

## 6. Key GI Players in Europe

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### 6.1 INTRODUCTION

The purpose of this Chapter is to provide additional material that need to be considered in relation to the development of a European strategy for GI. The previous Chapters have demonstrated the high level of attention given by many governments across Europe and its immediate neighbours to the contribution of GI to good governance, and economic, and social developments. This Chapter builds on three sets of studies commissioned by GINIE to get a better understanding of the key players in the field.

Section 6.2 focuses on the main organisations in the public and private sectors that contribute to the GI economy in Europe. The survey was undertaken by Mark Probert and covers the key market players in 29 European countries including Turkey. The individual country reports are included in the full report by Mark, available from the GINIE web site, while this Section only includes the analysis of the larger pan-European players and the overall market trends.

Section 6.3 focuses on the National GI Associations, and is the result of a survey undertaken for GINIE by Anton Wolfkamp. The importance of NGIAs for capacity building has already been discussed in Chapter 3, and the survey by Anton covered all the European countries. His full report is available from the GINIE web site, while this Section reports the key findings, based on his report NGIAs in Europe: Analysis and Capacity Building.

Section 6.4 shifts the focus on the pan-European associations, building on another survey conducted by Anton for GINIE in August 2003. The analysis clearly shows the wide breadth of organisations with a stake in the development of GI in Europe, and provides an important input into the GINIE strategy.

## 6.2 PAN-EUROPEAN GI MARKET PLAYERS

One of the key industry sources for GI market intelligence is [Daratech Inc.](#) Daratech is a market research and technology assessment firm that has specialised in CAD/CAM, CAE, EDM/PDM, CIM, plant design/plant management automation, GIS and computer graphics since 1979. Daratech has also covered the GI and GIS market in particular since 1989 with an annual subscription based study entitled *GIS Markets and Opportunities*. Daratech published a timely press release<sup>49</sup> about the current GI market during the course of this key players study. The data relates to GIS “core-business” which again emphasises the importance of understanding the definition of the market. Unfortunately however, most of the data is global rather than dealing with Europe specifically (many global GI players aggregate Europe, Middle East and Africa as a market), but several trends and issues can be discerned and are very relevant. For example, the market for GIS appears to be growing. According to Daratech’s forecast total global GIS core-business revenue for 2003 will grow 8% to €1.6 billion in 2003, compared to a 2.4% growth (to €1.46 billion in core-business revenues) in 2002. Core-business revenue includes software, hardware, services and data products.

### 6.2.1 Software

According to Daratech, software comprised more than two-thirds (67%) of the GIS pie in 2002, with revenues from GIS software vendors reaching €1.0 billion. Leading the market in software revenues were Environmental Systems Research Institute Inc (ESRI) and Intergraph Corporation. Together, the two companies accounted for nearly half of the industry’s total software revenues. This trend appears to correlate with the GINIE key players survey findings although the latter are by no means the result of any rigorous quantitative assessment. Other software leaders in 2002 from the Daratech report included Autodesk, Inc, GE Network Solutions, Leica Geosystems GIS and Mapping Division, MapInfo Corporation, IBM Corporation’s GIS Business Unit, and SICAD Geomatics GmbH & Co (mentioned in country sections of the key players report). To keep these data in perspective one must bear in mind the comments made in the assumptions section of this report regarding the definition of the GI market.

<sup>49</sup> [www.daratech.com/gis](http://www.daratech.com/gis)

During the course of the GINIE key players survey ESRI were able to provide very helpful information concerning the GI market in Europe<sup>50</sup>. Approximately 25% of ESRI worldwide software revenue comes from Europe (ESRI software revenue mentioned in the Daratech report for 2001 is \$340m, which represented about 36% of the total GIS industry). This amount is “net” to ESRI however, so the actual end-user spending would be substantially higher. The European distributors also have an income from services, training and application work. ESRI business partners are very active in Europe and will add substantially to the total GI revenue. ESRI estimates that the total end-user spending in Europe (Western and Eastern) was around €141 Million in 2002 of which it believes it has around a 50-80% share. In terms of employment ESRI distributors are responsible for employing around 800 people in Europe (with another 2,000 in the USA). Although there are only eight ESRI distributors listed in the Trade Directory annexed to this report there are in fact distributors in *all* European countries. They are each locally registered and owned companies i.e. ESRI-UK, ESRI-Sweden, ESRI-Italia, etc. are local companies.

Apart from ESRI the other key player in the software sector that seemed to be mentioned most frequently in the GINIE survey were [Autodesk](#), [Bentley](#), [Intergraph](#), [MapInfo](#), and [Smallworld](#) (GE Network Solutions). Autodesk claims to be the world's market leader in CAD, and with Autodesk Map and the Internet GIS Autodesk MapGuide the company claims to have over 2 million users worldwide. The Daratech report index provides a good list of global “key player” software vendors, although not all of these will have a strong European presence:

Table 6.1: Key Software vendors in the GI field

APIC SA	IBM
Autodesk	Intergraph Corporation
Auto-Trol Technology (Canada) Ltd	Laser-Scan
Byers Engineering Company	Logica Plc
C.H. Guernsey & Co	MapInfo Corporation
Cadcorp	Mincom, Inc. (USA)
ECS (Exploration Computer Services)	Ness Technologies
Enghouse Systems Limited	PCI Geomatics
ERDAS, LLC d/b/a Leica Geosystems GIS	Safe Software Inc
ESRI (Environmental Systems Research Institute) GenaWare, Inc	SICAD Geomatics GmbH & Co
GE Network Solutions	Syncline, Inc

<sup>50</sup> Information courtesy of Frank Holsmuller, ESRI-Europe and Nick Chapallaz, ESRI UK

GeoConcept SA	Techbase International, Ltd
GIRO Inc	Tekla Corporation
Hansen Information Technologies	Tele Atlas, Inc
	Terra-Mar Resource Information Services, Inc

The following list indicates (global) web-based mapping software vendors:

Table 6.2: Web-based Mapping vendors

Apic ( <a href="http://www.apic-sa.com">http://www.apic-sa.com</a> )	Laser-Scan ( <a href="http://www.lsl.co.uk">http://www.lsl.co.uk</a> )
Autodesk ( <a href="http://www.autodesk.com">http://www.autodesk.com</a> )	LizardTech ( <a href="http://www.lizardtech.com">http://www.lizardtech.com</a> )
Bentley Systems ( <a href="http://www.bentley.com">http://www.bentley.com</a> )	MapInfo ( <a href="http://www.mapinfo.com">http://www.mapinfo.com</a> )
Byers Engineering Co ( <a href="http://www.byers.com">http://www.byers.com</a> )	MetaMAP ( <a href="http://www.metamapgis.com">http://www.metamapgis.com</a> )
Cadcorp ( <a href="http://www.cadcorp.co.uk">http://www.cadcorp.co.uk</a> )	MicroImages ( <a href="http://www.microimages.com">http://www.microimages.com</a> )
CubeWerx ( <a href="http://www.cubewerx.com">http://www.cubewerx.com</a> )	PCI Geomatics ( <a href="http://www.pcigeomatics.com">http://www.pcigeomatics.com</a> )
Earth Resource Mapping ( <a href="http://www.ermapper.com">http://www.ermapper.com</a> )	SICAD Geomatics ( <a href="http://www.sicad.de">http://www.sicad.de</a> )
ESRI ( <a href="http://www.esri.com">http://www.esri.com</a> )	SINTEF ( <a href="http://www.sintef.no/">http://www.sintef.no/</a> )
Geodan ( <a href="http://www.geodan.nl">http://www.geodan.nl</a> )	Smallworld ( <a href="http://www.gepower.com">www.gepower.com</a> )
GeoMicro ( <a href="http://www.geomicro.com">http://www.geomicro.com</a> )	Soft Reality ( <a href="http://www.softreality.com">http://www.softreality.com</a> )
Intergraph ( <a href="http://www.intergraph.com">http://www.intergraph.com</a> )	Star Informatic ( <a href="http://www.star.be/">http://www.star.be/</a> )
IONIC Software ( <a href="http://www.ionicsoft.com">http://www.ionicsoft.com</a> )	Sysdeco GIS ( <a href="http://www.gis.sysdeco.com/">http://www.gis.sysdeco.com/</a> )

Where does one draw the boundary of the GI software market though? As mentioned in the opening paragraphs of this report the edges of the definition of GI are getting more and more blurred. **Oracle** (<http://otn.oracle.com/>) is world market leader for databases. Its **Oracle9i** is nowadays considered to be a “spatial database”. No-one in the GINIE survey mentioned Oracle as a key player but its software is becoming more and more common as an element in an “enterprise solution”. As database technology develops it is incorporating more and more GI capability to keep up with developers demands – features such a topology management, raster data management, and faster spatial indexing are also helping to push the database software into more and more application areas.

Founded in 1997, and based in Dublin Ireland (but with offices in Washington DC, Chicago, San Diego, the UK and Australia) **eSpatial** ([www.espatial.com](http://www.espatial.com)), has developed a **suite of products** to integrate the spatial advantages of Oracle into the wider IT infrastructure. It claims to be a world

leader in on-line spatial processing systems. eSpatial solutions are already in place with a number of key clients, including several national governments, and significant utility and transport companies including UK Railtrack and the Electricity Supply Board of Ireland. In addition to its obvious close relationship with Oracle, eSpatial has partners that include some of the largest system integrators in the world.

No-one in the survey mentioned **Safe Software Inc** ([www.safe.com](http://www.safe.com)) either, although since its foundation 10 years ago it has become the world's leading supplier of spatial data translation software. It provides software solutions that deliver seamless data format translation for organisations that need to access and manipulate GIS and CAD data in multiple data formats. In the medium to longer term there will inevitably be greater interoperability between GI applications in Europe from developments such as OGC, EuroGeographics EuroSpec and initiatives such as INSPIRE. In the shorter term however many organisations will rely on software such as Safe for data format translation. In our search for the boundaries of GI software we could even mention **Microsoft** – as the geographical element becomes more and more integrated into “standard” office software the GI definition becomes more blurred – it is possible to make simple maps from tabular data in Microsoft Excel for example. You can create simple choropleth, chart and dot density maps using data organised by country, state or region – is that GI software? Microsoft is getting into the GI product market with software such as AutoRoute (Europe), Streets and Trips (USA), and Map Point - is Microsoft therefore a key player?

Another undoubted key GI player in Europe, and globally, is the **Open GIS Consortium (OGC)** ([www.opengis.org](http://www.opengis.org)). This organisation could also be included under the data, or perhaps even services sections also. OGC is a global organisation “dedicated to promoting consensus development and application of open commercial specifications worldwide”. For the GI sector this means facilitating the creation of a set of standards that enable GI data to be shared more easily in an interoperable IT infrastructure. Its principles are therefore central to the long term development of INSPIRE, EuroSpec, and a European SDI. To help accomplish its global mission, OGC has established a not for profit subsidiary, OGC (Europe) Limited (OGCE) to facilitate programs with European Commission Agencies and European members of the OGC. The OGC website lists a number of important activities in Europe that are helping to develop the concept of interoperability, for example:

- OGCE is working with the State Chancellery of Northrhine-Westfalia (NRW) to help develop a pilot project for information dissemination involving the state, a number of city municipalities and their private sector partners;

- OGCE has been instrumental in promoting standards convergence with ISO/TC 211, the de jure standards organisation addressing spatial standards (<http://www.statkart.no/isotc211/>);
- Since June 2001 OGCE has partnered with EUROGI (the European coordinator of national geo-information associations) and the European Joint Research Centre (JRC) at Ispra, Italy (represented by Institute for Environmental Sustainability) to establish a new framework to overcome barriers to information exploitation.

## 6.2.2 Hardware

Hardware, a declining component of core-business revenues for many years, again accounted for just 5% of total core-business revenues in 2002, or \$88 million according to Daratech<sup>51</sup>. Almost all of this came from Intergraph and IBM, both of which offer bundled hardware/software systems. Worldwide, PC shipments of 33.2 million were up 7.6% year-on-year in the second quarter of 2003 according to IDC's Worldwide Quarterly PC Tracker. This was ahead of projections for 4.1% growth due to the strong response to pricing initiatives in the U.S. and Europe, as well as the limited impact of SARS on demand in Asia. This is the fourth consecutive quarter of positive growth and represents the highest growth rate since the end of 2000. Key players according to worldwide PC sales in early 2003 are Dell (5.9 Million units shipped Q2 2003, 17.8% market), HP (5.3 Million, 16.2%), IBM (2.1 Million, 6.6%), Fujitsu Siemens (1.2 Million, 3.8%) and Toshiba (1.0 Million, 3.1%)<sup>52</sup>.

## 6.2.3 Services

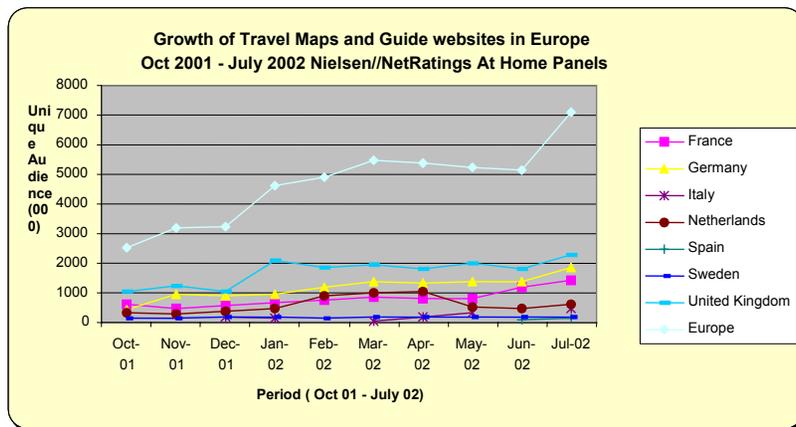
In the Daratech 2003 survey, services were said to be the second-largest component of GIS core-business revenues accounting for 24% of total GIS core-business revenues, or \$393 Million - essentially flat from 2001. A feature of recent developments in GI applications has been the growth of on-line services. This is inevitably going to accelerate as more people are connected to the internet and as more services are developed into more markets – for example mobile telecomms.

<sup>51</sup> Daratech Aug 2003 [http://www.gismonitor.com/news/pr/2003/080803\\_Daratech.php](http://www.gismonitor.com/news/pr/2003/080803_Daratech.php)

<sup>52</sup> Source: IDC, <http://www.idctracker.com/newtracker/Pressreleases/july162003.doc>

Recent research<sup>53</sup> from [Nielsen/NetRatings](#), a leading provider of market intelligence on consumer behaviour and trends on the Internet reveals that online map websites in Europe, such as [multimap.com](#) and [streetmap.co.uk](#) in the UK, [mappy.com](#) in France, [map24.com](#) in Germany and [karthotellet.com](#) in Sweden have experienced a growth of almost 300% in the last 12 months. This makes the online map sector one of the fastest growing Internet sectors in Europe. While 2.5 million users visited an online map site during October 2001, by July 2002 the figure had risen to 7.1 million, with the biggest increase experienced in the summer months of June and July. In France and the UK, a mapping service is the most visited of all online travel sites. Mappy.com in France has a unique audience of 947,000 and [multimap.com](#) in the UK has a leading position in the travel sector with a Unique Audience of 1,441,000 people.

Figure 6.1: Growth of Travel Maps and Guide Websites



Source: Nielsen/Netratings

The online map sites are particularly popular with surfers who use the Internet from their offices: the reach of each site is double for at-work surfers compared to at-home surfers, indicating that online map sites are being used by workers going to meetings or arranging to go out after work.

Tom Ewing, European Analyst at Nielsen/NetRatings says:

<sup>53</sup> [http://www.nielsennetratings.com/pr/pr\\_020920\\_uk.pdf](http://www.nielsennetratings.com/pr/pr_020920_uk.pdf)

This is a great example of the Internet making a practical difference in people's lives. It's the kind of service that easily gets taken for granted but these sites actually have enormous potential. Whilst at present, the majority of these sites provide their information for free, there is a possibility to generate revenue from them in the future. Map sites could be combined with local information sites and with new Global Positioning System technology and really changing the way we go about organising and arranging our social and business lives. Currently there may be two or three local mapping sites in every market, but there is no key pan-European player as yet – if you're looking for the 'new Google' this sector is an interesting place to start."

These impressive user statistics show why organisations such as Wanadoo ([Mappy.com](#)), Netsolut GmbH ([Map24.com](#)), and Multi Media Mapping Limited ([www.multimap.com](#)) are included in this report of key GI players in Europe and why the on-line services sector appears to be one of the most significant growth areas of the GI market.

Table 6.3: Nielsen/NetRatings Top Ten UK Travel Sites By Audience Growth, August 2002 at home panel

Rank	Domain	Unique Audience	Audience Reach (%)	Avg Time Spent
	All Travel	5,425,000	33.3	0:07:35
1	<a href="#">multimap.com</a>	1,441,000	8.8	0:06:59
2	<a href="#">lastminute.com</a>	844,000	5.2	0:10:50
3	<a href="#">expedia.co.uk</a>	751,000	4.6	0:07:24
4	<a href="#">streetmap.co.uk</a>	684,000	4.2	0:07:21
5	<a href="#">easyjet.com</a>	634,000	3.9	0:13:33
6	<a href="#">Britishairways.com</a>	519,000	3.2	0:15:47
7	<a href="#">travelselect.com</a>	334,000	2.1	0:03:54
8	<a href="#">teletextholidays.co.uk</a>	323,000	2.0	0:09:31
9	<a href="#">cheapflights.co.uk</a>	242,000	1.5	0:02:57
10	<a href="#">thetrainline.com</a>	355,000	2.2	0:16:43

#### 6.2.4 Data

While national mapping data needs have been largely catered for by a variety of public and private sector players, pan-European data have been slow to

emerge. Road navigation, routing, logistics etc applications that depend upon consistent and up to date road data have stimulated that particular vertical market. A number of private sector datasets cover Europe at relatively small scales but initiatives such as EuroGeographics' EuroSpec and the EC INSPIRE promise to bring about more consistent interoperable data in the coming years. Some of the key players in terms of data are listed in the following paragraphs.

With a permanent HQ based in Paris, **EuroGeographics** ([www.eurogeographics.org/](http://www.eurogeographics.org/)) (formerly MEGRIN and CERCO) is the Association of the European National Mapping Organisations, with 40 members from 38 countries. Its mission is to represent the National Mapping Organisations of Europe working towards the European GI infrastructure. To fulfil its mission it has a permanent HQ staff of 5 who co-ordinate the activities of EuroGeographics members towards a vision "to achieve interoperability of European mapping (and other GI) data within 10 years". The organisation works on a distributed basis, with HQ staff ensuring overall co-ordination while operational activities are performed by its member organisations. EuroGeographics has produced or is in the process of creating the following pan-European geographic datasets:

- SABE – an administrative boundaries dataset on the scale 1: 100 000 and 1:1000 000 since 1997;
- EuroGlobalMap – a 1:1 million topographic dataset that will be the European contribution to the Global Map project;
- EuroRegionalMap – a 1:250 000 scale topographic dataset.

EuroGlobalMap is intended to become the European contribution to the Global Map project. Global Map, to quote the project website<sup>54</sup>, "is a group of global geographic data sets of known and verified quality, with consistent specifications which will be open to the public. Global Map is considered a common asset of mankind, and will be distributed worldwide at marginal cost. (Rule of International Steering Committee for Global Mapping: Article 3). The Global Mapping concept calls for every nation and all concerned organisations to work together to develop and provide easy and open access to global geographic information at a scale of 1:1,000,000"

Recognising the fundamental need for users to discover information about existing datasets in Europe EuroGeographics has for many years operated the GDDD Map Catalogue. As well as co-ordinating the production of pan-European data and providing a GI metadata service, EuroGeographics provides its members with advice on best practice within the areas of Legal & Commercial Issues / Pricing & Licensing, Quality Management, and

<sup>54</sup> <http://www.iscgm.org/html4/index.html>

Geodesy, via its Expert Groups which are comprised of specialists representing member organisations. Some of the other projects with which EuroGeographics are currently involved include EuroSpec, GISEE, and the R&D forum. Previous European GI projects with which EuroGeographics has been involved, either as leader or partner, include ETEMII (European Territorial Management Information Infrastructure), LaClef (Metadata Information Service), ESMI (Linking Metadata Providers), PETIT (1:250,000 Topographic Databases), and ABDS (Administrative Boundaries Data Service for Central and Eastern European Countries). More information on each of these is available from the Eurogeographics Web site.

In recent times, reflecting changing technological capabilities, EuroGeographics has changed the emphasis of its work from the co-ordination of centralised pan-European databases (such as SABE, or PETIT) towards facilitating the creation of interoperable (distributed) European data. A major plank in this strategy is the EuroSpec work, which in many ways is a practical implementation of the principles being formulated under the INSPIRE initiative.

**EuroRoadS**: This project reflects the increasing need for a standardised, seamless, updated and quality assured digital road data infrastructure for Europe as a basis for further development within the areas of intelligent transport systems, mobility management, traffic management, road maintenance, traffic safety, environmental and society planning and many other areas. EuroRoadS is a new project (started at the end of 2003) intended to lay the ground for the creation of such an infra-structure. The main objectives for the project is to build a platform for a European road data solution through a specification framework consisting of a road data structure, description of data content, data exchange mechanisms and interoperability specifications. The framework will be built on identified user requirements and tested through a prototype. A service provider will show that the data set can be used in an application or product. Finally the project will give long-term recommendations for implementation and exploitation aiming to support a rapid establishment of a harmonised road data solution and stimulate a widespread use of road data.

Although it is not a pan-European dataset the MapBSR data covers a large sub-region of Europe. The purpose of the **MapBSR** project (<http://www.mapbsr.nls.fi/>) is to provide basic map data sets for the Baltic Sea region in the nominal scale of 1:1Million. The elements included in the database are boundaries, hydrography, transport, settlements, geographical names, elevation and national parks. The MapBSR Project provides the first uniform, reliable map data sets for the Baltic Sea drainage area and the countries within its sphere of influence. The database forms a base map for

GIS, in which any kind of data item can be located and represented, as long as its coordinates are known. Different kinds of thematic information can therefore be added to the database, such as statistics on population density or data on water quality. The National Mapping Organisations of each of the participating countries have produced the map elements for the areas of their respective countries. These were then combined into one cartographic database by NLS Finland<sup>55</sup>. The MapBSR project has received funding from the European Union's Interreg II C-program. To some extent the EuroGlobalMap has now taken this product forward. It is being produced also by NLS Finland on behalf of EuroGeographics and extends the 1:1 Million scales mapping across Europe as a whole.

**GRID-Arendal** (<http://www.grida.no/>) is an environmental data and information centre operating under the United Nations Environment programme and has produced a range of GIS datasets. The Baltic Sea Region GIS, Maps and Statistical Database is a result of the Baltic Drainage Basin Project (BDBP). The BDBP was a multi-disciplinary research project under the EU 1991-1994 Environment Research Programme. In the past it has claimed to be "Europe's most popular on-line GIS database for an international trans-boundary region". The organisation claims 1,000 weekly visitors to their Baltic Sea Region GIS site, with 200-300 datasets downloaded in ArcInfo, Idrisi, and MapInfo formats. The dataset includes administrative data to county and in some cases municipality level. It is compiled from source data at between 1:200k and 1:3million, coming from the ArcWorld (1:3million) CDROM, EpiMap (Internet public domain software and data for public health applications), and a variety of Baltic state agencies (not NMOs).

The private sector provides a growing number of pan-European data providers. **AND** (<http://www.and.com/>) was founded in 1984 and now has offices in the Netherlands, Germany, UK & US. With a turnover in excess of €34 Million, the company employs over 350 people and is listed on the Amsterdam Exchanges. AND claims to be "the leading provider of location, routing, mapping and address management technologies and intelligence, which power enterprise applications worldwide". It aims to provide one-stop-shopping concept for online & mobile services, supplying global travel content & context, POI's and address verification tools for e-commerce.

**GfK Macon AG** (<http://www.globalmaps.com/>) was founded in 1991 and is now able to offer an extensive archive of worldwide digital maps. In the beginning the company mainly developed postal and administrative maps for Germany, Austria and Switzerland to integrate with their GI software

<sup>55</sup> <http://www.maanmittauslaitos.fi/>

RegioGraph and District. High demand for European and non-European maps encouraged Macon to develop a range of worldwide digital maps. Increased demand for vector maps for countries, economical regions, continents, and also for the whole world has encouraged Macon to extend its range and in recent years some of its digital data have been bundled with Microsoft Office.

In the GIS software vendors sector both ESRI and MapInfo have built up a range of European GI data to support their software applications. For example **ESRI UK** provides a "DataStore" ([www.data-store.co.uk](http://www.data-store.co.uk)) which aims to serve all areas of the international GIS market providing mapping, demographics and remote sensing data. The DataStore has established links with many independent providers of GIS data, for example Bartholomews, Philips and Lovell Johns. As a result The DataStore holds international datasets from a wide range of different agencies for example, the Ordnance Survey (GB) and the Military Survey for Greece. The DataStore is continually building on its data portfolio, not only UK based but also Pan-European and International. "It is anticipated that a full US portfolio will be introduced over the next 18 months and that a comprehensive set of worldwide datasets will be available by the end of 2002".

**MapInfo** ([www.mapinfo.co.uk/products/data.cfm](http://www.mapinfo.co.uk/products/data.cfm)) provide a range of GI data products covering individual European countries and pan-European coverage. Much of this is based on partnerships with existing data providers – organisations such as Tele Atlas, Ordnance Survey GB, Bartholomew, and AND. Its 1:300k Cartique™ product for example is based on AND data and is a seamless European database "designed for graphic output, backdrop mapping, and route planning"<sup>56</sup>.

The two key players in the European road navigation data sector are Navigation Technologies and Tele Atlas. **Navigation Technologies** ([www.navtech.com](http://www.navtech.com)) is a global GI player with corporate headquarters in Chicago, Illinois, USA. Additionally, there are over 140 field offices in 18 countries. Privately held, Navigation Technologies (often referred to as **NavTech**) was founded in 1985 and currently employs over 1,200 people. NavTech is a leading provider of digital map information and related software and services used in a wide range of navigation, mapping and geographic-related applications, including products and services that provide maps, driving directions, turn-by-turn route guidance, fleet management and tracking and geographic information systems. These products and services are provided to end-users on various platforms, including: self-contained hardware and software systems installed in vehicles; personal computing

<sup>56</sup> <http://www.mapinfo.co.uk/products/mapping.cfm>

devices, including personal digital assistants and cell phones; server-based systems, including internet and wireless services; and paper media. According to their website NavTech has built a database,

unrivaled in precision by employing the industry's most extensive development and quality control program, executed by one of the largest team of geographers in the world. This detailed map data is captured by over 400 full time professional Navigation Technologies employees, who drive millions of miles / kilometres a year on the roads in North America, Europe and other select countries to provide accurate and ever-expanding detail to our NAVTECH® database.

The NavTech database is maintained on a continuous basis and released to customers/partners 4 times a year on CD/DVD. The product is a fully navigable street database at a nominal scale of 1:10,000 containing the full street network with navigation attribution such as one-ways, turn restrictions, gate restrictions, access restrictions, speed limits, traffic calming, tollbooths, under construction attributes, physical restrictions such as barriers, etc. The NT database also includes address ranges, postal codes, cartographic features and points of interest.

**Tele Atlas** ([www.teleatlas.com](http://www.teleatlas.com)), with its HQ in The Netherlands, is recognised as a European and US markets “key player” in GI products and services. It is a PLC 32.06% owned by Bosch GmbH. With over 16 years experience in the GI market (as Etak, Tele Atlas invented the first car navigation system in 1985) its core business is the provision of detailed geographic databases centred on traffic telematics, vehicle navigation, location based services (LBS) and GIS applications. Its €78.3 Million turnover in 2002 was split into €55.9 Million for navigation products and services and €22.3 Million for LBS/GIS. Tele Atlas views itself “primarily as a facilitator that enables hundreds of business partners to develop high quality applications for their own or commercial use”<sup>57</sup>. Although it reported 10% revenue growth in 2002 it was operating at an overall €19 Million loss. While it enjoyed an operating profit in Europe, mainly due to strong growth in car navigation product sales, it has invested heavily in the USA, creating “the most powerful database ever built”<sup>58</sup> which from Jan 2003 has been able to provide unique nationwide combined traffic information and mapping (via an alliance with Westwood One). In Feb 2003 it released the latest version of its Multinet map database<sup>59</sup>. This seamless digital European dataset extends from

<sup>57</sup> [Tele Atlas Annual Report 2002](#)

<sup>58</sup> [Tele Atlas Press Release Oct 2002](#)

<sup>59</sup> [Tele Atlas Press Release Feb 2003](#)

Spain or Italy in the south to Scandinavia including Finland in the north, or from the Czech Republic in the east to Ireland in the west. The Feb 2003 release includes, for example, the number of lanes at motorway intersections in several countries, and every house number for seven European countries: Belgium, Denmark, Great Britain, Luxemburg, Norway, Switzerland and The Netherlands. Although its core market has been in vehicle navigation it clearly sees LBS as a potential growth area with recent alliances signed with organisations such as MapInfo and Hutchinson 3G. Although its sales are principally B2B in conjunction with partners it does provide some on-line services such as sales of CDs on its Navshop<sup>60</sup> website. Some of TeleAtlas's key partners are Siemens VDO, Daimler Chrysler, BMW, Blaupunkt, ESRI, Microsoft, Michelin and Ericsson.

Some of the key players such as **Maporama** ([www.maporama.com](http://www.maporama.com)) (France) claim to be “the world's leading enterprise location-centric services Application Service Provider (ASP).” While **Webraska** ([www.webraska.com](http://www.webraska.com)) (France) claims to be “the worldwide provider of location-based services and telematics software solutions”. Further afield **OMNI Resources** ([www.omnimap.com](http://www.omnimap.com)) is a US company that claims to have “The world's largest online map catalog”, while **East View Cartographic**, (also US) with offices in Russia and the Ukraine, is a major producer and distributor of international map data that claims to have “the world's largest collection, 150,000 plus sheets in all scales, of Russian produced topographic maps”. It offers large and small scale mapping of Europe in national topographic maps and Russian Military Topographic mapping [georeferenced](#)<sup>61</sup> to the customer's requirements.

Other organisations providing pan-European GI data products and services include Bartholomews, EUROSTAT, Geodan, Geo Strategies, Intermap, and Lovell Johns.

## 6.2.5 Conclusions

The purpose of this Section has been to provide evidence of the breadth and depth of the GI market. Whilst it is clear that there are many important organisations in the public and private sector contributing to the development of this market, gauging its overall size and growth is not easy. The findings from the PETIT project, which looked at creating a 1:250k scale pan-European topographic database were partly based upon the GIBASE study<sup>62</sup>

<sup>60</sup> <http://www.navshop.com/>

<sup>61</sup> [http://www.cartographic.com/georeferenced\\_topographic\\_maps.asp](http://www.cartographic.com/georeferenced_topographic_maps.asp)

<sup>62</sup> <http://www.ec-gis.org/copyqi2000/product/qimarket.html>

and the findings from a number of private sector organisations (Dataquest, Frost & Sullivan, International Data Corporation). The figures are quite out of date now, being based upon the situation in 1996-98, but they indicated a total European GI data market size estimated at the time to be €550 Million with an estimated 50%, i.e. €275 Million, being supplied via National Mapping Organisations. Looking at the figures gathered during this key players study may give us some indication of the size of the market in 2002 but the figures for turnover from National Mapping Organisations, for example, can be difficult to interpret – all have different financing models with some being 100% state funded and others being 100% cost recovery. An estimate has to be made of the income received for GI data products. A further complication is that some receive revenue from cadastre and land registration activities so that their overall income doesn't just reflect data sales (it could be argued that these are GI related services). Taking into account as many of these variables as possible the overall data income from NMOs in 2002 was approximately €390 Million - but there is probably quite a large margin of error in this figure.

If we assume that the figures from 1996-98 were approximately correct, it suggests an overall (and plausible) 42% increase in the NMO market over 5-7 years, which would equate to a European GI data market of approximately €780 Million. Totalling the turnover figures for the European key players listed in this report produces a figure approaching €2.5 Billion – including all types of GI products and services (how much of the total European GI market do the 250 or so organisations featured in this report represent however...70%-80%-90%?). This figure is also based on assumptions regarding the split of revenue, in some organisations, from non GI related income (for example EADS). In its review of the GIS market Daratech estimate total worldwide sales of GIS software and related hardware and services now tops €6.5 Billion annually (NB the distinction here between this figure and the one given earlier for GI “core-business”). The key players survey figure of approximately €2.5 Billion correlates with such a figure if we assume that it accounts for most of the market and that the European share of the global figure is around 35%-40%

Other reports suggest a European *content sector* that has a market size of €433 Billion, employing some 4 million Europeans and a value of *public sector information* in the European Union estimated at around €68 Billion<sup>63</sup>. Other informal estimates suggest the integrated spatial services market, which includes 'map services' in many forms and ways is probably in the neighbourhood of €27-35 Billion and growing at about 6% per annum<sup>64</sup>.

<sup>63</sup> <http://www.sourceuk.net/indexf.html?02656>

<sup>64</sup> <http://egip.jrc.it/200303/0884.html>

The results of these estimates need to be treated with caution; they clearly emphasise the importance of establishing a clear definition of what constitutes “GI”. The figures from this key players survey seem to be plausible based on the previous [GI-Base](#) figures, and the overall market size stated by Daratech, but the general conclusion that must be drawn is that *it would be dangerous to put too much weight on these findings and that any serious estimation of the size of the market would need a separate study to analyse all the possible evidence and to create rigid criteria for definitions of the market.*

In terms of GI market sectors the Daratech 2003 report suggests that:

Utilities grew 8% and contributed 51% of total regulated-sector GIS revenues in 2002, while telecommunications companies accounted for 30%. By comparison, transportation accounted for 10%, and education for 8%. Revenues from the public sector - the two major segments being state and local governments, and federal governments—grew by 5% and now account for 30% of total revenue. While federal governments were among the early adopters of GIS technology, recent trends toward devolving more responsibilities to states and localities have spurred those entities to become important consumers of GIS. In 2002, state and local government markets accounted for 67% of total public-sector GIS revenue, while federal governments contributed 33%. The private sector remained flat at 24% of core business. Of the major industry segments within the private sector, earth resources represents the largest opportunity for GIS business, accounting for 43% of total private-sector GIS revenue in 2002. Also notable is the AEC segment, which accounted for 16% of sector revenue. Other significant segments within the private sector include marketing and sales, and cartography

([http://www.gismonitor.com/news/pr/2003/080803\\_Daratech.php](http://www.gismonitor.com/news/pr/2003/080803_Daratech.php))

According to ESRI, whose distributors are active in over 30 vertical markets in Europe, the primary markets are the national, regional and local government sectors which provide about 50% of revenue, utilities are the second largest sector, with education, military, transport, private businesses as runners up. While Location Based Services have been hailed as a significant breakthrough for the wider expansion of GI services there is conflicting evidence over how much impact it will have in financial terms<sup>65</sup>. Increasingly the growth of the GI market is taking place within organisations, and by web users, using GI technology and data without recognising it as the traditional compartmentalised GIS of recent decades. As described in the section above

<sup>65</sup> [http://www.directionsmag.com/article.php?article\\_id=311](http://www.directionsmag.com/article.php?article_id=311)

relating to ORACLE or Microsoft, the use of spatial functions and GI data is becoming difficult to separate from "mainstream" IT. Internet and Intranet expansion is having a big impact on the ability of users to access and share GI data.

In summary, who *are* the key players in Europe, how big is the market and what are the main sectors?

At a European level the key players are the EC itself (especially the JRC), some of the pan-European bodies such as EuroGeographics and EUROGI, and some private sector players such as Tele Atlas and NavTech. The list should also include some of the global players such as ESRI, Dell, HP, IBM, Intergraph, Microsoft, OGC, and Oracle.

At a national level the key players will always include the National GI Associations, the National Mapping Organisations, the Cadastre Agencies, and possibly the land registration offices. It may include key government departments, such as statistical offices. There is clearly a trend across Europe for the development of "e-public services" and the growth of such services can have a large impact on the GI sector if the significance of geography in these services is recognised during their implementation. The EC's IDA Programme<sup>66</sup> is set to become the IDAbc (Interoperable Delivery of pan-European eGovernment Services to Public Administrations, Businesses and Citizens) Programme, following a proposal adopted by the European Commission on 9 July. The list should perhaps include national GI policy defining and co-ordinating bodies, but these do not appear to be widespread. In many countries there are very strong regional or municipality influences and while the plethora of SMEs might not have a great impact individually their collective contribution is significant.

The size of the GI market indicated by the survey is in the region of €2.5 Billion, although, as has been stated several times, this is based on assumptions, and is likely to be subject to a large margin of error.

The main user markets are still central and local government, utilities, education, transport and retail – although these again are broad general categories. Although the level of importance one attaches to organisations such as Wanadoo, Netsolut GmbH, and Multi Media Mapping Limited is difficult to assess it is clear from the volume of use that these on-line service providers generate that they represent one of the most significant growth areas of the GI market. A noticeable trend amongst many key players is the degree to which they form partnership amongst themselves to exploit GI opportunities – partnerships for example between key players that are data producers, software providers, and service providers.

<sup>66</sup> <http://europa.eu.int/ISPO/ida/isps/index.jsp?fuseAction=home>

Another main point that comes out of the survey is the increasing penetration of GI into applications which do not rely on a traditional GIS implementation, and the increasing integration of spatial components within mainstream everyday IT. The survey represents a snapshot in time – Summer 2003, in what is clearly a fast changing market, but its findings provide a useful input to the development of a GI strategy.

## 6.3 NATIONAL GI ASSOCIATIONS

### 6.3.1 General information about national GI associations

Most European countries have active NGIAs as illustrated in Table 6.4.

Table 6.4: Establishment of national GI associations

Year	Countries
1969	Norway
1986	Belgium, France, Sweden
1989	United Kingdom
1990	Italy
1991	Slovenia
1992	Luxembourg
1993	Finland, The Netherlands
1994	Germany, Hungary, Iceland, Switzerland
1995	Denmark, Ireland, Russia
1996	Poland
1997	Czech Republic
1998	Austria, Greece
2002	Slovakia
No association, but plans	Bulgaria, Cyprus, Lithuania, Malta, Turkey
No association	Bosnia and Herzegovina, Estonia, Romania

By and large they are established for the following purposes:

- To promote, stimulate, encourage and support the development and use of GI and its associated technologies at the national and international level.

- To stimulate the development of GI for the benefit of all public and private actors, the industry, producers, publishers, researchers, teachers, technical services of state and local governments, and other users.
- To encourage the collaboration at the different levels of the public central, regional and local administration and in the private sector between the software/hardware, data /value added data and service providers.
- To strengthen the institutional links between the multidisciplinary GI communities in the country and abroad.

### 6.3.2 Objectives/strategy

The mission gives the organisation its reason for existence. The formulation of the objectives is needed to convert the mission into actions for the long term (3-5 years). The national GI associations have developed a set of objectives/strategies to carry out their mission, using elements of the list below. To fulfil the mission they will work in the following fields of interest:

#### Awareness raising of the value of geographic information

- Exchange results from the practice of geographic information systems.
- Participate in solving specific problems of common interests by initiating projects related to the development of geo-information systems and the use of appropriate information technologies.
- Ensure that needs and technical improvements are better taken into consideration within the national policies.
- Support activities of public authorities in the areas of geographic information.
- Disseminate knowledge about projects, which are prepared and implemented.

#### Dissemination of information

- Keep members and the GI community up to date through regular newsletters, e-mails, mailings, seminars, publications and articles.
- Promote the interdisciplinary exchange of information in the use of modern information technology, mainly for the set-up and the operation of geo-information systems.
- Provide international contacts with European and international associations in the area of subject matter.
- Deliver information too magazines for the dissemination of information.

- Support and provide a tight working contact of all involved participants to exchange information, knowledge and experience among the members.
- Hold meetings, seminars, and conferences or provide special publications.
- Accelerate technical developments through dissemination of information.
- Improve the co-operation between all institutions dealing with geo-information through adopting the role as "central information-stock exchange", "Clearing House", "Observatory".

#### Political interface

- Provide contacts and co-operation with government offices.
- Participate in the development of a national information system, spatially oriented information systems and usage of these information systems in the public environment.
- Stimulate strategic thinking and innovative actions through communication between the different disciplines and organisations in economy, science and administration.
- Create and promote political awareness.

#### Promotion of the use of standards

- Contribute to quality, metadata and harmonisation.
- Participate in setting European standards in the domain of digital technologies.
- Encourage the development and adoption of qualified and reliable standards for GI.
- Promote the use of standards for the development of geo-information applications, for the exchange of geo-information and the transfer between different systems.

#### Education and training

- Promote education in the GI field and stimulate a high professional level.
- Promote research activities.
- Create a forum for exchange of views and ideas among persons, which are involved in creating and using geographic information systems.
- Foster the exchange of experience and the co-operation of IST members in the branch of geo-information.
- Promote and support the education of producers and users of geo-information;

- Transfer and spread experience from abroad.
- Educate (short and long-term seminars, courses, and conferences) with the aim to advance the awareness of spatial information systems' usage and possibilities.

### **Policymaking**

- Advance the National Geographic Information Infrastructure.
- Support the development of a knowledge infrastructure.
- Create conditions for a general development of geo-information systems.
- Maintain constant relations with scientific and technical organisations as well as professional bodies.
- Support the development of a Geographic Information Infrastructure based on accepted data and system interoperability standards.

### **Economic and legal aspects**

- Contribute to solve problems regarding financing and pricing of geographic information.
- Create conditions for the accessibility of the basic infrastructure data with a geo-information character.
- Create conditions and a place for an open professional discussion leading to solutions of conceptual, technical, economical and legal problems in spatial information systems and associated information technologies.

### **6.3.3 GI association and Government**

The relationship between NGIAs and government varies, and takes normally the following two options.

#### **State participation**

As an example, RAVI – the Dutch national GI association is an independent network for geo-information, financially supported by the Ministry of Housing, Spatial Planning and Environment, which is the co-ordinating ministry for geo-information policies. In Luxembourg the national GI association is a Working Group established by the government and composed of representatives from the public departments dealing with geographic information with no individual members and no membership fee. It can be beneficial to be a part of the government or financed by governmental institutions. However, due to changes in governmental policy it is easy to reduce or stop funding the association. This happened with the Slovenian Geographic Information Centre (GIC). GIC Slovenia was a part of the

Ministry of Environment and Spatial Planning. The unit merged with the Surveying and Mapping Authority. The Surveying and Mapping Authority set other priorities and reduced the activities and finance.

### **Counterpart for government**

Some associations act as the unique representative of the GI field. In this case it is easy for government bodies to join the association or ask their advice. With this respect the government recognises the associations as the spokesman on behalf of the GI community. Due to their broad geographical and professional representation, the associations are an important source of information and advice and are available to the authorities for performing special studies, such as for example, evaluation of municipal statistics on GI. When associations try to fulfil this role they need to represent a broad variety of members from academia, industry, public utilities etc. Sometimes local government is a member as well. Central government often declines being a member.

### **6.3.4 Membership**

Depending on the maturity of the organisation, activities and age, the membership totals range from 47 through to 1400. There are a wide variety of types of membership and the way the membership is split up. Where a group of members has a common interest, then they may form a Special Interest Group (SIG). Special Interest Groups are tightly connected with the branches, which are presented in the association.

#### **Types of membership and target groups**

GI associations have different types of membership. The longer a national GI association exists, the more categories there will be. Some associations have a relatively small number of individuals and a lot of institutions; others have a balance between institutions and individual members. The following classes can be found in the Survey of GI Associations at the National level in Europe:

- Individual members.
- Collective members (organisations).
- Companies: producers and distributors of information technologies, designers and processors of applications of spatial information systems, industry in general working in the field of geographic information.
- Educational institutions: universities, research groups, other academic organisations.
- Other associations.

- Public Institutions: federal and regional administrations, local authorities.
- Professional associations (Surveyors, Planners, Statisticians).
- Sponsors: sponsors are members, but when they pay higher dues as normal for their category they will be considered as sponsor members. Benefits are e.g. promotion for the company, space at an exhibition.
- Consultants.
- Utilities.
- Electricity companies, emergency services, health authorities.
- Students, retired professionals.
- Non Governmental Organisations (NGO's), voluntary sector.

The categories are not fixed. When an association is growing there will be more categories come into being, based on the type of members. Often they formulate target groups out of the categories based on common interests. The most important groups, frequently mentioned are the companies and public institutions.

Table 6.5: Association and number of members (as of end 2002)

Country	Name of the association	Members
Austria	Austrian Umbrella Organisation for Geographic Information	48
Belgium	Co-ordination committee for digital geographical information	50
Czech Republic	Czech Association for Geoinformation	163
Denmark	Geoforum Denmark – Society for Geographical Information	575
Finland	Finnish Association for Geographic Information	237
France	French Association for Geographic Information	67
Germany	German Umbrella Organisation for Geographic Information	90
Greece	Hellas Geographic Information	289
Hungary	Hungarian Association for Geo-information	63
Iceland	LISA, Organisation for Geographical Information in Iceland for all	128
Ireland	Irish Organisation for Geographic Information	131
Italy	Automated Mapping/Facilities Management /Geographic Information System	100
Luxembourg	Inter ministerial working group on GIS	12
Netherlands	Foundation RAVI, network for Geo-information	8

Table 6.5: Association and number of members (as of end 2002) continued

Country	Name of the association	Members
Norway	Geoforum	2150
Poland	National Land Information System Users Association	149
Russia	GIS association	450
Slovakia	Slovak association for Geoinformatics	61
Slovenia	Geographic Information Centre Slovenia	
Spain	Spanish Association for Geographic Information systems	234
Sweden	Swedish development council for Land Information	213
Switzerland	Swiss Organisation for Geo-Information	129
United Kingdom	Association for Geographic Information	1200
	<b>Total</b>	<b>6547</b>

Not all countries mentioned the numbers of members. Some organisations like Geoforum Norway have many individual members

### 6.3.5 Resources

An organisation exists when persons are carrying out tasks, when there is a certain structure and funding to maintain the organisation. Resources can be money, contributed by different organisations or persons, but also funding in kind. Sometimes an organisation gives an employee time to spend for the association or gives the buildings free of charge etc. Members provide housing and facilities for the secretariat. Funding in kind combined with dues for membership, in general covers the costs from the national GI associations in Europe. When there is a strong government interest government sometimes partially sponsors the association. Associations with a small budget are frequently voluntary driven. When the activities increase they will assign a small staff. Growing activities means the need for growing financial resources and expanded staff. Financing the growing activities will be done by enlargement of the membership or increasing membership dues, by seeking sponsors, organising seminars and/or conferences and funding in kind. The last point will be a minor part of the resources in large national GI associations. The amount of money coming from dues etc and the out of pocket expenses shows a broad variety between the associations. It corresponds in general to the level of activities.

Table 6.6: Income and Expenditure (years 2000-2002)

Country	Association	Income	Expenditure
Austria	AGEO	€ 24.000	€ 24.000
Belgium	CC Belgium	NA	NA
Czech Republic	CAGI	€ 55.000	€ 57.000
Denmark	Geoforum Denmark	€162.000	€ 160.000
Finland	ProGIS	€ 84.000	€ 92.000
France	AFIGÉO	€ 92.000	€ 89.000
Germany	DDGI	NA	NA
Greece*	HELLASGI	€ 10.000	€ 10.000
Hungary	HUNAGI	NA	NA
Iceland	LISA	€ 63.500	€ 64.000
Ireland	IRLOGI	€ 34.150	€ 34.500
Italy	AM/FM Italia	€ 40.000	€ 40.000
Luxembourg	GTIM SIG	NA	NA
Netherlands	RAVI	€ 867.000	€ 870.000
Norway	Geoforum	€ 620.000	€ 585.000
Poland	GISPOL	NA	NA
Russia	GIS association	NA	NA
Slovakia**	SAGI	€ 2.500	€ 2.000
Slovenia	GIC Slovenia	NA	NA
Spain*	AESIG	€ 50.000	€ 50.000
Sweden	ULI	€ 150.000	€ 150.000
Switzerland	SOGI	€ 42.300	€ 42.300
United Kingdom	AGI	€ 1.056.120	€ 1.010.256
		<b>€ 3.352.570</b>	<b>€ 3.281.056</b>

Not all figures are from the same year. They varies between the years 2000, 2001 and 2002 depending on the answers given in report Survey of National Geographic Information Associations in Europe. Funding in kind is not included.

NA: not available or the figures are incomplete

\* Budget figures.

\*\* Estimated expenditure for the year 2003

In these figures is funding in kind not included. A lot of work is voluntary driven; housing etc is given (partially) free of charge. It makes the size of the investment done by the members even higher than the table shows. The table shows that there is considerable investment annually by the GI community both financially and in kind.

### 6.3.6 Role of a national GI associations in their countries

In the Survey of National GI Associations in Europe a paragraph was included to obtain insight in the ideas of national GI associations about the role they wish to fulfil in society. Derived from the study *Models of national GI associations in Europe* (van Biesen 2001) nine possible roles are taken into account. In the table below the ideas about the most important roles are presented, ranked from high to less important. The outcomes fit with the mission and objectives. The answers given by the associations are consistent.

Table 6.7: Roles of National GI Associations

- R ef.	- Role	- Rank ing
- 1	- Public relations, awareness raising and promotion of GI	- 16
- 2	- Knowledge and information supply	- 15
- 3	- Political interface, lobbying	- 13
- 4	- Promotion of standards, certification	- 12
- 5	- Facilitator for (professional) education and training	- 10
- 6	- GI policy making	- 9
- 7	- Program assistance and support	- 7
- 8	- Mediation, negotiation	- 7
- 9	- Research	- 5

For all national GI associations public relations, awareness raising and promotion of GI are the most important issues, immediately followed by knowledge and information supplier and political interface, lobbyist. Many GI associations have a clear policy about distribution of geographic information, the use of the web site and communication to members, politicians and other actors. With respect to these actions the associations often take the lead and they are very active. The second group of roles are those about standardisation, policy making and facilitating education. The associations leave it up to other bodies and institutions to do their job (e.g. development of standards to the ISO standardisation body TC 211), but they monitor the developments and are active in promotion and dissemination of the material. The last three issues are least important for most of the associations. They are

not so very much involved in research and only a few associations will give program assistance and support or have a role as mediator. All associations have a clear picture about their profile in fulfilling roles. Most of the time the actions are in line with the roles they wish to fulfil.

### 6.3.7 Actions

Nearly all associations are active in the field of workshops, seminars, conferences, projects, publications, lobbying and a broad variety of other activities. As presented in the list below there is a small width between the highest and the lowest ranked item.

Table 6.8: Main Types of Actions

Ref.	Activity	Ranking
1	Conferences	12
2	Seminars	11
3	Lobbying	11
4	Projects	11
5	Publications	10
6	Workshops	10
7	Other	7

Both the type of activity carried out by the associations and the subject matter are important as discussed below.

#### Seminars

Seminars are used to bring people together, exchange ideas and focus on topics of common interest. Seminars stimulate the creation of networks and bring people and organisations together. AGEO holds each year an annual seminar on burning issues of GI in Austria. About 80-120 participants from all sectors of GI including private, public, related professions, decision makers, national and international sector take part. CAGI organises subject-oriented seminars for its members and participates in seminars together with other partners. The content of seminars varies from “Physical Planning – Need for data” till ‘Photogrammetry and Remote Sensing’ and “aspects of an SDI’.

#### Conferences

Conferences are the large events organised by a country or a group of countries. Examples include:

- Nordic GI conference (3 days, 400 participants) organised by one of the members of GI Norden, a partnership from Denmark, Finland, Iceland, Norway and Sweden.
- GIS IRELAND Conference & Trade show held annually in October.
- International regional co-operation North Rhine Westphalia (NRW) and The Netherlands.
- National conference on GI and GIS every two years in Switzerland organised by the Swiss association for geographic Information.
- Annual AGI exhibition and conference.
- Annual conference and exhibition of AFIGéO in April each year.

Not all national GI associations organise an annual conference. Some of them participate in a conference organised by others and play a support role or prefer a role as co-organiser.

#### Lobbying

Lobbying occurs by personal contacts to raise awareness for GI matters and to stress the necessity of the use of GI. Individuals dealing with IT and GIS strategies lobby in government departments, agencies and semi-state bodies. Lobbyists arrange meetings and seminars and act as an expert towards the ministries. Lobbying is done on behalf of the members to participate in policy making or/and law preparation by consultation and awareness raising activities.

### 6.3.8 Actions related to the roles and membership

To gain credits from the members and the environment the actions need to correspond to the roles. We will zoom in on these aspects.

#### Roles

The members have a strong interest in the first four roles as mentioned in Section 6.3.6: Public relations awareness raising and promotion of GI, Knowledge and information supplier, Political interface and lobbying, and Promotion of standards and certification. The association functions as a channel for information to and from all parties united in the association. These roles can be considered as critical for a national GI association. It seems evident that where there is a strong sustainable national GI Association there is also a growing sustainable GI market. The other roles (policymaker, facilitator for education and training, program assistance and support, mediation and research) are more divers and in the interest of all members of the association.

## Membership

National GI associations bring together public bodies and private companies. All member categories can be related to these two aspects. Both parties have a strong interest in PR, awareness raising and promotion of GI and the supply of knowledge and information. The association functions as a channel for information to and from all parties united in the association. The third role, political interface, refers to the interaction between politicians and industry. The fourth role, promoter of standards, is in the interest of all members.

## Actions

Formulating a GI strategy and policy for the associations is the basis for sustainable growth and development. Carrying out the proper actions related to the roles means for the association a growing credibility, influence and legitimacy for their existence. Seminars and conferences mainly support the awareness raising and information supplier role. Lobbying supports the role of political interface. Projects and workshops are content oriented and support standardisation. The table below points out the relation between role, membership and actions.

Table 6.9: Relationship between role, membership and actions

Role	Interested member categories	Main actions
Public relations, awareness raising and promotion of GI	All, especially Public bodies and Private companies	Seminars and conferences
Knowledge and information supplier	All, especially public bodies and private companies	Seminars and Conferences
Political interface, lobbyist	Private companies	Lobbying
Promoter of standards, certification	All	Projects and Workshops
Facilitator for (professional) education and training	All	Workshops
GI policy maker	All	Seminars and conferences
Program assistance and support	All	No specific issues
Mediator, negotiator	All	No specific issues
Research	All	Projects

## 6.3.9 Conclusions

The Survey of NGIAs and their comparative analysis indicates that a strong national GI association has the following characteristics:

- Is aware of its role in society and represents the broad interests of the members.
- Is an independent association.
- Is aware of the roles and actions needed to meet the requirements of society and members.
- Creates high member participation.
- Creates short and mid range member benefits.
- Assigns support staff when growing from quadrant 1 to quadrant 4.
- Has a flexible and adaptive structure that fits the nation.
- Balances the resources and activities.
- Establishes co-operation and partnerships.
- Is aware of the need for internal and external communication.
- Has a clear mission and strategy and reviews them periodically.

As shown, most European countries have very active NGIAs which collectively represent over 6500 institutional, organisational, and individual members. Their voice is therefore important in the context of the development of GI strategies in Europe. NGIAs perform a range of activities that have been summarised above, directly or in partnership with other. In addition they link in multiple ways with pan-European organisations, which is the subject of the next section.

## 6.4 PAN-EUROPEAN ORGANISATIONS

The characteristics that identify a pan European GI Organisations include the following:

- It is a membership organisation that normally has an annual subscription;
- It is a non governmental organisation; (NGO)
- It is a not for profit organisation;
- It is an organisation that provides benefits to its members;
- It is an organisation that represents its members;
- It is an organisation that promotes the interests of its members;
- Its main interest is Geographic Information.

Bearing the above in mind the organisations as listed below meet the definition and exhibit the characteristics identified:

Table 6.10: Pan-European GI Associations

Year	Organisation
1971	Urban Data Management Society (UDMS)
1972	The European Council of Geodetic Surveyors / Comité de Liaison des Géomètres Européens (CLGE)
1977	European Association of Remote Sensing Laboratories (EARSeL)
1987	European Geography Association (EGEA)
1988	The European Network for Housing Research (ENHR)
1992	Geographical Information Systems International Group (GISIG)
1994	Environmental and Engineering Geophysical Society-European section (EEGS-ES)
1994	European Real Estate Society (ERES)
1994	European Umbrella Organisation for Geographic Information (EUROGI)
1997	European Society for Geography (EUGEO)
1998	Association of Geographic Information Laboratories for Europe (AGILE)
1999	European Cartographic Union (ECU)
1999	Working Party on Land administration (WPLA)
1999	European Association of Remote Sensing Companies (EARSC)
2001	EuroGeographics, former CERCO (Comité Européen des Responsables de la Cartographie Officielle)
2002	European Geosciences Union (EGU)
2002	Permanent Committee on Cadastre in the European Union (Eurocadastre)
2003	European Organisation for Spatial Data Research (EuroSDR). Former European Organization for Experimental Photogrammetric Research (OEEPE) has been established in 1953

The Council of the European Geophysical Society (EGS) and the Council of the European Union of Geosciences (EUG) established the European Geosciences Union (EGU) on 7 September 2002. EGU is a merge from both organisations.

OEEPE has a long tradition of research since 1953. Basically the change of the name in EuroSDR reflects the latest developments in spatial research.

EuroGeographics, former CERCO and MEGRIN, is the association of the national mapping agencies in Europe. The organisation as such exists since the beginning of the 1980's.

Eurocadastre was set up as an initiative under the auspices of the Programme of Activities of the Spanish Presidency of the EU in May 2002. Members are the representatives of the EU member states, including the countries that will join the EU in 2004.

In January 2003, the EEGS-ES has joined the EAGE (European Association of Geoscientists and Engineers) to build the 'Near Surface Geoscience Division' (NSGD). NSGD will be a separate division within the EAGE.

European Cartographic Union (ECU): at this moment the organisation is dormant.

#### 6.4.1 Clustering of the organisations

When we consider the names of the organisations and their mission statements, it becomes clear that there is sometimes an overlap in mission and objectives. In some other cases the organisations are working in the same field of interest or adjacent. Along these lines the information about mission and objectives has been clustered. It leads into the following classification:

Table 6.11: Categorization of organizations

Type of organisation	Organisation	Research
Broad, umbrella:	EUROGI, GISIG	
Geographic information in general		
Thematic:	AGILE, EGEA, EUGEO,	AGILE, EGEA
Research and education	EARSC, EARSeL,	EARSeL
Thematic:	EEGS-ES, EGU,	All three
Remote sensing	EuroSDR,	
Thematic:	ECU, ENHR, ERES,	ECU, ENHR, ERES,
Geophysical, Geosciences and Space	Eurocadastre, EuroGeographics, WPLA, UDMS	
Thematic:		
Topography, land use, real estate		
Thematic:		
Local government		
Professional:	CLGE	
Geodesy		

- EUROGI is a broad umbrella organisation dealing with all aspects of geographic information.
- GISIG is a broad umbrella organisation with thematic networks such as rural, water, coastal, urban.
- AGILE is a research organisation.
- EGEA is a professional research organisation.
- EUGEO is a professional geographic organisation dealing with education.
- EARSC is a professional organisation, industry oriented.
- EARSeL is a thematic research organisation: Co-ordination of research in numerous thematic fields that use space data. (cartography, land use/land cover, coastal zones, agriculture, etc.)
- EEGS-ES is professional body with a focus on environment. It is also research and educational oriented.
- EGU is a scientific, research-oriented organisation.
- EuroSDR is a research organisation for spatial data.
- ECU is a professional research organisation.
- ENHR is a thematic research organisation.
- ERES is a professional research organisation.
- Eurocadastre is dedicated to cadastral issues.
- EuroGeographics represent both the topographic and cadastral mapping agencies. It is a thematic (topography, land use, geology, aerial etc) oriented organisation.
- WPLA is focussed on land administration.
- UDMS is a thematic organisation focussed on local government including regional and rural aspects.
- CLGE is a professional organisation dealing with qualification and education in the field of surveying.

Nine of the 17 organisations mention *research* as one of their aims.

For a better understanding of all different aspects of the organisations the mission and objectives provide a more elaborated answer.

#### 6.4.2 Mission and objectives/strategy

##### **Broad umbrella**

*EUROGI mission:* To maximise the effective use of geographic information for the benefit of the citizen, good governance and commerce in Europe and to represent the views of the geographic information community. EUROGI achieves this by promoting, stimulating, encouraging and supporting the development and use of geographic information and technology.

*GISIG mission:* The Association has as its main objective the promotion and the realisation of activities in the field of innovation, education and training, technology transfer, research and applications in all fields related to Geographical Information Systems (GIS), also through initiatives of cooperation among universities, companies and other bodies.

*Observations:* Both EUROGI and GISIG have a broad interest in all GI matters. There are a few differences: EUROGI is more focussed on policymaking rather than operational work. They are acting in the field of awareness raising, facilitating developments and capacity building. GISIG has a broad interest in running projects, organisation of seminars, education, technology transfer and the implementation of studies and projects. Although there is an overlap they are more or less complementary to each other.

##### **Thematic: Research and education**

*AGILE mission:* To promote academic teaching and research at the European level and to facilitate networking activities between geographic information laboratories at the European level. In order to achieve this mission AGILE establishes working groups on specific topics intended to influence the future European geographic information research agenda and organises for example focused meetings on key research issues and European geographic information research conferences.

*EGEA mission:* Exchange of knowledge and information for geography students and young geographers.

*EUGEO mission:* To raise and stimulate awareness of geography and environmental matters in schools, higher education, business, governments and the public at large in Europe, provide a focus for European wide research in all fields of geography in Europe, promote good practice in teaching, promote profession standing and development, facilitate information exchange, prepare recommendations that will further the aims of the Society and tackle geographical issues from a comprehensive European Union perspective.

*Observations:* All three organisations are working in the field of education and training. There is no information about co-operation between them.

AGILE responded to the questionnaire and provided an answer that underpins the mission and objectives with activities. Research is undertaken in the working groups as well. EGEA hold congresses to present and exchange scientific information about geography and organise student exchanges. They are not research oriented. EUGEO has a well-elaborated mission, but it is unclear how they execute their mission. The web site provides insufficient information and they did not respond to the questionnaire.

**Thematic: remote sensing**

*EARSC* is a non-profit-making organisation that is devoted to promoting the European remote sensing industry. *EARSC* will continue to expand its activities according to its members' views wherever it can benefit the remote sensing industry. Specific objectives are: promotion of the interests of, and co-operation between European remote sensing companies, providing its members with information on the development of the remote sensing market, ensuring that its members' views are represented in national and international fora and initiatives in the field and giving advice and assistance to funding and executing agencies.

*EARSeL* is a scientific network of European remote sensing institutes, coming from both academia and the commercial/industrial sector. The principal activities are: stimulating and promoting education and training related to remote sensing and Earth observation, initiating and co-ordinating application-oriented research, forming a bridge between technology and applications of interest to the wide user community, providing a network of experts for the agencies in Europe and promoting co-operation between remote sensing experts and the environmental managers and decision-makers.

*Observations*: Both organisations are working in the same field of interest. They have connections with the same EU institutions. *EARSC* is the representative of the industry. *EARSC* maintains close links with key European Institutions, including EC-DG Research, EC DG-JRC, ESA, and National Space Agencies. *EARSeL* represents the academia. *EARSeL* was founded in 1977 under the auspices of the European Space Agency and the Research & Development Directorate of the EU.

Although they are working in the same area and have the same interests there is no information about co-operation. They do not refer to each other in their web sites or other information.

**Thematic: Geophysical, Geosciences and Space**

*EEGS-ES mission* and therefore of *NSGD* will be to foster and encourage the application of geophysical techniques for environmental, engineering and mining applications, foster education and research in these areas, provide a means for communication between geophysicists and users, provide a forum for exchange of technical information, represent the membership in all state and national initiatives and work closely with other societies for the furthering of geophysics as a whole.

*EGU mission*: Dedicated to the pursuit of excellence and free and universal accessibility of scientific publications in all areas of geosciences and planetary and solar system sciences for the benefit of the scientists worldwide. *EGU* is devoted to the following publication strategy: maximum

flexibility regarding the type and the medium of publication, maximum attention with respect to the scientific and technical quality of a publication, maximum visibility and impact for all published articles.

*EuroSDR*: Develop and improve methods, systems and standards for the acquisition, processing, production, maintenance and dissemination of core geospatial information and to promote applications of all such data. Special emphasis is put on the further development of airborne and space borne methods for data acquisition, on methods for information extraction from these sources and on the integration of this information with information from other sources. Encourage exchange of ideas about research problems and transfer to geoinformation production organisations.

*Observations*: These organisations are working in the broader field of Geosciences: any scientific field that deals with the earth and its characteristics. Geosciences include geography and it is not desirable to make a strict distinction in the framework of this analysis. Geography is more related to the earth surface. The term geospatial, used by *EuroSDR*, is a combination between geography and space. In this section all organisations are located, which deal with geography in a broader context.

*EEGS-ES* has joined *EAGE* as a separate division under the name *NSGD*. *EAGE* is the European Association of Geoscientists and Engineers. *EAGE* has 2 divisions, the Oil and Gas Geoscience Division and the Near Surface Geoscience Division. *EAGE* exists to promote, stimulate and communicate the ethical development and application of the geosciences and related engineering disciplines to the benefit of its members as well as industrial and public organisations and thus to society at large.

*EuroGeoSurveys* is an organisation that is also acting in the same field of interest. *EuroGeoSurveys* is an association formed by the Geological Surveys of the European Union. Objectives are i.e. to address European issues of common interest, provide a permanent network between the Geological Surveys and to promote the contribution of geosciences to European Union affairs and action programs.

*EGU* extends its interests to the planetary and solar systems. In the same field of interest is working *ESOA*, the association of the European satellite operators. This organisation is formed in March 2002 to ensure that satellite services have their role in the upcoming e-society.

*EuroSDR*, the former *OEEPE* (European Organisation for Experimental Photogrammetric Research) has changed its name due to the broader activities. Geographic information and spatial issues have their interest.

**Thematic: Topography, Cadastre, land use, real estate**

*ECU mission:* to strengthen member societies through the promotion of mutual co-operation in, and understanding of, the discipline and profession of cartography within and between member societies. The ECU shall achieve its purpose through its member societies and through working in co-operation with the International Cartographic Association.

*ENHR mission:* Support research and promote contacts and communications between researchers and practitioners within the housing field.

*ERES mission:* Promote and advance the field of real estate research throughout Europe and provide a forum for information flow and debate on research issues.

*Eurocadastre mission:* to create an adequate space in which to promote the full awareness of the activities developed by the European Union and the Member States related with Cadastre and, by means of this information, to develop strategies and propose common initiatives with the aim of achieving greater co-ordination among the different European cadastral systems and their users.

*EuroGeographics mission:* to facilitate the development of Europe's Spatial Information Infrastructure by bringing people and organisations together. The objectives include: promote and facilitate collaboration and best practice between members, promote the NMAs, their national and pan-European products and services and their leadership role in ESDI, provide harmonised metadata and reference data for Europe that meets customers' needs for quality, timeliness, ease of access and value for money, work in partnership with others to build the ESDI consistent with national and global SDIs.

*WPLA mission:* promotion of land (immovable property) administration through security of tenure, establishment of real estate markets in countries in transition, and modernization of land registration systems in the market economies.

*Observations:* This group of organisations is involved in activities related to the use of land. Registration of land use is a crucial activity for a modern society. It is needed for transport and traffic, agriculture, environment, public utilities, and economic development. ECU does not show any activity at the moment, for the organisation is dormant. ENHR and ERES are both research organisations. ENHR mention the link between research and practice. Cadastral information is a basis for their existence. The organisations do not refer to each other. WPLA and EuroGeographics have some overlapping activities (both are invited observers in Eurocadastre). WPLA (branch of the UNECE) is focussed on land administration; especially in East Europe. WPLA is working close together with EuroGeographics. In several countries (but not

in all) in Europe the Cadastre and the National Mapping Agency are merged into one organisation. This cooperation is a good example of combining resources and ideas to the development of common interests.

**Thematic: Local government**

*UDMS mission:* To organise international symposia at various locations in Europe in order to promote the development of information systems in local government. An important aim of UDMS has been to provide a forum for people to discuss new approaches, to consider new technologies and to share practical experiences in the field of urban data management. To an increasing degree urban development has its effect on regional and rural zones and vice versa. The impact of this expansion on rural areas should be made visible. Therefore UDMS has decided to focus also on regional and rural aspects.

*Observations:* At the European level exists one other Pan European organisation, which is involved in local government: Council of European Municipalities and Regions (CCRE). CCRE deals with local government in general. UDMS is focussed on geographic information. At the international level there is one other organisation working in the same way. URISA, the Urban and Regional Information Systems Association are the US counterpart.

**Professional: Geodesy**

*CLGE mission:* To represent the interests of the geodetic surveying profession in Europe, especially to the European Institutions, to aid the development of the profession both administratively and scientifically, to facilitate training and mutual recognition, and to promote the activities of geodetic surveying e.g. by promotion and exchange of technical, scientific, educational and organisational know-how within the European states and provision of assistance in dealing with issues arising from different conditions in various CLGE member States, stimulate and facilitate the enhancement of standards of academic and professional qualifications, improved service to customers and quality of outputs within the geodetic surveying market throughout Europe, participation in and membership of organisations and associations within the scope of the CLGE's purpose.

*Observations:* Members are the representatives from professional organisations in the European countries. The organisation influences the debate about professional standards and education.

### 6.4.3 Key roles and actions

Most important for all Pan European GI Organisations is the role of Knowledge and information supplier, immediately followed by Research and Public relations, awareness raising and promotion of GI, as shown in Table 6.12.

Table 6.12: Roles of Pan-European Organisations

Ranking	Aspect	Organisation	Total
1	Knowledge and information supplier	EEGS-ES, EARSC, CLGE, EGEA, EGU, ENHR, EuroSRD, ERES, EUGEO, Eurocadastre, EUROGI, EuroGeographics, GISIG, UDMS, WPLA	14
2	Research	AGILE, EEGS-ES, EARSeL, ECU, EGEA, EGU, ENHR, EuroSDR, ERES, EUGEO, EuroGeographics, GISIG	12
3	Public relations, awareness raising and promotion of GI	AGILE, EARSeL, ECU, CLGE, ERES, EUGEO, EUROGI, EuroGeographics, GISIG, UDMS	10
4	Facilitator for education (professional development) and training	AGILE, EEGS-ES, EARSeL, ECU, CLGE, EUGEO, GISIG, UDMS	8
5	Political interface	EEGS-ES, EARSC, Eurocadastre, EUROGI, EuroGeographics, GISIG	5
6	Program assistance and support	EARSeL, EUROGI, EuroGeographics, UDMS	4
7	Promoter of standards, certification	CLGE, EuroSDR, EuroGeographics	3
7	Supplier of goods and services	CLGE, EuroGeographics, GISIG	3
7	GI policy advisor	CLGE, EUROGI, EuroGeographics	3

The need for the transfer of knowledge and information is clear, but presumably there is a need for coordinated effort with respect to research.

This can be connected with the nature of a pan European organisation. Most of them are thematic oriented, not for profit organisations and able to share resources for research in the same field of interest. The national GI associations ranked "Research" very low as shown in Table 6.7. The character of national GI associations is totally different from Pan European. The national GI associations are "broad churches" open for all and focussed on issues such as Public relations and the supply of knowledge. Policy advising, Standardisation, Programme assistance and support and the Supply of goods and services are minor issues for most of the pan European GI organisations.

#### Actions

Actions of the organisations should be in line with the mission and roles. Therefore the organisations are clustered again as in Section 6.4.1 with a closer view on their actions. For a better understanding of the organisation the table of actions shows a few activities as illustration. Not all are mentioned. More detailed information can be obtained from the full report available from the GINIE Web site.

#### Broad umbrella

##### EUROGI:

Workshops	Data Policy Workshop: 23-24 May 2002 (Paris, France) Accession Countries Workshop: 29 September - 1 October 2002 (Prague, Czech Republic) Cadastral data as a component of Spatial Data Infrastructure in support of agri-environmental programmes, 7-9 2001 (Budapest, Hungary) Spatial Data Infrastructures Workshop Local to Global, March 2003, Rome, Italy
Conferences	GSDI 6 Conference - From global to local September 16-19th 2002, Budapest, Hungary
Projects	GINIE, Geographic Information Network in Europe
Lobbying	Many EUROGI members have lobbied their MP's regarding the Public Sector Information Directive. German member (DDGI) met with Commission Liikanen to discuss burning points of GI in Europe and management needs within EC, with respect to the GI-industry and the associations. EUROGI has a list of MEP's, closely linked to the members.

**GISIG:**

Workshops	The Association promoted (in co-operation with Techware (Technology for Water Resources Association) the project <i>ECO-GEOWATER (European COference and forum to link GEO and WATER research)</i> in the framework of the Thematic Network WATER-GIS for the organisation of a series of six High-Level Scientific Conferences within the Programme “Improving Human Potential” of the Fifth Framework Programme.
Seminars	GISIG developed for the Inter-regional Centre for Co-ordination and Documentation for Territorial Information (CIR – Inter-regional Centre) a series of seminars and a distance-training course on “ <i>GIS elements for Regional Administrations technicians</i> ”. The initiative was designed together with the Venice University Institute of Architecture (IUAV), member of the Association.
Conferences	GISIG is organising the symposium COASTGIS 2003 (Genova, 16th-18th October 2003), the 5 <sup>th</sup> event of a bi-annual series dedicated to the analysis and study of the issues arising from design and implementations of marine and coastal GIS
Projects	PANEL-GI: Pan European Link for Geographical Information

Observations: Both organisations are very active in the field of GI. Their actions are in line with their mission and their objectives.

**Thematic: Research and education****AGILE**

Workshops	AGILE2003 Interoperability Workshop.
Seminars	Education seminar (EUGISES).
Conferences	Yearly AGILE scientific GI research conference.
Projects	Participated in ETeMII project.
Other	Participating in a whole range of GI research related meetings or relevant EU (project) meetings.

**EGEA**

Conferences	Annual congress (present and exchange scientific information about geography), Regional congresses.
Other	Student exchanges are organised quite often. Two entities visit each other, the host entity being responsible for the programme. During the programme, which usually takes a week, faculties of geography in the guest city are visited, geographical excursions are organised, the city and surrounding are informally introduced and parties take place, which introduce you to the other geography students. The visitors pay the travelling costs; the food, stay and programme are taken care of by the hosting group.

**EUGEO**

Lobbying	Towards EU institutions.
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*Observations:* AGILE is an active organisation with an annual high scientific congress. EGEA is focussing on student exchange. The website from EUGEO does provide insufficient information to estimate their activities.

**Thematic: Remote sensing****EARSC**

Conferences	Annual General Meeting.
Projects	EARSC is closely involved with EUFOREO ( <i>EU FORum on EO use for Environment and Security</i> ), a Thematic Network (TN), funded by EC under the RTD Fifth Framework Programme, and managed by EARSC through one of its members (Telespazio). The objective of EUFOREO is to set up and demonstrate a European Forum linking the major Space Agencies, Research Centres, Service providers, Manufacturers and Users at both national and European levels.

*EARSel*

Workshops	Main activities are through Special Interest Groups (SIGs), who organise specialist workshops. Some examples are: Berlin, May 22-23, 2003, 2nd IEEE/ISPRS/EARSel Joint Workshop on <a href="#">Remote Sensing and Data Fusion over Urban Areas</a> (URBAN'2003). Bern (CH) 11-13 March 2002, Observing our Cryosphere from Space: Techniques and Methods for monitoring Snow and Ice with regard to Climate Change.
Conferences	An annual General Assembly and symposium is held each year in a different country where EARSel has member laboratories. In 2003, the annual symposium was held in Gent, Belgium, and the theme was: Remote Sensing in Transition. In 2004, the annual meeting is planned to hold in Dubrovnik, Croatia, from 25-27 May and the theme is: New Strategies for European Remote Sensing.

*Observations:* The activities are in line with the mission and objectives. Both organisations have the same field of interest.

**Thematic: Geophysical, Geosciences and space***EEGS-ES*

Actions	No specific information available.
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*EGU*

Other	Publications: Membership Bulletin: <a href="#">Newsletter</a> - the eggs Abstracts & Extended Abstracts: <a href="#">Geophysical Research Abstracts</a> Proceedings: <a href="#">Advances in Geosciences</a> Letters & Short Communications: Geosciences Express Topical Journals: <a href="#">Annales Geophysicae</a> , <a href="#">Atmospheric Chemistry &amp; Physics</a> , <a href="#">Hydrology and Earth System Sciences</a> , <a href="#">Natural Hazards and Earth System Sciences</a> , <a href="#">Nonlinear Processes in Geophysics</a> Book Series: <a href="#">Stephan Mueller Special Publication Series</a> , <a href="#">EGU Reprint Series</a>
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*EuroSDR*

Projects	Commissions and working groups: Commission 1: Sensors, Primary data acquisition and Georeferencing Commission 2: Image analysis and Information extraction Commission 3: Production Systems and Processes Commission 4: Core Geospatial Databases Commission 5: Integration and Delivery of Data and Services Working groups as a subset of the commissions
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*Observations:* The web site does not provide information about the activities of EEGS-ES. EGU shows in its mission that they are dedication to publications. Their activities are very much in line. EuroSDR has a well built up system of commissions and working groups. It is a good example how to achieve.

**Thematic: Topography, land use, real estate****ECU:**

Actions	No information available
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*ENHR:*

Conferences	General Assembly held every two years.
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*ERES*

Seminars	ERES hosts a number of smaller workshops and seminars. The first in this series was jointly held by ERES, FAIBCI & NACORE in London in December 2000. The event examined new technologies and their impact on real estate.
Conferences	Annual conference. ERES is associated with the Journal of Property Investment & Finance who publishes a special issue each year containing papers from the conference.

*Eurocadastre*

Projects	Preparation of the Declaration of Cadastre in the European Union; Identification of EU institutions potentially interested in having access to cadastral information for the development of their policies; Study of the definition of the cadastral parcel in each member and the cadastral code or reference that serves as the unique identifier of each
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*EuroGeographics*

Workshops	As a means to an end.
Conferences	With exception to the annual General Assembly.
Projects	For products, metadata, pricing and licensing, information (best practice) exchange The term "Projects" refers to all the tasks needed to pool all the resources of all or part of the Association's Members in order to study, design, develop and/or market products or services that fall within the scope of the Association's purpose. Projects: EuroSpec (European Specifications for reference data) EuroRegionalMap (1:250 000 Topographic Database) EuroGlobalMap (Contribution to the Global Map Initiative) GISEE GIS Technology and Market in South-East Europe

*WPLA*

Workshops	Spatial Information Management for Sustainable Real Estate Market. Best Practice Guidelines on Nation-wide Land Administration, Athens, 28-31 May 2003. Workshop on Mass Land Valuation, Moscow (Russian Federation), 27 28 June 2002, Workshop on customers co-operation services, Vienna (Austria), 12 -13 September 2002.
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*Observations:* ECU is dormant, as already mentioned. The web site of ENHR provides insufficient information about their activities. ERES shows more activities. Both organisations are acting at the same field of interest.

EuroGeographics is an organisation with broad range activities, carried out on behalf of their members. The members, the NMAs from the European countries are often merged with the cadastral organisations. Therefore a strong cooperation with WPLA exists. WPLA has a focus in their activities on East European countries.

**Thematic: Local government***UDMS:*

Yearly conferences since 1971.	Last conference has been held in Prague, October 2002, at the same time workshops and seminars have been organised, some particularly addressed to Local Authorities of the new member states.
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**Professional: Geodesy***CLGE:*

Other	Expertises to national governments on professional items.
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*Observations:* CLGE holds workshops and seminars as well. No further information is available.

**6.4.4 Membership**

The members of the organisations are mostly other organisations from countries in Europe. The membership categories can vary. As far as the information is given, an overview of membership and categories can be given to obtain an insight in the way GI is structured in Europe. It makes sense to set up the information in the same way as the clustering of organisations in Section 6.4.1.

*Broad, umbrella: Geographic information in general*

Organisation	Target groups	Members
EUROGI	National GI Associations	22
	Pan European GI Associations	2
GISIG	Universities	31
	Enterprises	20
	Others: mainly research centres, local authorities and Networks (coming from 24 European and Mediterranean countries)	37

*Thematic: Research and education*

Organisation	Target groups	Members
AGILE	Academic institutions and other centres where geographic information research is carried out. Members are institutions rather than individuals.	83
	Affiliated membership is agreed for industry partners in order to strengthen the relations with industry.	4
EGEA	Entities in around 20 different countries.	40
EUGEO	Founder: e.g. <a href="#">Österreichische Geographische Gesellschaft - Wien</a> <a href="#">Real Sociedad Geografica - Madrid</a>	11

	<a href="#">Royal Danish Society of Geography - Copenhagen</a> <a href="#">Royal Dutch Geographical Society (KNAG)</a> <a href="#">Verband der Geographen an Deutschen Hochschulen</a> Full Corresponding (society of a country outside the European Union), Honorary members.	
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*Thematic: Remote sensing*

Organisation	Target groups	Members
EARSC	Membership is open to any European company active in the remote sensing business.	45
EARSeL	Research institutes and the research departments of commercial and industrial enterprises. These are located throughout the whole European geographical area, including Russia and the Baltic States.	250
	Observer members are institutes situated outside the European geographical area and individuals.	12

*Thematic: Geophysical, Geosciences and Space*

Organisation	Target groups	Members
EEGS-ES	Each country has one representative person of the EEGS-ES to facilitate the communication between the society and the members. The organisation has representatives from the following European countries: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Hungary, Ireland, Italy, Lithuania, Luxembourg, Poland, Portugal, Russia, Spain, Sweden, Switzerland, The Netherlands, and the United Kingdom	20
EGU	No information available	
EuroSDR	The Government of any European country (member of the Council of Europe) may become a Member of the OEEPE. Austria, Belgium, Cyprus, Denmark, Germany, Finland, France, Ireland, Italy, The Netherlands, Norway, Poland, Portugal, Spain,	18

	Sweden, Switzerland, Turkey and the United Kingdom.	
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*Thematic: Topography, land use, real estate*

Organisation	Target groups	Members
ECU	Any self-governing society or association for cartography or cartographers or any section for cartography or cartographers within a wider society or association in Europe e.g. Austrian Cartographic Commission Belgium Committee of Cartography and GIS British Cartographic Society Cartographic Society of the Czech Republic Cartographic Section Croatian Geodetic Society	19
ENHR	Individual membership	More than 1000
	Institutional members	Nearly 100
ERES	Individual Membership; Academic Membership; Corporate Membership. National property research societies, academic researchers and real estate practitioners	
Eurocadastre	Members are the states of the EU including the states that will join the EU in 2004	25
	Observers (EuroGeographics and WPLA)	2
EuroGeographics	Any national mapping agency, which is the responsible agency for topographic mapping in a country within the enlarged Europe and which accepts the Articles of Association and pays an annual subscription fee to be voted each year at the General Assembly, may become an Active Member Any official mapping agency in a country within the enlarged Europe, which accepts the Articles of Association and pays an annual subscription fee, limited to the fixed portion, may become an Associate Member.	40
WPLA	No information available	

*Thematic: Local government*

Organisation	Target groups	Members
UDMS	The organisation counts no formal membership.	19

*Professional: Geodesy*

Organisation	Target groups	Members
CLGE	CLGE represents <b>22 000</b> (1977 data) Geodetic Surveyors, which are members of the members.	22000
	Principal Members: accepted from EU member States. Only one membership per State is permitted.	15
	<i>Associate Members</i> : accepted from European States, which are not members of the European Union. Only one membership per State is permitted.	7
	Observer status is permitted from any European country, usually during the process of joining CLGE, to facilitate the application procedure.	6
	Honorary membership is permitted to facilitate the achievement of CLGE key goals	

**Observations:**

Only a few organisations count individual membership. The membership structure is not very complicated. Sometimes one organisation from each country is allowed to enter membership. In some cases more organisations may join up. The membership is split up into 2 or 3 categories. The members are generally speaking public or private bodies, working in the European countries.

**6.4.5 Pan European GI Organisations and their environment****Memorandum of Understanding (MoU)**

Some organisations agree on mutual cooperation by entering a Memorandum of Understanding (AGILE, EUROGI). Especially AGILE is using this form for better cooperation with other organisations. AGILE has MoU's with several organisations and works with others on a more ad hoc basis.

**Relations with EU institutions**

*EARSC*: EC major Directorates and Services (e.g. DG Research, DG INFSO, JRC), European Space Agency (ESA).

*EARSeL* Was founded in 1977 under the auspices of the European Space Agency and the R&D Directorate of the EU. It still has links with the Earth Observation Directorate of ESA and with the JRC in Ispra.

*CLGE*: DG Internal Market, DG IST, European Parliament.

*EuroSDR*: WPLA.

*EUROGI*: MoU with the Joint Research Centre, good relations with DG Information Society.

*Eurocadastre*: Represent a privileged link between cadastral institutions and the organs of the European Union

*EuroGeographics*: E.g. contract with Eurostat for use of NMA data; involvement in INSPIRE; working with specific DG's helping to meet their requirements for GI in support of reporting within particular directives e.g. Water Framework Directive or policy areas e.g. Transport – monitoring and management of Trans European Networks.

*GISIG*: In projects: e.g. with DG Information Society, DG Education and Culture, JRC.

**6.4.6 Relations with other Pan European Associations**

*AGILE*: EUROGI, GISIG

*CLGE*: GE Geometres Europeens, CEPLIS European Council of liberal professions, ESF European Services Forum, EUROGI, EARSC, UDMS, EuroGeographics, EuroSDR

*EuroSRD*: EUROGI, EuroGeographics, EARSEL, CLGE, AGILE, member of the European Federation of Networks (FER)

*EUROGI*: MoU with EuroGeographics, EARSC (member), UDMS (member). AGILE, WPLA, GISIG, EuroSDR, and CLGE.

*Eurocadastre*: EuroGeographics, WPLA

*EuroGeographics*: MoU with EUROGI and WPLA.

*GISIG*: AGILE, EUROGI, UDMS, UNIGIS.

*UDMS*: Geographical Information Systems International Group (GISIG), Czech Association for GeoInformation (CAGI), Czech Republic. UDMS has co-operated with many European local authorities, universities and institutions.

*WPLA*: EUROGI, EuroGeographics.

#### 6.4.7 Contacts with international (global) bodies

*AGILE*: Open GIS Consortium (OGC).

*EARSel* Regional member of the International Society for Photogrammetry & Remote Sensing (ISPRS) and organises joint meetings with their Working Groups and Commissions whenever possible. For example, EARSel has a joint group with the ISPRS on Remote Sensing of Urban Areas, and the EARSel Special Interest Group on Multilateral Environmental Agreements will hold a joint Workshop as a Special Event at the ISPRS Congress to be held on the 12-23 July 2004 in Istanbul, Turkey.

*ECU*: International Cartographic Association (ICA).

*CLGE* : Fédération Internationale des Géomètres (FIG), General Agreement on Trade in Services (GATS), World Trade Organisation (WTO).

*ENHR*: [Asia-Pacific Network for Housing Research](#) (affiliated)

EuroSDR: ISPRS, ICA.

ERES: [International Real Estate Society](#) (IRES)

*EUROGI*: Holds a seat in the Global Spatial Data Infrastructure (GSDI) Association, is a member of the steering committee and maintains contacts with the Permanent Committees for Geographic Information in Asia & Pacific and the Americas.

*EuroGeographics*: GSDI (member of steering committee) and Global Mapping (member of steering committee and also delivering European data for the Global Map)

*WPLA*: WPLA is a branch of the United Nations Economic Council for Europe. Contact exists with FIABCI: the International Real Estate Federation [www.fiabci.com](http://www.fiabci.com)

#### 6.4.8 Other contacts

*AGILE*: ESRI, Bentley Systems, Intergraph, University Consortium for Geographic Information Science (UCGIS) , International postgraduate Courses in Geographical Information Systems (UniGIS)

*EARSC*: National Space agencies

*EARSel* Has reciprocal membership with the Remote Sensing and Photogrammetry Society in the UK and maintains links with other national RS societies throughout Europe.

*EuroGeographics*: Value Added Resellers who act as a main channel to market for our pan-European products.

*UDMS*: URISA Urban and Regional Information Systems Association (URISA).

One of the forums to maintain contact among some of the organisations referred to above is PEAFF, the Pan-European Associations Forum. At the end

of 2001 AGILE, EuroGeographics, UDMS, OEEPE, WPLA, CLGE and EUROGI decided to intensify the cooperation and form a Pan European Associations Forum. PEAFF brings together the various Pan European GI Organisations. It has no formal structure or statutes. Under this label the associations meet once a year to discuss matters of common interest. EUROGI provides the website information and holds the secretariat. The table below shows the common interest of a few organisations, joined up in the Pan European Associations Forum (PEAFF) ([www.eurogi.org/peaff](http://www.eurogi.org/peaff)).

Table 6. 13: Main Interests covered by Members of the PEAFF

	AGILE	EuroGeo graphics	OEEPE (ESDR)	UDMS	WPLA	CLGE	EUROGI
Data policy (pricing, legal aspects, access etc)	x	X			x	x	x
Standards, Interoperability	x	X	x	x		x	x
Reference data, metadata	x	X	x				x
Research	x	X	x				
Harmonisation		X	x			x	
Education	x		x			x	
Quality		x	x			x	
GI policy		x		x			x
Spatial data infrastructures	x	x	x	x	x	x	x
Urban data management				x			
Land					x	x	
Surveying					x	x	
Geographic databases		x	x	x			
Geospatial applications			x	x			
Membership	GI research Labs	NMA's	Nations States	Individua ls	ECE mem- bers	Nat assoc	Nat + Pan Euro GI associations

x : the associations consider as their core business.

### 6.4.9 Users at the European level

At the European level other pan European organisations are using geographic information as input for their core business or that of their members. These organisations can be clustered in common areas of interest. Just as it is with the pan European GI organisations, these organisations are working close to each other, e.g. the meteorological cluster. The following clusters and organisations can be mentioned (the list is not exhaustive).

#### Geoscience and Geology

*EuroGeoSurveys*: The Association of the Geological Surveys of the European Union, ([www.eurogeosurveys.org](http://www.eurogeosurveys.org)). Objectives are to address European issues of common interest, promote the contribution of geosciences, assist the EU to obtain technical advice for the members and provide a gateway for information to and from the members.

*EAGE*: European Association of Geoscientists and Engineers, ([www.eage.org](http://www.eage.org)) EAGE field of interest is the application of geosciences and related engineering disciplines to solve problems in petroleum exploration and production, in mineral industries, water production, environmental protection or civil engineering.

EEGS-ES has joined the EAGE in January 2003 to build the 'Near Surface Geosciences Division' (NSGD). NSGD will be a separate division within the EAGE.

#### Space

*EUROSPACE*: Association of the European Space Industry, ([www.eurospace.org](http://www.eurospace.org)) EUROSPACE is a non-profit European organisation created in 1961. Its member companies today represent 90% of the total turnover of the European Space Industry. EUROSPACE acts as a focal point of the European Space Industry. It prepares proposals for future comprehensive space programmes. They act as a consultant on selected issues e.g. technology and strategy.

*EUROCONTROL*: European Organisation for the Safety of Air Navigation, ([www.eurocontrol.be](http://www.eurocontrol.be)) EUROCONTROL wish to create "One Sky for Europe" and to co-ordinate the development of a uniform system of air traffic management throughout Europe.

*ESA*: European Space Agency, (<http://sci.esa.int>) The European Space Agency is Europe's gateway to space. Its mission is to shape the development of Europe's space capability and ensure that investment in space continues to deliver benefits to the people of Europe.

*ESOA*: European Satellite Operators Association, ([www.esoa.net](http://www.esoa.net)) ESOA represents the interests of European satellite operators with key European organisations including the European Commission, Parliament, Council and the European Space Agency as well as any other relevant international organisations. ESOA wish to ensure that satellites fulfil their vital role in the delivery of communications.

#### Meteorology

*EUMETNET*: The Network of European Meteorological services, ([www.eumetnet.eu.org](http://www.eumetnet.eu.org)) EUMETNET provides a framework to organise co-operative programmes between the members in the various fields of basic meteorological activities such as observing systems, data processing, basic forecasting products, research and development, training.

*EMS*: European Meteorological Society, ([www.emetsoc.org](http://www.emetsoc.org)). The objectives of EMS are to advance meteorology (and sciences related to it) at a European-wide level. EMS assists the development of applications of meteorology (and sciences related to it) for the public benefit and promotes the public understanding. They promote the exchange of ideas and help Member Societies benefit all classes of their individual members, amateurs, users of meteorological services and knowledge, and professionals in both the applied and research fields.

*EUMETSAT*: European Organisation for the Exploitation of Meteorological satellites, ([www.eumetsat.de](http://www.eumetsat.de)). EUMETSAT aims to establish, maintain and exploit European systems of operational meteorological satellites. EUMETSAT is responsible for delivering satellite data to end-users as well as contributing to the operational monitoring of climate and the detection of global climate changes.

#### Transport

*ERTICO*: Intelligent Transport Systems in Europe, ([www.ertico.com/INDEX.htm](http://www.ertico.com/INDEX.htm)). ERTICO is a European not-for-profit, public private partnership for the implementation of Intelligent Transport Systems and Services (ITS). It was set up in 1991 at the initiative of the European Commission as well as key members of European ITS industry and national governments. ERTICO promotes and supports the implementation of ITS in Europe, ensuring sustainable mobility, travel satisfaction and high economic returns.

*UNIFE*: Union of European Railway Industries, ([www.unife.org](http://www.unife.org)). UNIFE is the European network for the railway supply industry. It is a professional association representing the interests of the 100 largest and medium sized companies. A further 1000 suppliers of railway equipment are associated members through their National Associations. UNIFE represents its member's

interests towards the European institutions, rail operators and other business organisations.

### Environment

*ECNC* : European Centre for Nature Conservation, ([www.ecnc.nl](http://www.ecnc.nl)). ECNC actively promotes the conservation of nature and especially of biodiversity in Europe, because of their intrinsic values and their relevance to the economy and European culture; thereby ECNC seeks the integration of nature conservation considerations into other policies.

*EFI* : European Forestry Institute, ([www.efi.fi](http://www.efi.fi)). EFI's mission is to conduct, promote and co-operate in the research of forests, forestry and forest products at the pan-European level, and to provide the results of the research to all interested parties, notably in the areas of policy formulation and implementation, in order to promote the conservation and management of forests for producing goods and services in a sustainable way.

*EEA* : European Environment Agency, ([www.eea.eu.int](http://www.eea.eu.int)). The European Environment Agency's core task is to provide decision-makers with the information needed for making sound and effective policies to protect the environment and support sustainable development.

#### 6.4.10 Global GI organisations

At the global level a few GI organisations should be mentioned, due to the relations with European GI organisations.

*GSDI*: Global Spatial Data Infrastructure Association, ([www.gsdi.org](http://www.gsdi.org)) The purpose for which the Global Spatial Data Infrastructure Association is formed is exclusively for educational, scientific, research and other similar non-profit purposes. The mission of the GSDI Association is to:

- Serve as a point of contact and effective voice for those in the global community involved in developing, implementing and advancing spatial data infrastructure concepts;
- Foster spatial data infrastructures that support sustainable social, economic, and environmental systems integrated from local to global scales; and
- Promote the informed and responsible use of geographic information and spatial technologies for the benefit of society<sup>67</sup>.

*FIG*: The International Federation of Surveyors, (<http://www.ddl.org/figtree/>). FIG is a federation of national associations and

represents all surveying disciplines. It aims to ensure that the disciplines of surveying and all who practise them meet the needs of the markets and communities that they serve. It realises its aim by promoting the practice of the profession and encouraging the development of professional standards.

*ICA*: International Cartographic Association, ([www.icaci.org](http://www.icaci.org)). The mission of the International Cartographic Association is to promote the discipline and profession of cartography in an international context.

*IHO*: International Hydrographic Organisation, ([www.iho.shom.fr](http://www.iho.shom.fr)). The mission of the IHO is to ensure the provision of hydrographic information for worldwide marine navigation and other purposes, through the endeavours of national hydrographic offices. A subsidiary mission is the application of hydrographic data to support science, and to promote its use in geographic information systems, principally for the sustainable development of national maritime zones.

*ISO*: International Standardisation Organisation, ([www.iso.ch](http://www.iso.ch)). ISO is the world's largest developer of standards. Standards contribute to making the development, manufacturing and supply of products and services more efficient. They provide governments with a technical base for legislation. Technical Commission TC 211 is dedicated to geographic information. The scope is Standardization in the field of digital geographic information. More information can be obtained from the ISO web site.

*ISPRS*: The International Society for Photogrammetry and Remote Sensing: ([www.isprs.org](http://www.isprs.org)) The International Society for Photogrammetry and Remote Sensing is devoted to the development of international cooperation for the advancement of knowledge, research, development, education and training in the photogrammetry, remote sensing and spatial information sciences, their integration and applications.

*OGC*: Open GIS Consortium, ([www.opengis.org](http://www.opengis.org)). Aim of OGC is to deliver specifications in the field of geographic information that are openly available for use. The mission of OGC is closely related to ISO TC 211.

*UNGIWG*: UN Working Group for GI, (<http://www.ungiwg.org/>) The UNGIWG is an internal UN working group that aims to play a cross-sectoral role in the same way as COGI does for the EC. They hold a yearly meeting to discuss topics related to the use of GI within the United Nations offices.

The list is of course not comprehensive but gives a good sense of the wide range of organizations that have a stake in the development of GI in Europe. Of course one of the main organisation that is engaged in the process is the European Commission, as discussed below.

<sup>67</sup> Draft Bylaws of the Global Spatial Data Infrastructure Association, Version Sept 7, 2001.

#### 6.4.11 European Commission initiatives

GIS activities in the Commission started since 1981 (e.g. DG REGIO, Eurostat, ) with the CORINE project, the creation of DG ENV and the creation of the European Environment Agency (EEA) and as a result the awareness about GI(S) increased. This led Eurostat to establish the GISCO project in 1991 Geographic Information System of the Commission. GISCO has established a GISCO user committee acting as a consultation forum between GISCO and its DGs user Members from the different Commission services including the Agencies established by the EC (e.g. EEA). Participants are invited to propose and discuss issues of mutual concern with GISCO or of general concern to the entire User Community. Eurostat has also set-up a task force with the National Statistical Offices and the National Mapping Agencies in order to participate in European coordination activities in the field of GI; to strengthen national collaboration between NMAs and NSIs; and to discuss problems of integrating statistics and geography.

Within the European Commission there are GI key players and a coordinating structure between the various Directorates General has been created in 1999 under the initiative of Eurostat and DG Information Society (INFOS) :COGI ([www.ec-gis.org/cogi](http://www.ec-gis.org/cogi)) the Interservice Committee for Geographical Information. COGI aims to co-ordinate the use of geographic information within the Commission services to improve the efficiency and cost effectiveness of European policy monitoring that require a spatial analysis of the European territory. Within the EC it is influential in co-ordinating a unified approach e.g. use of a common reference system, metadata, and projection system. COGI aims to work as an internal body, but it is becoming more and more influential outside the Commission.

DG Information Society must be mentioned as well as an influential player in the GI field. They not only support the INSPIRE initiative, but are developing a public sector initiative to regulate and harmonise the access of public sector information for all users in Europe. The Information Society Directorate-General is playing a key role in implementing the "vision" set by Europe's heads of state in Lisbon, 2000: to make Europe the world's most competitive and dynamic economy, characterised by sustainable growth, more and better jobs and greater social cohesion, by 2010. As set out in the eEurope action plan, this will require advanced and easily accessible Information Society technologies to permeate throughout European business and society. The Directorate-General therefore:

- stimulates research into Information Society technologies which can be integrated into the citizen's everyday environment, business and administration;

- has established and is maintaining a framework of regulation designed to generate competition and stimulate the development of applications and content;
- supports initiatives that encourage and enable all European citizens to benefit from, and participate in, the Information Society. DG Information Society is coordinating relevant European Commission programmes and initiatives, such as the eEurope action plan, ISTweb, eContent, eSafety, eTen, IDA (Interchange of Data between Administrations), the Internet Action Plan and others.

The DG Research is also coordinating programme (e.g. GMES) that are relevant for research activities dealing with spatial information (see Chapter 1) as well as supporting research activities through the Framework Programmes of Research and Development of the European Union.

DG Environment plays a role in stimulating access (Aarhus convention) and sharing of data via the INSPIRE initiative. As already mentioned in Chapter 1 the INSPIRE initiative (INfrastructure for SPatial InfoRmation in Europe) promises to play a major role in setting up and infrastructure for Europe aiming to enlarge the model developed by the participants to all sectors of the European Commission.

Also an important player is the Joint Research Centre (JRC) of the European Commission. "The mission of the JRC is to provide customer-driven scientific and technical support for the conception, development, implementation and monitoring of EU policies. As a service of the European Commission, the JRC functions as a reference centre of science and technology for the Union. Close to the policy-making process, it serves the common interest of the Member States, while being independent of special interests, whether private or national." JRC plays a very active role (through its specific institutional project called ESDI and previously with project GI&GIS) in the development of the European Spatial Data Infrastructure. JRC is now leading the technical development of INSPIRE in collaboration with various GI networks (AGILE, GISIG, EUROGI, EuroGeographics.). The JRC participates in the GINIE project, and in the NATURE-GIS project and in the past other projects dealing with SDI (e.g. ETEMIL, PANEL-GI, GIPSIE) and as well in application using in various policy field (risk management, nature conservation, agriculture, urban development, water, soils.

Other DGs are active and some of them have an internal GIS office DG REGIO, DG TREN (partially), DG ENV (contractors), DG AGRI (contractors)

The EC provides geographic information, but it is one of the largest users as well. COGI is the link between the EC institutions with respect to the use of geographic information.

### 6.4.12 Conclusions

As this Section has demonstrated, whilst there are clear GI reference points at the national (national GI associations) and at the global level (global spatial data infrastructure association), there is no clear reference point at the European level. The pan European GI organisations all maintain relations with EU institutions, national bodies and global institutions. They are aware of the other pan European organisations and are working together with them if there is a common interest. The questions that arise are: Is there a need for further cooperation? Or; is the present situation providing enough opportunities to meet? How would it be possible to foster greater cooperation and synergy at the European level?

#### Cooperation within the clusters

Looking at the clustering of the organisations and their mission and strategy as set out earlier, it may be clear that is evident for some of the clusters to cooperate in order to achieve their aims in a better way and at reduced costs. In order to avoid duplication and share resources some of them should consider merging and forming a new organisation.

EUROGI and GISIG are broad umbrella organisations and can investigate the common interests and options to cooperate. They are complementary.

AGILE, EGEA and EUGEO are dealing with the same issues: teaching, education, research and do have partially the same target groups. There is some overlap and it may be useful for them to investigate further cooperation.

EARSC and EARSeL are both dealing with remote sensing: the first as a representative of industry, the latter as a scientific body. Where they are working in the same field it is clear that cooperation can benefit both. The results of the scientific work can be used by industry and at the other hand industry can ask EARSeL for help by doing research on specific topics.

Eurocadastre, EuroGeographics and WPLA are involved in activities related to land use. EuroGeographics and WPLA are already working close together.

ENHR is working in the housing and real estate domain; as does ERES. Both are dealing with research. There is no indication of cooperation between them. It is obvious to join forces looking at their work.

ECU and EuroGeographics could investigate if there are options for collaboration. EuroGeographics e.g. is participating in the work of the International Cartographic Association. So does ECU.

### Cooperation between all pan European GI organisations

Although it is useful to strengthen the cooperation within the clusters there are a number of reasons for better cooperation between all pan European GI organisations. Most of the pan-European organisations analysed share similar roles and objectives, including:

- Knowledge and information supplier (14 times mentioned).
- Research (12).
- Public relations, awareness raising and promotion of GI (10).
- Facilitator for education (8).

Where they have many roles in common, not only within the clusters it may be possible to investigate if there are enough issues in common to share resources. Also analysing the main topics on which these organisations focus it is clear that several parties share the same interest. For example:

- Data policy is an issue for EUROGI, EuroGeographics, and AGILE.
- AGILE has a working group dedicated to environmental modelling; EARSC and EARSeL are carrying out projects related to environmental issues.
- Interoperability and metadata is an issue for EuroGeographics and AGILE.
- ERES, ENHR and WPLA are doing projects in the domain of real estate.
- Education is a matter for AGILE and EGEA.

Table 6.13 of main issues covered by the members of the Pan European Associations Forum (PEAF) shows the interest in the same topics. They decided to inform each other and cooperate if possible. The table points out that there is a need for cooperation between all organisations rather than the clusters only. This cooperation may include in particular

- Sharing information on each other activity
- Share resources: About half of pan European GI organisations are voluntary driven. Members contribute to projects by working on a voluntary basis. It is clear that in case of minimal resources it may be interesting for all parties to join forces in order to reduce the costs and increase results.
- Share activities such as Conferences

The content of this Section shows the complex mosaic of pan-European GI organisations that currently exist that have a stake in the development of GI in Europe. As it suggests, there are many good opportunities for pan-European GI organisations to work together towards their common aims and we hope that closer collaboration particularly within the identified clusters will take place in the future.