided by the NMCA in their country.	***Does this seem about right?*** *Seems about right.*
What is the demand for NMCA geospatial data from Higher Education users in your country?	Your NMCA told us they receive between 100-499 requests for geospatial data per year from the Higher Education community.	The Higher Education users, who responded to the survey, told us 22% of users download data between 1 and 5 times a year. 14% of users download data between 6 and 10 times a year and 43% of users download data more than 10 times a year. The remainder are not sure or never download data.	***Does this seem about right?*** *I guess the figure from the NMCA represents direct requests to OS?*
Would Higher Education users, in your country, benefit from having access to geospatial data from NMCAs in other countries?	This question was not asked in the NMCA survey.	32% of the Higher Education users, who responded to the survey, said this would be very valuable.	***Do you agree?*** *Sounds high – we occasionally get requests for European data but not often*
What is the demand for NMCA geospatial data from Higher Education users from other countries?	Your NMCA told us they receive request once every few months from Higher Education users from other European countries.	The Higher Education users who requested geospatial data from the NMCA in your country came from: • The Czech Republic • France • Greece • Ireland • Netherlands. • Switzerland • Germany • Norway	***Do you have any idea why these counties would be interested in geospatial data from your NMCA?*** *Pan-European studies perhaps. Planning field trips abroad. Collaborative research with UK based partners.*
Geospatial Data Availability			

What geospatial data does the NMCA in your country provide?	Your NMCA told us: • They provided topographical data. • They make between 51% and 80% of their data available. • The reason some data is not made available is due to the IP restrictions in third party data.	The Higher Education users in your country, who responded to the survey, told us the NMCA provided: • Topographic data • Cadastral information • Aerial photography • Land use information • Historical data • Administrative units • Cadastral parcels • Postcode data • Transport networks • Hydrography • DTM/DEM • Protected sites	***Which list is the most accurate?*** *The two lists seems to differentiate what the NMCA makes available for free through Digimap and what products are available from a variety of national sources (not just OS).*
Geospatial Data Accessibility			
Are there any issues associated with the supply of geospatial data from the NMCA to Higher Education users?	Your NMCA told us there had been no problems or issues in providing data to the Higher Education Community.	57% of the Higher Education users in your country, who responded to the survey, told us that it was either easy or very easy to access data from the NMCA, with only 29% suggesting that it was difficult, or very difficult to access geospatial data. The reminder of users said it was neither easy nor difficult to access data. Higher Education users in your country said: • Without Digimap, prices are prohibitively expensive. • Mastermap data is not very informative • Restrictions on the size of OS map downloads are a problem. • The OS derived data license prevents using the data to compare with other organisations • Digimap access can sometimes be slow, especially Digimap Carto. • Lack of online access to high resolution topographic data (DTM) and aerial photography. • OS data is far too expensive even under the Digimap conditions. • Restrictions on what you can do with it and what	***Which perspective is most accurate?*** *Comments about lack of high resolution DTM and aerial imagery are true.* *Some statements clearly show a misunderstanding or confusion in the licensing terms.*

		you can publish are very restrictive and confusing. • There are no web service APIs to the data. I'd like to be able to overlay the data on Google earth and stream the data to the GIS on my desktop. • Sharing data with colleagues that has been derived from OS's data is not allowed. • Licence terms are for 1 year (sometimes but not always renewable) and the format of the digital datasets are not compatible for easy importing to GIS software (eg, Ordnance Survey MasterMap .gml into ArcGIS) • Licence terms are restrictive and confusing, especially. re data integration (as happens in most GIS work), sharing, publication, dissemination – eg, preparation of class datasets. • Extremely difficult to get some datasets, eg, Address Point (building attribute data), even for research.	
Who is responsible for championing better access to geospatial data for the Higher Education in your country?	Your NMCA told us it is the JISC Collections responsibility for negotiating access to geospatial data for the Higher Education community.	The Higher Education users in your country told us there is a national body which represents colleges and/or universities. They named this as being: JISC, EDINA, Digimap, MIMAS, INSPIRE.	***Do you have an opinion?*** *Should it be the JISC GWG?*
Geospatial Data Licensing			
What arrangements are in place to provide the Higher Education community with access to the geospatial data held by the NMCA?	Your NMCA told us data is available through a National agreement which caters for all Higher Education Institutions.	The Higher Education users in your country, who responded to the survey, said the NMCA provides: • They offer site licences (46.2%). • Data is available through a National Agreement (39%) • Data is available free of charge; for use in teaching and research (23.1%). • Free sample geospatial data (23%). • Higher Education users have to pay the same price as everybody else (8%). • They offer price discounts (8%).	***Which perspective better reflects the licensing arrangements in your country?*** *The NMCA view is correct for those institutions that sign up to the Digimap agreement, although clearly that has not reached everyone and leaves those outside of the agreement in a difficult position.*
Do the terms of the NMCA end user licence	This question was not asked in the NMCA survey.	31% of the Higher Education users in your country, who responded to the survey, told us that the licence	***Would you agree with this? Are there particular issues?***

agreements with the NMCA allow Higher Education users to use the geospatial data the way they want to?		allowed them to use the geospatial data in the way they needed.	*See the answers to the first question in 'Geospatial Data Accessibility' for a list of issues with the licence. Probably the most important is that it is restrictive and confusing which means people don't know what they're allowed to do.*
Are there any restrictions on how Higher Education users can use the geospatial data provided by the NMCA in your country?	Your NMCA told us: • The geospatial data can only be used for teaching and research. • The data may only be used and shared by authorised individuals. • There are publication restrictions on the data.	The Higher Education users in your country, who responded to the survey, told us that the main restrictions were: • The geospatial data must only be used in teaching and research. • The geospatial data must not be used for commercial purposes • The geospatial data must not be passed on to another organisation or individual. • The data can only be used by named individuals • The data is available for a limited time	***Would you agree with this? Are there particular issues?*** *Both are fairly accurate.*

GERMANY Country Report

Survey Questions	Survey Answers		The independent observer told us:
	The NMCA in your country told us:	**The Higher Education users from your country told us:**	
Geospatial Data Demand			
How important is it for the Higher Education Community, in your Country, to have access to the geospatial data held by the NMCA in your country?	Your NMCA told us that they have arrangements in place to support the demand for geospatial data from the Higher Education Community.	80% of the Higher Education users in your country, who responded to the survey, told us that it was important for them to have access to the geospatial data provided by the NMCA in their country.	***Does this seem about right?*** *Seems OK to me, additional to the national MCA arrangements there are sometimes additional ones for the various MCA on the 'Länder' level, as these are the data owners for topographic data of scale 1:25000. Only some Länder do offer the data free of charge for research purposes.*
What is the demand for NMCA geospatial data from Higher Education users in your country?	Your NMCA told us they receive between 1 to 99 requests for geospatial data per year from Higher Education users.	The majority of the Higher Education users, who responded to the survey, told us they request geospatial data between 1 and 5 times a year.	***Does this seem about right?*** *These might be the number of official requests but I would guess unofficial data exchanges (i,e. exchanges that are between university departments without doing a specific request to a NMCA) to be a of a higher number.*
Would Higher Education users, in your country, benefit from having access to geospatial data from NMCAs in other countries?	This question was not asked in the NMCA survey.	75% of the Higher Education users, who responded to the survey, said this would be very valuable.	***Do you agree?*** *I would agree, there are number of research projects with an European or even Global scope.*
What is the demand for NMCA geospatial data from Higher Education users from other countries?	Your NMCA told us they receive approximately one request per month from Higher Education users from other European countries.	The Higher Education users who requested geospatial data from the NMCA in your country came from: • The Czech Republic • Finland	***Do you have any idea why these counties would be interested in geospatial data from your NMCA?***

		• Italy • Netherlands	*Two countries are our direct neighbours, so there might be cross-border projects. For the others I do not know.*
Geospatial Data Availability			
What geospatial data does the NMCA in your country provide?	Your NMCA told us they provide: • Topographic data • Historical data • Administrative units This represents 100% of the geospatial data they hold and is the most recent geospatial data available.	The Higher Education users in your country, who responded to the survey, told us the NMCA provided: • Topographic data • Cadastral information • Aerial photography • Land use information • Historical data • Administrative units • Cadastral parcels • Postcode data • Transport networks • Hydrography • DTM/DEM • Protected sites	***Which list is the most accurate?*** *This depends a bit on the definition of 'topographic data', where the NMCA seems to have a quite inclusive view. However the list on the right includes data topics for which our Federal)NMCAis are not the owner nor maintains it (e.g. cadastral parcels, protected sites, transport networks).*
Geospatial Data Accessibility			
Are there any issues associated with the supply of geospatial data from the NMCA to Higher Education users?	Your NMCA said No.	60% of the Higher Education users in your country, who responded to the survey, told us that it was either difficult, or very difficult to access geospatial data from the NMCA. The Higher Education users in your country said: Geospatial data costs are too high; there is too much bureaucracy; and geospatial data is sometimes of poor quality.	***Which perspective is most accurate?*** *I tend to support my colleagues in Higher Education: it would be great to have geospatial data free of charge and without any overcomplicated licences for our teaching and research tasks*
Who is responsible for championing better access to geospatial data for the Higher Education in your country?	Your NMCA told us it is the responsibility of each individual college, university or research institute.	The Higher Education users in your country told us it is the responsibility of each individual college, university or research institute.	***Do you have an opinion?*** *This reflects the current state, open access for Higher Education users offered would be an ideal solution and prevent us from having to negotiate multi-level agreements.*
Geospatial Data Licensing			

Germany Country Report

What arrangements are in place to provide the Higher Education community with access to the geospatial data held by the NMCA?	Your NMCA said they offer price discounts (eg, 50% off the commercial price) if the user can prove they are from a Higher Education institution	The Higher Education users in your country, who responded to the survey, said the NMCA provides: • Free sample geospatial data. • Offer price discounts. • Offer site licences • There are national agreements in place for all Higher Education institutions.	***Which perspective better reflects the licensing arrangements in your country?*** *The 'Higher Education one': see above. This is dependent on the arrangements applied at the Länder lever.*
Do the terms of the NMCA end user licence agreements with the NMCA allow Higher Education users to use the geospatial data the way they want to?	This question was not asked in the NMCA survey.	57% of the Higher Education users in your country, who responded to the survey, told us that the licence allowed them to use the geospatial data in the way they needed.	***Would you agree with this? Are there particular issues?*** *I would agree.*
Are there any restrictions on how Higher Education users can use the geospatial data provided by the NMCA in your country?	Your NMCA told us the geospatial data they make available to the Higher Education community should only be used for: • Non commercial research projects. • Training (education) purposes.	The Higher Education users in your country, who responded to the survey, told us that the main restrictions were: • The geospatial data must only be used in teaching and research. • The geospatial data must not be used for commercial purposes • The geospatial data must not be passed on to another organisation or individual.	***Which view do you believe is more accurate?*** *The 'Higher Education one'.*

GREECE Country Report

Survey Questions	Survey Answers		The independent observer told us:
	The NMCA in your country told us:	**The Higher Education users from your country told us:**	
Geospatial Data Demand			
How important is it for the Higher Education Community in your Country to have access to the geospatial data held by the NMCA in your country?	Your NMCA told us that they consider each request for data on a case by case basis.	75% of the Higher Education users in your country who responded to the survey told us that it was important for them to have access to the geospatial data provided by the NMCA in their country.	***Does this seem about right?*** *It is absolutely right that access to the geo data provided by the NMCAs to the Higher Education users is important. It is also true that the NMCAs consider each request case by case; the problem is that in most cases their response to the requests is negative!!*
What is the demand for NMCA geospatial data from Higher Education users in your country?	Your NMCA told us they receive between 100-499 requests for geospatial data per year from the Higher Education community.	The Higher Education users, who responded to the survey, told us 33% of users download data between 1 and 5 times a year. The remainder are not sure or never download data.	***Does this seem about right?*** *I believe that the term "download" is not appropriate here. The real downloading facilities available are very limited and thus nobody can claim that he/she downloads data. If functional downloading facilities were in place accompanied by the relevant licensing policies, both the number of requests and the number downloads would be different.* *It is promising though that the implementation of the INSPIRE Directive will put an end to this..*
Would Higher Education users in your country benefit from having access to geospatial data from NMCAs in other countries?	This question was not asked in the NMCA survey.	50% of the Higher Education users, who responded to the survey, said this would be very valuable.	***Do you agree?*** *There is no doubt about that!!*

What is the demand for NMCA geospatial data from Higher Education users from other countries?	Your NMCA told us they receive request once every few months from Higher Education users from other European countries.	The Higher Education users who requested geospatial data from the NMCA in your country came from: • The UK	***Do you have any idea why these counties would be interested in geospatial data from your NMCA?*** *I am sorry but I have no idea.*
Geospatial Data Availability			
What geospatial data does the NMCA in your country provide?	Your NMCA told us they provide: • Aerial photography • Historical map data This is less than 20% of their data catalogue. The access to certain data sets is restricted because the data contain sensitive information. The age of the data, made available, depends on the confidentiality of the data set.	The Higher Education users in your country, who responded to the survey, told us the NMCA provided: • Topographic data • Cadastral information • Aerial photography • Administrative units • Cadastral parcels • Postcode data • Transport networks • Hydrography • DTM/DEM • Protected sites	***Which list is the most accurate?*** *There is a misunderstanding here: The geospatial information is not produced/provided/coordinated by a single agency.* *The content of the second column is right as far as the HEMCO is concerned. Other geospatial data categories are handled by other agencies like the Army Map Service, the Statistical Service, the Hellenic Navy Hydrographic Service etc. In this sense the content of the third column is right as well.*
Geospatial Data Accessibility			
Are there any issues associated with the supply of geospatial data from the NMCA to Higher Education users?	Your NMCA told us there had been no problems or issues in providing data to the Higher Education Community.	50% of the Higher Education users in your country, who responded to the survey, told us that it was difficult to access geospatial data • Data costs are expensive. • In Greece it is not clear 'who' the national mapping agency is, several agencies which provide data. • The data is not on-line • Most of the time we have to create our own data.	***Which perspective is most accurate?*** *Considering my comments to the previous survey question it is obvious that Higher Education users perspective is more accurate.*
Who is responsible for championing better	Your NMCA told us they would need to negotiate	• The Higher Education users in your country told us it is the responsibility of each individual Higher	***Do you have an opinion?***

access to geospatial data for the Higher Education in your country?	directly with each Higher Education institution.	Education institution.	*My opinion is that there is a need for a national policy on the provision of geospatial data to the Higher Education Community. The responsibility lies with all those involved. The Higher Education Community has no problem in taking the lead for this the problem is that there is a kind of concern given the rather negative experiences we had so far.*
Geospatial Data Licensing			
What arrangements are in place to provide the Higher Education community with access to the geospatial data held by the NMCA?	Your NMCA told us that, depending on the amount of data requested, a contract would need to be signed between the end user and the Institute.	The Higher Education users in your country, who responded to the survey, said the NMCA provides: • Higher Education users have to pay the same price as everyone else (33%). • Free sample geospatial data (33%). • They offer price discounts (33%).	***Which perspective better reflects the licensing arrangements in your country?*** *Certain geospatial data requested for utilization in Diploma/MSc theses, is provided free of charge. The process requires a statement by the supervisor of the research activity indicating the purpose.* *For data required for research some agencies offer discounts others not.*
Do the terms of the NMCA end user licence agreements with the NMCA allow Higher Education users to use the geospatial data the way they want to?	This question was not asked in the NMCA survey.	67% of the Higher Education users in your country, who responded to the survey, told us that the licence allowed them to use the geospatial data in the way they needed.	***Would you agree with this? Are there particular issues?*** *The data must be used for research purposes only, otherwise royalties must be paid.*
Are there any restrictions on how Higher Education users can use the geospatial data provided by the NMCA in your country?	Your NMCA told us: • The geospatial data is for personal use only. • There are publication restrictions on the data. • The geospatial data must not be passed to a third party or commercial	The Higher Education users in your country, who responded to the survey, told us that the main restrictions were: • The geospatial data must only be used in teaching and research. • The geospatial data must not be used for commercial purposes • There are no restrictions we can use the data as	***Which view do you believe is more accurate?*** *To me both responses are similar/ complementary and indicate the restrictions imposed on data use. NMCAs consider geospatial datasets*

	organisation. • The institute retains IPR to the data • The geospatial data must not be reproduced.	we wish.	*as their property and protect their IPRs in any possible way.*

Do you have any other comments?

Higher Education users (faculty members, researchers & students) face a number of problems in accessing and using geospatial data in Greece. This is mainly due to the fact that there is no national policy for licensing of geospatial data to Higher Education users.

SPAIN Country Report

Survey Questions	Survey Answers		The independent observer told us:
	The NMCA in your country told us:	**The Higher Education users from your country told us:**	
Geospatial Data Demand			
How important is it for the Higher Education Community, in your Country, to have access to the geospatial data held by the NMCA in your country?	Your NMCA told us that they were not interested in providing data to the Higher Education Community	35% of the Higher Education users in your country, who responded to the survey, told us that it was important for them to have access to the geospatial data provided by the NMCA in their country.	***Does this seem about right?*** *Regarding the NMCA response we don't completely agree: since 3 or 4 years ago, the Spanish NMCS are making efforts to open and provide geospatial data, especially for educational uses.*
What is the demand for NMCA geospatial data from Higher Education users in your country?	Your NMCA told us they were not sure how many requests they receive for geospatial data per year from Higher Education Users. They also told us that The Cadastral Virtual Office gives cost-free, easy, rapid, 24-hour, 7 days a week access to all non protected cadastral data and permit down load cadastral information, literal and graphic via the internet totally free of charge. (wms, wfs, dxf…etc).	The Higher Education users, who responded to the survey, told us 33% of users download data between 1 and 5 times a year. 33% of users download data between 6 and 10 times a year and 33% of users download data more than 10 times a year.	***Does this seem about right?*** *About the comment of what Cadastral Virtual Office provides we could clarify that it provides only cadastral information (wms) not cadastral data (nor wfs, dxf). Under especially request (by agreement) they can provide geospatial data.* *We agree with Higher Education users answer.*
Would Higher Education users, in your country, benefit from having access to geospatial data from NMCAs in other countries?	This question was not asked in the NMCA survey.	100% of the Higher Education users, who responded to the survey, said this would be very valuable.	***Do you agree?*** *Yes*
What is the demand for NMCA geospatial data from Higher Education users from other countries?	Your NMCA told us they receive request once every few months from Higher Education users from other European countries.	The Higher Education users who requested geospatial data from the NMCA in your country came from: • Netherlands. • Germany	***Do you have any idea why these counties would be interested in geospatial data from your NMCA?***

		• The UK	*Sorry, we don't. It might be for specific projects or research which need geospatial data from our country.*
Geospatial Data Availability			
What geospatial data does the NMCA in your country provide?	Your NMCA provided us with no information on this topic.	The Higher Education users in your country, who responded to the survey, told us the NMCA provided: • Topographic data • Cadastral information • Aerial photography • Land use information • Historical data • Administrative units • **Cadastral parcels** • Postcode data • Transport networks • Hydrography • DTM/DEM • Protected sites • Real time seismic data	***Which list is the most accurate?*** *The list provided by the Higher Educational users is right.*
Geospatial Data Accessibility			
Are there any issues associated with the supply of geospatial data from the NMCA to Higher Education users?	Your NMCA provided us with no information on this topic.	16% of the Higher Education users in your country, who responded to the survey, told us that it was either difficult, or very difficult to access geospatial data from the NMCA. 50% said that it was neither easy nor difficult and 36% said it was very easy to access geospatial data. The Higher Education users in your country said: • The Instituto Geográfico Nacional won't allow commercial use of the data, NOR redistribution of the by-products of the data processing which could then have the possibility of being linked to other data and allow a commercial use. • The Cadastral Office of Spain is another matter - they will keep their cadastral data completely locked down by the time being. • There are too many regional or local agencies that overlap and seem not to collaborate. Some	***Which perspective is most accurate?***

		regional services apply really high prices whereas others provide data with no cost or with a really low cost	
Who is responsible for championing better access to geospatial data for the Higher Education in your country?	Your NMCA told us it is the responsibility of each individual college, university or research institute.	The Higher Education users in your country told us it is the responsibility of each individual college, university or research institute.	***Do you have an opinion?*** *We agree with Higher Educational users: everyone, every project has to find out how access to geospatial data. There isn't one organisation who takes care of this..*
Geospatial Data Licensing			
What arrangements are in place to provide the Higher Education community with access to the geospatial data held by the NMCA?	Your NMCA provided us with no information on this topic. However, they did tell us that The Cadastral Virtual Office gives cost-free, easy, rapid, 24-hour, 7 days a week access to all non protected cadastral data and permit down load cadastral information, literal and graphic via internet totally free of charge. (wms, wfs, dxf…etc).	The Higher Education users in your country, who responded to the survey, said the NMCA provides: • Data is available free of charge for teaching and research (83.3%). • They offer site licences (33%). • HE users have to pay the same price as everybody else (16%). • Free sample geospatial data (16%). • HE users have to pay the same price as everybody else (16%). • They offer price discounts (16%).	***Which perspective better reflects the licensing arrangements in your country?*** *We agree with the majority response: data is available free of charge for use in teaching and research. Apart of that, local and regional agencies have their own data policy. It can make sense to the other minority response.*
Do the terms of the NMCA end user licence agreements with the NMCA allow Higher Education users to use the geospatial data the way they want to?	This question was not asked in the NMCA survey.	57% of the Higher Education users in your country, who responded to the survey, told us that the licence allowed them to use the geospatial data in the way they needed.	***Would you agree with this? Are there particular issues?*** *We agree only when they refer to educational and research purposes, not commercial use or transfer the information to others.*
Are there any restrictions on how Higher Education users can use the geospatial data provided by the NMCA in your country?	Your NMCA provided us with no information on this topic.	The Higher Education users in your country, who responded to the survey, told us that the main restrictions were: • The geospatial data must only be used in teaching and research. • The geospatial data must not be used for commercial purposes • The geospatial data must not be passed on to another organisation or individual.	***Which view do you believe is more accurate?*** *We completely agree with Higher Education users response.*

THE NETHERLANDS Country Report

Survey Questions	Survey Answers		The independent observer told us:
	The NMCA in your country told us:	**The Higher Education users from your country told us:**	
Geospatial Data Demand			
How important is it for the Higher Education Community, in your Country, to have access to the geospatial data held by the NMCA in your country?	Your NMCA told us that all Higher Education requests for geospatial data are passed to a third party.	67% of the Higher Education users in your country, who responded to the survey, told us that it was important for them to have access to the geospatial data provided by the NMCA in their country.	**Does this seem about right?** *Yes*
What is the demand for NMCA geospatial data from Higher Education users in your country?	Your NMCA did not answer this question.	The Higher Education users, who responded to the survey, told us 36% of users download data between 1 and 5 times a year. 7% of users download data between 6 and 10 times a year and 14% of users download data more than 10 times a year. The remainder told us it was different each year.	**Does this seem about right?** *It depends very much on the user. If downloading means using the data, than I think the demand is higher. Consider that the same data is used many times over the year in all kind of courses for many years.*
Would Higher Education users, in your country, benefit from having access to geospatial data from NMCAs in other countries?	This question was not asked in the NMCA survey.	80% of the Higher Education users, who responded to the survey, said this would be very valuable.	**Do you agree?** *Access to up-to-date data would be beneficial.*
What is the demand for NMCA geospatial data from Higher Education users from other countries?	Your NMCA did not answer this question.	The Higher Education users who requested geospatial data from the NMCA in your country came from: • France • Germany • Norway • United Kingdom	**Do you have any idea why these counties would be interested in geospatial data from your NMCA?** *As they are neighbouring countries I would say yes (Belgium is missing) The situation is different at our institute. Students from the developing countries who study at ITC use data from the NMCA in their projects for lack of or no access to data.*
Geospatial Data Availability			

What geospatial data does the NMCA in your country provide?	Your NMCA did not answer this question.	The Higher Education users in your country, who responded to the survey, told us the NMCA provided: • Topographic data • Cadastral information • Aerial photography • Land use information • Historical data • Administrative units • Cadastral parcels • Postcode data • Transport networks • Hydrography • DTM/DEM • Protected sites	***Which list is the most accurate?*** *No answer by NMCA. There are other institutions that provide transport networks, DTM/DEM, Postcode data, hydrography, protected sites, landuse info, etc.*
Geospatial Data Accessibility			
Are there any issues associated with the supply of geospatial data from the NMCA to Higher Education users?	Your NMCA did not answer this question.	47% of the Higher Education users in your country, who responded to the survey, told us that it was either difficult, or very difficult to access geospatial data from the NMCA. 7% said it was very easy to access geospatial data and the remainder of users said it was neither easy nor difficult to access information. The Higher Education users in your country said: • it is difficult to find detailed information (i.e. the scale is not detailed enough) and it is difficult to compare the information. The coordinates or the projection differs too much. In short the information is not exact and accurate enough. • It is really difficult to find geological information. • Datasets of the national mapping and cadastral agency are in general far too expensive for us. Therefore we use cheaper or even free datasets from other sources (commercial companies, national statistical agency, and European statistical agency).	***Which perspective is most accurate?*** *Supply of data for educational purposes is nowadays more easy, but it's an advantage to have a contact person at the NMCA. All kind of agreements make access difficult. It's not possible to download the data through a geoportal.* *Lower authorities (water agencies, municipalities, etc) and private companies offer similar data and some are more up-to-date.*

		• For every project, we have to acquire the data and get permission again, which costs a lot of time and troubles. And sometimes we can only use the data for a limited time, which is cumbersome since research and in particular publishing on research always continue when a project is already finished. • Data are often old or incomplete.	
Who is responsible for championing better access to geospatial data for the Higher Education in your country?	Your NMCA did not answer this question.	The Higher Education users in your country told us: • There is a national body which represents colleges and/or universities. DANS (Data Archives Network Services), a branch of the ministry of Education, located in The Hague. But it is a new service. • It is the responsibility of each individual college, university or research institute. • The professional bodies for the different subject areas (for example geography, surveying, planning etc) are responsible for this.	***Do you have an opinion?*** *DANS is a good initiative, but the data are not up-to-date.*
Geospatial Data Licensing			
What arrangements are in place to provide the Higher Education community with access to the geospatial data held by the NMCA?	Your NMCA did not answer this question.	The HE users in your country, who responded to the survey, said the NMCA provides: • Data is available free of charge; for use in teaching and research (25%). • Data is available through a national agreement (25%) • They offer site licences (16%). • HE users have to pay the same price as everybody else (16%). • HE users have to pay the same price as everybody else (16%). • They offer price discounts (25%). The national agreement has only just been put in place and several users do not believe it is available for all HE institutions. It also does not cover the use of data for publication.	***Which perspective better reflects the licensing arrangements in your country?*** *Higher education users usually don't have to pay the full price, some data are free of charge (e.g. via DANS).*

The Netherlands Country Report

Do the terms of the NMCA end user licence agreements with the NMCA allow Higher Education users to use the geospatial data the way they want to?	This question was not asked in the NMCA survey.	62% of the Higher Education users in your country, who responded to the survey, told us that the licence allowed them to use the geospatial data in the way they needed.	***Would you agree with this? Are there particular issues?*** *License agreements are not always transparent.*
Are there any restrictions on how Higher Education users can use the geospatial data provided by the NMCA in your country?	Your NMCA did not answer this question.	The HE Users in your country, who responded to the survey, told us that the main restrictions were: • The geospatial data must only be used in teaching and research. • The geospatial data must not be used for commercial purposes • The geospatial data must not be passed on to another organisation or individual. • The data can only be used by a named individual. • The use of the data is time limited.	***Which view do you believe is more accurate?*** *The restrictions mentioned are correct.*

SWEDEN Country Report

Survey Questions	Survey Answers		The independent observer told us:
	The NMCA in your country told us:	**The Higher Education users from your country told us:**	
Geospatial Data Demand			
How important is it for the Higher Education Community, in your Country, to have access to the geospatial data held by the NMCA in your country?	Your NMCA told us that they have special arrangements in place for providing geospatial data to the Education Community. This is through a national agreement.	100% of the Higher Education users in your country, who responded to the survey, told us that it was important for them to have access to the geospatial data provided by the NMCA in their country.	***Does this seem about right?*** *Yes*
What is the demand for NMCA geospatial data from Higher Education users in your country?	Your NMCA told us they receive over 5000 request from the Higher Education community per year.	The Higher Education users, who responded to the survey, told us 40% of users download data between 1 and 5 times a year and 60% of users download data more than 10 times a year.	***Does this seem about right?*** *Yes*
Would Higher Education users, in your country, benefit from having access to geospatial data from NMCAs in other countries?	This question was not asked in the NMCA survey.	100% of the Higher Education users, who responded to the survey, said this would be very valuable.	***Do you agree?*** *Yes*
What is the demand for NMCA geospatial data from Higher Education users from other countries?	Your NMCA told us they receive request once every few months from Higher Education users from other European countries.	The Higher Education users who requested geospatial data from the NMCA in your country came from: • Norway	***Do you have any idea why these counties would be interested in geospatial data from your NMCA?*** *Might be Swedish students on exchange.*
Geospatial Data Availability			
What geospatial data does the NMCA in your country provide?	Your NMCA told us: • They provided: o Topographical data. o Cadastral information o Aerial photography o Land use information	The Higher Education users in your country, who responded to the survey, told us the NMCA provided: • Topographic data • Cadastral information • Aerial photography • Land use information • Historical data	***Which list is the most accurate?*** *The NMCA is more accurate, but it miss DTM/DEM.*

	o Historical data • They make between 51% and 80% of their data available. • The data they make available is the most recent. • The reason some data is not made available is due to either lack of demand or the sensitivity of the data.	• Administrative units • Cadastral parcels • Postcode data • Transport networks • Hydrography • DTM/DEM • Protected sites	
Geospatial Data Accessibility			
Are there any issues associated with the supply of geospatial data from the NMCA to Higher Education users?	Your NMCA chose not to answer this question.	80% of the Higher Education users in your country, who responded to the survey, told us that it was either easy or very easy to access data from the NMCA. The reminder of users said it was neither easy nor difficult to access data. Higher Education users in your country said: • The monthly limit on the amount of data you can download is a problem. • The licence restricts co-operation with other organisations. • The web portal is clumsy. • There is limited historical data available and it is expensive.	***Which perspective is most accurate?*** *The one from HE.*
Who is responsible for championing better access to geospatial data for the Higher Education in your country?	Your NMCA told they were not sure who would do this.	• The Higher Education users in your country told us there is a national body which represents colleges and/or universities. They also told us that it is the responsibility of each individual Higher Education Institution.	***Do you have an opinion?*** *Formally it is the Royal Library (which represents all colleges and universities).*
Geospatial Data Licensing			

What arrangements are in place to provide the Higher Education community with access to the geospatial data held by the NMCA?	Your NMCA told us data is available through a National agreement which caters for all Higher Education Institutions. This has been in place 6 years. They also offer • 80% price discounts for data sold through their reseller network. • Free sample data sets.	The Higher Education users in your country, who responded to the survey, said the NMCA provides: • Data is available through a National Agreement • Data is available free of charge; for use in teaching and research • They offer price discounts	***Which perspective better reflects the licensing arrangements in your country*?** *Free data through national agreement (up to certain limits)*
Do the terms of the NMCA end user licence agreements with the NMCA allow Higher Education users to use the geospatial data the way they want to?	This question was not asked in the NMCA survey.	80% of the Higher Education users in your country, who responded to the survey, told us that the licence allowed them to use the geospatial data in the way they needed.	***Would you agree with this? Are there particular issues*?** *There are some restrictions, for instance the allowed volume of data to be downloaded. Also, compliance with OGC specifications are lacking*
Are there any restrictions on how Higher Education users can use the geospatial data provided by the NMCA in your country?	Your NMCA told us: • The geospatial data can only be used for teaching and research. • The data should not be passed to a third party or commercial organisation. • There are publication restrictions on the data.	The Higher Education users in your country, who responded to the survey, told us that the main restrictions were: • The geospatial data must only be used in teaching and research. • The geospatial data must not be used for commercial purposes • The geospatial data must not be passed on to another organisation or individual. • There is a quota set for the amount of data that can be downloaded each month.	***Which view do you believe is more accurate?*** *The one by HE*