The Association of Geological Surveys of the European Union
(EuroGeoSurveys)
in their position as
custodians to their national natural resources
and
guardians of their terrestrial environment

present their contribution
to the Draft Position Papers prepared by the
INSPIRE Working Groups.

Input to the GMES Meeting

Emile F.M. Elewaut
Secretary general
EuroGeoSurveys
3, Rue du Luxembourg
1000 Brussels
Tel +32 2 282 95 14
info@eurogeosurveys.org
www.eurogeosurveys.org

François Robida
"Terre Virtuelle" Project Manager
BRGM
3, avenue Claude Guillemin
45060 ORLEANS CEDEX2 France
Tel : +33 2 38 64 31 32
f.robida@brgm.fr

Having taken notice off the following documents:

- Inspire vision
- Draft Environmental Topic User Needs; Position Paper
- Draft Data Policy and Legal Issues; Position Paper
- Draft Reference Data and Metadata; Position Paper
- Draft Implementation Structures and Funding; Position Paper
- Draft Architecture and Standards; Position Paper
- Final Draft ESDI Organisation and E-ESDI; Action Plan

Taking into account the following EuroGeoSurveys documents and opinions:

- EuroGeoSurveys Opinion 25: “eEurope 2002: creating an EU framework for the Exploitation of Public Sector information.”
- EuroGeoSurveys Contribution to: “Stakeholders Consultation Meeting on Soil Protection Policy.”

and referring to existing data and meta-data experience within EuroGeoSurveys and amongst its members, the National Geological Survey Organisations;

EuroGeoSurveys contributes the following observations:

- EuroGeoSurveys welcomes the initiative that will be beneficial to many more fields of technical, social and environmental information than enumerated in the above mentioned documents. The INSPIRE initiative will provide the strongest basis for standardisation and exchange of information, not only between geographical reference systems, but also between different fields of technical and scientific expertise, thus forming one of the cornerstones of the European Research Area, as well as of the GMES, transport, sustainable land use, soil and sub-soil and hydrogeological reference system.

    1. GEIXS (Geological Information Exchanges System): this is the European Geological Data Catalogue, where data sets are described through:

        - The geographic coverage of the data
        - A system of keywords from multilingual lexicons
        - A string of free text.

    2. EU-SEASED, including separate metadata systems:

        - Eurocore (a registration of seabottom sedimentary samples and cores),
        - Euroseismic (a catalogue of all marine seismic data lines including the many oil and gas related exploration data),
        - EuMarsin (the catalogue of Marine sedimentary deposits and coverage).

EuroGeoSurveys has developed and is developing these data systems partly with participation and sponsoring of the European Commission (FP4 and FP5).
EuroGeoSurveys is financing the maintenance and continued development of these data systems (repport TNO-BRGM).
Based on areas as part these data catalogues, EuroGeoSurveys is developing a number of thematic applications, where data have been combined and interpreted to provide e.g.

- The International Geological Map of Europe (1:5.000.000)
- The Geochemical Map of Europe, in co-operation with FOREGS (Forum of the European Geological Survey Directors)
- The Multilingual Thesaurus: a product initiated and developed through the International Union of geological Sciences (IUGS) has been further extended by EuroGeoSurveys to form the multilingual, standardized lexicon for all its meta data systems.
- The European Minerals Yearbook, a compilation of mineral reserves and resources based on spatial an economic information.

The partners of EuroGeoSurveys Meta data product, based on their own experience, fully agree with the proposed development and technical implementation proposed in the INSPIRE Draft Position Papers. The newly proposed set-up for the GEIXS and EUSEASED systems (GEIXS Review, Managerial and Technical reports, TNO-NITG and BRGM reports, 2002) is fully in, line with the proposed INSPIRE development. In fact, a large number of the INSPIRE objectives have already been achieved by EuroGeoSurveys. Therefore, EuroGeoSurveys suggests a link-up, or close cooperation between EuroGeoSurveys and INSPIRE. As such, EuroGeoSurveys and its member National Geological Survey Organisations as horizontal thematic frame work in existence, is prepared to contribute, to the development of the initiative, both as national Data Information custodian and as users.

Environmental topic User needs
Draft Position paper

1) INSPIRE Rationale

The Geological Information Exchange System (GEIXS), is operational (over 200.000 visitors in 2001), is filled with an extensive amount of data and has a legal framework available that can easily be adapted to INSPIRE.

2.2) Spatial Data Producers and Suppliers.

The members of EuroGeoSurveys the Geological Survey Organizations as National mapping agencies and their specific agencies have the ability to step up the present INSPIRE initiative.

3.2) Why define environment topics and common geographic data lager.

The organisational set-up, where data will be loaded to INSPIRE in national systems to be used locally, will require an enormous reformatting and standardization effort, especially in the thematic fields.
Meeting budgetary constraints will require an early definition of the level of standardization needed e.g achievable.

3.3) The process of defining environmental topics

Geology and geological spatial data will form a sound basis to many topics of relevance to the needs defined in different kinds of legislations, conventions and policies.
e.g:

- Legislation and Policies
- Water frame work Directive
- Mining waste
- Soil Monitoring
- Land Use
- Sustainable development
- Natural Hazards

Cross cutting need

- Geochemistry and health
- Geodiversity
- Versus biodiversity
- Cultural heritage and building and decoration materials.

This will lead to a complexity of data and models yet unforeseen. Indeed, the spatial reference to a meandering is rather simple.
For geological purposes, as well as for some other thematic applications, models should allow for much more complex formulations in the sense of historical data and vertical stacking of data.
But the main complexity can be anticipated in the translation of data, meaning: the formulation for other users. Especially this issue makes the installation of user platforms of prime importance to success of the initiative.
This issue will help solve the inherent problems described in 3.6: High level geographic data topic classification.

As a recommendation, EuroGeoSurveys would strongly support the idea to link INSPIRE's work on a European Spatial Data Infrastructure to other initiatives on European and environmental data infrastructures in particular EuroGeoSurveys in parallel with EEA's and ERONET's report net.

Euro stresses the fact that the geological sciences contribute to a large number of Environmental Policies, conventions and the other Sectoral policies as listed in appendix 1:
Policies and legal instruments linked to environmental Topics; and more specifically in the areas of WATER (inland, marine), climate change, land soil (land use, soil and subsoil), Nature (biodiversity) and Hazard.
At the same time, and in line with the communication of the Commission: Towards a thematic Strategy for Soil Protection (COM (2002) 179 final).
EuroGeoSurveys suggests to consequently use the terminology "soil and subsoil".

Data Policy and legal Issues Working Group Draft Position Paper

EuroGeoSurveys would like to point out that for future draft, documents and developments, the INSPIRE Policy and legal framework should be fully in live with the EU framework Directive: eEurope 2002 – Exploitation of Public Sector Information.

Regulations of INSPIRE, established at a European and national level, and based on the application of subsidiary, may, if not properly orchestrated and executed, prove to be in conflict with the establishment of (simple) harmonized Licensing Frameworks.

1.1 INSPIRE context and Vision (General)

EuroGeoSurveys would like to attract the attention to the duality expressed in 1.1.1 where it is stated:

“The data are often of poor quality, of inconsistent standards…….This is often symptom of insufficient revenue and this paper is therefore mindful to ensure it does nothing to perpetuate unsustainable models”.

Many of the data collected, are collected not for economic welfare, but rather in function of the social well-being and safety of the population and its habitat. Too many environmental, biological processes operate on a time scale too long too proves immediate worthiness and applicability to a number of data systems and data models. The choice whether models are sustainable is not a point of consideration to INSPIRE.
Many of the data collected are collected based on philosophies inherited and elaborated over many generations of accumulated problems, disasters and cataclysms. Data acquired in function of these accumulated experiences are collected as Service of General Interest and their functioning should not be evaluated or reconsidered based on such vague terminology as “unsustainability” (especially if, as is the case here, it means “not frequently used or not paid for.”

1.2

EuroGeoSurveys knows from own experience that the aim to have a citizen in Europe follow on a day-to-day basis the state of the local living environment is overly ambitions. EuroGeoSurveys would therefore suggest a classification of data in function of their regular need of update (e.g: daily, monthly, yearly).

1.2.4

EuroGeoSurveys cannot but stress the need to establish a supportive/organizational environment able to comfort and stimulate participants and government and commercial stakeholders. A constant demand on financial and human resources as imposed upon participants will form a continuous threat both to the overall functioning and to financial well being of the stakeholder’s organizations.

2.2.2

EuroGeoSurveys supports the idea of putting the burden of installing and operating a national spatial data infrastructure on the shoulders of each Member State.
However, in view of the many existing differences in the level of development and maintenance of such spatial data infrastructure in Europe, this may become one of the major pitfalls in the INSPIRE initiative, and result in large differences in implementing speed.

2.7 Thematic Data

2.7.1 In line with the EU framework directive soil, (COM (2002) 179 final) EuroGeoSurveys suggests to use the terminology “soil and sub soil” wherever “soil” is used in the draft document.

2.7.2 EuroGeoSurveys supports the idea of having small Work Groups specify and develop the process of defining themes and sub-topics, and as such is prepared to contribute to these Work groups.

3. Identification of producers and users of data

The national Geological Survey Organizations, members of EuroGeoSurveys, as Services of General Interest are at the same time producers and users of special information. As user, the national Geological Survey Organizations are at the same time Governmental Administrations (task installed by law), research development organizations, but also Commercial and Professional End Users. In fact, Geological Survey Organizations conduct a significant amount of business in the conventional sense with the private sector, or with the general public.

4.5 Primary data

4.5.2 EuroGeoSurveys strongly believes that the statement: ”Public bodies must ensure that primary Data is made available ……without any charge whatsoever” needs a very clear description of the terminology used: primary data versus value added data and reference data.

8. Summary of the Policy Principles defining the scope of the INSPIRE legislation:

Policy Principle N° 6: Thematic Data will be compiled to agreed time scales and using common approaches.

EuroGeoSurveys has all too often in the past observed that time scales for data acquisition, collection and compilation may change either gradually in function of developing philosophies, or abruptly in function of sudden, often catastrophic events. It is therefore our strong conviction that Policy Principle No 6 should allow for flexibility and non-exclusive use of time scales. The more so as the speed of physical and chemical process active its soil and subsoil may vary widely across Europe.

Reference Data and Metadata
Draft Position Paper

2. Executive Summary

The Executive Summary gives an extensive overview and identification of further research needed, EuroGeoSurveys would like to add to this list the following topics:

- Related to interoperability: TRANSLATION of data between different fields of technical expertise
- Related to resolution/scale: PROPAGATION of errors between scales.
- Standardization: the proposed ISO standards are not yet fully developed. The INSPIRE initiative is in fact pushing the further development of these standards.
  EuroGeoSurveys stresses the need for a definition of national and thematic profiles of the

ISO19115 metadata standard, in order to facilitate a consistent implementation of the initiative.

- Issue language and culture: EuroGeoSurveys and culture: EuroGeoSurveys proposes to be develop a number of thematic Multilingual thesauri.

4.3 Data quality

4.3.1 It is the strong belief of EuroGeoSurveys that in the past, product specification and development has not always reflected the needs of the users, not only as far as reference data are considered, but also in relation to thematic data.

4.3.4 EuroGeoSurveys is positive related to the introduction of quality flags. Any data provider should be aware that data are subject to liability disputes.
Therefore, a system of quality flagging may become laborious, and vague where historical data are involved.
Qualitative rather than quantitative rankings may be needed (e.g for historical versus newly acquired data).

4.6 Language and culture

EuroGeoSurveys, together with IUGS and all the EuroGeoSurveys members, have long time ago decided that unambiguous definitions should and can be established across languages, in order to render the metadata system more useful and applicable across Europe. A multilingual thesaurus has been developed, the basic technology of which could be translated to any other thematic field.

4.7 Resolution / scale and implementing priorities

4.7.3 The third INSPIRE funding principle: “It should be possible for information collected at one level to be shared between all the different levels “may generate large propagation problems in terms of geological, spatial data.
Moving from small scale to large scale is not an evident operation, needing sometimes elaborate further data manipulation. Changes in scale include changes in techniques of compilation and considerations of error propagation. EuroGeoSurveys suggest that this be a major research topic for the future.

6.3 Metadata implementation

EuroGeoSurveys recognises the need for a competent authority for co-ordinating the national producers of data, for collecting and managing the meta data.
However, as different thematic data pools will be included in the INSPIRE data system, the need for Several competent national authorities, co-ordinated through a centralised European thematic authority may rise.
These thematic coordination groups will also have the initiative of creating the thematic multilingual thesaurus.

7. Inter-relationships with other position papers

7.1 ETC – Environmental thematic co – ordination

EuroGeoSurveys stresses the point that a number of data layers are more complex than assumed in the draft document; indeed geographical data can have:

- 3D extensions: e.g drilling data and trajectories, hydrogeological models
- 4D extensions: e.g changes in geochemistry, pollution clean up, groundwater levels.

These possible complex extensions, even if not immediately included in the data model, even if they are taken into account in the next release of of GML 3 specifications,will have to considered up front.
EuroGeoSurveys proposes to include in the list of " thematic zoning systems" the following layers:

- mining sites
- mining permits
- pollution sites

Implementation Structures and funding
Draft Position paper

In general, EuroGeoSurveys would propose to use throughout the document the terminology " soil and subsoil" there where the term "soil" is used in the documents. This will bring the documents more inline with the communication COM (2002) 179 final.

EuroGeoSurveys stresses the need for the co-operation but point out that co- ordination will have to take into account that different thematic sectors will be included in the INSPIRE data system.

4.1 INSPIRE vision

"For each data a data custodian will be responsible for the quality of the information provided".

The reality is that for each data, already a data custodian on the national/regional level is responsible. In fact, in the case of the geological data, in most countries, the Geological Survey Organisations have that responsibility installed by law.
The INSPIRE concept and model will need to take these legal realities into account.

5.1 Roles needed within a European SDI

Structuring the responsibility for the sound operation of INSPIRE into a number of separate tasks:

- Co-ordination at European level,
- Co-ordination and management at national level
- Data services of European data
- Data collection and management at national to local level
- User organisation
- Research organisation

is considered necessary.

However, EuroGeoSurveys would like to point out that:

1. The user-organisation should be guaranteed a rather independent setting, free from interference with European and national providers,
2. The user-organisation should operate its own information channels and should have yearly user group meetings.
3. The user-organisation should have its own funding to operate a secretariat, close to the co-ordinating organisation.
4. As most of the research is done by data providers themselves, there is a strong need for co-operation and co-ordination of research with the recommendations of the user-organisation.

5.2 Actor categories within the SDI

EuroGeoSurveys notes that its members, the national Geological Survey Organisation are, through the specificity of their task, at the same time responsible for:

- the management and co-ordination
- the production and maintenance
- the distribution of the data
- providing the service and products
- the standardisation
- the use the policy advice and consultation
- the research

5.4 Examples of SDI

EuroGeoSurveys points out that it is currently operating a number of European data sets:

- GEIXS
- EUSEASED
- EUROSEISMICS
- EUROCORE
- EUMARSIN

6 Implementing

EuroGeoSurveys together with its member organisations is ready to provide national experts to finalise the specification of the European reference and thematic data.
As a number of pilots are already operational, the action plans could be stepped up considerably in the field of geological data. The geological data exchange systems could be useful examples for the development of other thematic data systems.

7. Funding

The national Geological Survey Organisations of the 15 European Union member states can be split up into roughly three categories, based on their size:

- The larger organisations (5) with over 600 employees
- The medium size (5) organisations with between 200 and 400 employees
- The smaller organisations (5) with less than 100 employees.

The number of employee's developes more or less in parallel with the importance and extension of the data base task.
Based on these considerations, EuroGeoSurveys has made an inventory of the overall cost for operating these databases; i.e: data collection, data maintenance, archiving, data analyses, as well as making data available. These costs include in general soft and hardware and human resources. The learned estimate arrived at amounts to:

- For the larger organisations: over 2 million euro per survey per year, totalling more than 10 million euro.
- For the medium sized organisations: between 1 million and 400 thousand euros per survey per year totalling around 4 million euros per year.
- For the smaller organisations: between 400 000 Euros and 200.000 per survey per year, totalling around 1.5 million euro per year.

All cost is provided for through national government funding.

If data acquisition, and data interpretation are included, the total cost amounts to between 10 and 15 times the cost for the data maintenance. Totalling for all 15 EU member states to roughly between 150 and 225 million euros per year.

7.3 Examples of financing

Also for the EuroGeoSurveys operated databases, the control structures for constructing and co-ordinating the databases is co-funded between the partners and the Commission, e.g GEIXS, EUMARSIN, EUROSEISMICS, ect. Such funding structures do not guarantee maintenance and updating on a long-term basis.
Therefore, the Commission should, through the INSPIRE initiative, guarantee long term financial security, especially for those data services that are of limited commercial interest and are conceived as Services of General Interest.

8.1.1 Organisation

With respect of the competencies of the Commission, EuroGeoSurveys is of the opinion that the "European Spatial Data Committee " should make certain that they have sufficient expert support at hand, not only in the field of supporting activities, but also in the thematic fields (e.g. soil, geology, transport, ect).

8.2.1 Step-wise implementing

EuroGeoSurveys fully agrees with the idea of involving the experience of similar metadata services today as run by Eurogeographies, but also by EuroGeoSurveys itself.

One important example of applicability mentioned is the implementation of the Water Framework Directive, WFD. However, other foreseeable implementations are: e.g soil monitoring, and land use. The stepwise implementing should therefore guarantee sufficient flexibility in order to:

1. Accommodate future applications
2. Allow for changes in action plans and priorities
3. Allow for vast and rapid increase in data and services

Architecture and Standards
Draft position Paper

In general, the INSPIRE model and initiative is very much based on the " Digital Earth" concept, as started a few years ago by the United States Government.
However, INSPIRE should not just copy the Digital Earth initiative, but should rather improve and elaborate, the basic concept. This last intention cannot readily be deduced from the figures used in the AST document.

2.1 Reference model

As far as user applications are concerned, EuroGeoSurveys would like to bring under the attention the fact that good 3D visualization software has already been developed by some of its members and is available and to used by customers on the data retrieval websites of these National Geological Survey Organisations.

2.2.1 User applications

The statement that: "Commercial organisations will use the infrastructure to get access to these data, and to publish their products" is a limitative statement in the sense that:

1. "Commercial organisations" implies that only commercial companies will stimulate the development of INSPIRE.
2. Commercial companies are described as value adders while public organisations are described as holding reference data in store.
3. In fact, many of the data, together with their user services have been developed by Government Organisations and companies providing Services of General Interest.

Tables 2.II

The time table provided is rather conservative in fact, taking into account the experience already existing with a number of organisations (incl. EuroGeoSurveys), many of the targets mentioned can be achieved much faster.

2.2.2 Geoprocessing and catalogue services

In order to make services, available through the net, large research investments will be needed.

3.1 Administration and certification of INSPIRE standards

The statement that " ISO 19100 series of standards will be compliant with the INSPIRE standards "turns the world upside down. In fact, the success of ISO is based on the fact that the standardisation has a world wide application while the INSPIRE standard may, in terms of applicability, run into geographical limitations.

4.1 Towards INSPIRE

EuroGeoSurveys wishes to express its concern for the development of INSPIRE in the times until legislation.
Indeed little effort has been made to give the development of the INSPIRE tools and models the necessary impetus through a coherent implementation in FP6.

4.4 Further Research and Development

In table 4.II, under priority 1, reference is made to "Mutation, Propagation" relating to how changes in base layers of geographic information propagate to other layers. Reference should also be made to the problems of the propagation of errors and uncertainties and to decision making when up-or down scaling geologic/geographic data.

5.2 Standards

The idea of upgrading the INSPIRE standard to a level comparable to the ISO 19100 family of standards engenders the risk of isolation. Indeed, INSPIRE is for the moment a regional data catalogue system. Just one in a world market.