

ESDI Organisation and E-ESDI Action Plan

Table of Contents

1.	INTRODUCTION AND BACKGROUND	5
1.1.	Purpose of the document.....	5
1.2.	The need for a initiative on E-ESDI	5
1.3.	The objectives of E-ESDI.....	6
1.4.	The elements of E-ESDI	7
1.5.	The types of activities for the introduction of E-ESDI.....	7
1.6.	The phases for the introduction of E-ESDI.....	8
1.7.	Organisation of the document	9
2.	OVERVIEW OF THE ESDI ORGANISATION	10
2.1.	Introduction.....	10
2.2.	Role of the different groups	10
3.	E-ESDI ADVISORY STRUCTURES: COMPOSITION AND MANDATE.....	13
3.1.	E-ESDI Expert group	13
3.2.	COGI	13
3.3.	GMES Steering Committee and Forum	14
4.	OVERALL MANAGEMENT & CO-ORDINATION.....	16
4.1.	E-ESDI Organisation and Action plan	16
4.2.	Horizontal consultation meetings	16
4.3.	Technical co-ordination & secretariat	16
5.	SUPPORT ACTIVITIES FOR THE PREPARATION OF THE E-ESDI INITIATIVE.....	18
5.1.	Baseline information collection.....	18
5.2.	E-ESDI Impact analysis	19
6.	ACTIVITIES DIRECTLY CONTRIBUTING TO THE DEFINITION OF THE E-ESDI FRAMEWORK LEGISLATION	20
6.1.	Funding and Implementing structures	20
6.2.	Data policy and legal issues	21
6.3.	Standards and architecture	23

7.	USER REQUIREMENT SPECIFICATIONS.....	25
7.1.	Co-ordination activities	25
7.2.	Reference data specification.....	27
7.3.	User requirements specifications for Environmental Thematic data.....	28
8.	ANNEX I. OVERVIEW OF ACTIONS AND THEIR TIMING.....	31
9.	ANNEX II RELEVANT ORGANISATIONS AND INITIATIVES	34
9.1.	European Environment Information and Observation Network (EIONET).....	34
9.2.	European Topic Centre on Terrestrial Environment	34
9.3.	EUROGI.....	34
9.4.	EuroGeographics	35
9.5.	ESPON	35
9.6.	GMES	35
9.7.	GINIE	35
9.8.	Global Spatial Data Infrastructure (GSDI)	36
9.9.	Open GIS Consortium, Inc. (OGC)	36
9.10.	ISO TC211.....	36
9.11.	United Nations Geographic Information Working Group (UNGIWG).....	36
9.12.	World Wide Web Consortium (W3C).....	37

Modification tracking

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0.13	JRC	20.12.2001	?? Draft with some outcome of the discussion at the E-ESDI Expert meeting in Vienna

Executive summary

The Environmental European Spatial Data Infrastructure initiative (E-ESDI) aims at making available relevant, harmonised and quality geographic information for the purpose of formulation, implementation, monitoring and evaluation of Community environmental policy-making. At a later stage, the initiative will be broadened to other sector policy areas such as transport, agriculture, ... and will eventually culminate in the establishment of a cross-sectoral European Spatial Data Infrastructure (ESDI).

This document defines the organisation and action plan for the preparation of a proposal for a Community E-ESDI framework legislative act and is the reference document for all actors involved. It focuses on the first two phases of this preparation, which should be concluded by the adoption of the proposal by the Commission end 2002. It does not cover the implementation of this framework at Member State level.

The preparation of the framework legislation will be strongly user-driven, by linking within the organisation for its preparation the Working groups/structures that are closely linked to the development, implementation, monitoring and evaluation of Community Environmental policy. These Working groups will be asked to formulate the user requirements for spatial data, which will drive the E-ESDI initiative forward.

The framework legislation will be furthermore prepared by a number of horizontal Working groups that will all address specific aspects of the E-ESDI proposal. These groups will mainly be staffed with Member State and stakeholder experts, with appropriate guidance from the Commission and the EEA. Co-ordination between the Working groups will be ensured by the staff of the Commission and the EEA.

All these activities will lead by June 2002 to a range of position papers on what issues should be addressed in the proposal for a Community E-ESDI framework legislative act and how. These position papers will be the basis for the elaboration of the Commission proposal for an E-ESDI framework legislative act, to be adopted by the Commission by the end of 2002.

The whole process will be guided by the E-ESDI Expert group who will closely follow the progress of the activities and advise the Commission and the Working groups on the orientations to take. The E-ESDI Expert group, chaired by the Commission, is composed of Experts from the Member States in the field of Environment and geographic information and of the EEA, completed with observers from Accession countries, international initiatives, ESPON, EFTA Countries, the local level, NGO and relevant umbrella organisations.

Broader stakeholder consultation including with industry will take place through a number of conferences and meetings scheduled in the context of related initiatives and a Communication strategy will be elaborated. Internal co-ordination within the Commission will be ensured through COGI, the Commission inter-service group for geographic information.

1. INTRODUCTION AND BACKGROUND

1.1. Purpose of the document

This document is the result of the first E-ESDI Expert group meeting of 18 September 2001, where the Commission was asked to clarify the organisation and action plan for the definition of the E-ESDI initiative. It has been prepared by the Commission lead services in close collaboration with the EEA. It will, once accepted by the E-ESDI Expert group, be the reference document for preparing the ground for the proposal for an EESDI legislative framework: the creation of the necessary organisational entities and the implementation of the overall action plan. The organisation and action plan will enter in effect immediately after the acceptance of the document by the E-ESDI Expert group.

The document mainly concerns the preparation of the ground for the elaboration and adoption of a Commission proposal for a framework legislative act on E-ESDI.

1.2. The need for a initiative on E-ESDI

Almost all themes of the environment policy (water, forestry, climate, soil, biodiversity...) have a **spatial dimension**. This common spatial dimension is very important for environmental and other sector policies that need to integrate the environmental considerations. All **interactions** between **the living environment of the citizens and the effects of the environmental policies** occur at a specific location.

These interactions are **not sufficiently understood** and taken into account in environment and other policies. For instance the interactions between environment and health would be better understood and exploited if timely and accurate information could be combined on where people live, their health and the pollution of their living environment.

For this to happen, we need to **increase the knowledge** on the spatial dimension of the environment. Advanced Information Technology nowadays allows exploiting geographic information through **Geographic Information Systems (GIS)** for policy definition, implementation, monitoring and evaluation. This is recognised in the 6th EAP¹ and in Community environmental policies that increasingly request geographic information from the Member States².

There are however **important obstacles** to the use of such systems, all linked to problems with the availability and usability of geographic information. The proposed initiative on E-ESDI (Environmental European Spatial Data Infrastructure) wants to gradually overcome these obstacles.

¹ Article 9 of the 6th Environmental Action Programme refers to the need for sound science

² For instance, the Habitats Directive requires Member States to send to the Commission precise maps on the Natura 2000 sites; several Directive in the water sector require the Member States to submit to the Commission geographical information, sometimes in GIS format (WFD); the Commission Proposal for a Noise Directive requires Member States to produce noise maps.

1.3. The objectives of E-ESDI

The E-ESDI initiative aims at making available relevant, harmonised and quality geographic information for the purpose of formulation, implementation, monitoring and evaluation of Community environmental policy-making and for the citizen, along the lines of the general principles set out in the box below.

Furthermore, by establishing from the onset cross-sectoral co-ordination mechanisms, the initiative wants to ensure that in the longer term, E-ESDI can be integrated into a broader cross-sectoral European Spatial Data Infrastructure (ESDI), aiming at providing geographic information for the purpose of Community policy-making in a broad range of sectors, such as transport, agriculture...

Principles of E-ESDI

- 1) Data should be collected once and maintained at the level where this can be done most effectively
- 2) it should be possible to combine seamlessly spatial information from different sources across Europe and share it between many users and application
- 3) it should be possible for information collected at one level to be shared between all the different levels, detailed for detailed investigations, general for strategic purposes
- 4) geographic information needed for good governance at all levels should be abundant under conditions that do not refrain its extensive use
- 5) it should be easy to discover which geographic information is available, fits the needs for a particular use and under which conditions it can be acquired and used
- 6) geographic data should become easy to understand and interpret because it can be visualised within the appropriate context selected in a user-friendly way

1.4. The elements of E-ESDI

E-ESDI envisages the establishment of integrated spatial information services, based upon a distributed network of databases, linked by common standards and protocols to ensure compatibility, each managed by custodians with the expertise and incentive to maintain the information service to the standards required by the Community and committed to the principles of custodianship.

The E-ESDI initiative will address two main pillars:

?? a thematic pillar in order to deal with spatial data gaps for Community Environmental policy in terms of availability, accuracy and quality;

?? a horizontal pillar, which is a prerequisite for spatial information to be **accessible and compatible** from the **local level** until the **Community level** and usable **across the environmental themes and sectors**; it will deal with reference data, organisational and management issues, data policy and data access and technical standards and architecture.

1.5. The types of activities for the introduction of E-ESDI

It is important to understand the different types of activities that will lead to the introduction of the E-ESDI initiative, in order to have a clear understanding of the scope of this document.

1.5.1. Activity type “Framework preparation”

This activity consists of the preparation and adoption by the Commission of a proposal for Community framework legislative act on E-ESDI. This legislative act will:

1) establish general³ requirements for the central part of E-ESDI (such as co-ordination mechanisms and key elements of the horizontal pillar of E-ESDI), including the establishing of a review mechanism, allowing the framework to cope with evolving requirements and

2) set a timetable for milestones for the future adoption of specific⁴ daughter legislative acts that will gradually complete E-ESDI.

1.5.2. Activity type “Framework negotiation and adoption”

The adoption by the Commission of a proposal for E-ESDI framework legislation will trigger the discussions in Council and Parliament⁵. This process should lead to

³ These requirements are called “general” because they do not go into technical details.

⁴ The term “specific” refers to legislation that will address in much more technical detail the general requirements that are established in the framework legislation.

⁵ Typically, the adoption by Council and Parliament takes place after two readings both by Council and Parliament, possibly followed by conciliation if Council and Parliament fail to agree after their respective

the final adoption by Council and Parliament of the Community framework legislative act on E-ESDI and its entry into force. This activity type is not covered by this document.

1.5.3. Activity type “Daughter preparation”

This activity type consists of the preparation and adoption of a Commission proposal for E-ESDI daughter legislation. This daughter legislation is typically of a technical nature and involves detailed discussions at technical level with Experts from the Member States. The majority of daughter legislation will be prepared after the entry into force of the framework legislation. These activities are not covered by the scope of this document.

In a limited number of areas however, daughter legislation can be prepared in parallel with the preparation of the framework legislation. These activities shall also be covered by this document.

1.5.4. Activity type “Daughter adoption”

Daughter legislation will be adopted either according to the same procedure as for the framework legislative act (i.e. by Council and Parliament) or by a fast track procedure⁶. This activity type does is not covered by the scope of this document (with the exception described above).

1.5.5. Activity type “Framework and Daughter implementation”

This activity, not covered by the scope of this document, concerns the implementation by the Member States and the Commission of the requirements of the framework and daughter legislative acts, once they have been adopted.

1.6. The phases for the introduction of E-ESDI

1.6.1. Phase I – Preparing the ground (1/2002 – 6/2002)

This phase is short and mainly focussed on the activity type “framework preparation”. The objective of this phase is to prepare the necessary elements for allowing the Commission to elaborate a Commission proposal for framework legislative act on E-ESDI. For a limited number of selected areas⁷, this phase will also cover activity type “Daughter preparation”. This document mainly concentrates on defining the organisation and action plan for this phase.

two readings. For non-controversial dossiers, faster conclusion is possible when Council and Parliament come to an agreement after the first reading.

⁶ This fast-track procedure can for instance be adoption by a Commission decision after consultation of a committee established by the framework legislative act.

⁷ E.g. mature and stable technical standards, data specifications agreed upon in other initiatives, ...

1.6.2. Phase II – E-ESDI Commission Proposal (6/2002 – 12/2002)

This phase addresses the preparatory work within the Commission needed for the adoption of the Commission proposal for a framework legislative act on E-ESDI. This phase is only described in general terms in this document.

1.6.3. Phase III – E-ESDI Framework negotiation and adoption (2003 – 2004)

This phase mainly involves activity type “Framework negotiation and adoption”. To the extent that some daughter legislative acts will already be annexed to the Framework legislative act, this phase will also involve activity type “daughter adoption”.

1.6.4. Phase VI – Daughter preparation and adoption (2002 and later)

This phase will develop at a pace set by the E-ESDI framework and its successive revisions. Preparatory work can already start in 2002 (see for instance sections 6.3 and 7.3).

1.6.5. Phase V – Evolution towards ESDI

At a certain point, it is anticipated that other sectors will join into the schema. The review mechanism of the framework legislation will address the requirements of the new sector(s), starting three-phased cycles for each sector involved.

At this point, E-ESDI will have evolved into a cross-sectoral initiative on ESDI.

Task Name	2002	2004	2006	2008	2010	2012
The phases for the introduction of E-ESDI						
Phase I – Preparing the ground						
Phase II – E-ESDI Commission Proposal						
Phase III – E-ESDI Framework negotiation and adoption						
Phase VI – Daughter preparation and adoption						
Phase V – Evolution towards ESDI						

1.7. Organisation of the document

The remainder of the document presents two parts. Part A describes the organisational entities that will be involved in the definition of the E-ESDI initiative. Some organisational entities described might be the precursor of a more permanent organisation to be set up for overlooking the overall implementation of E-ESDI. Part B describes the action plan.

PART A. ESDI Organisation

Contents of Part A

This part gives a general overview of the groups involved in the preparation of the E-ESDI initiative and show how they will function in the broader context of ESDI. Furthermore, a detailed description of the advisory groups is provided. The detailed description of the other groups can be found in part B, where the actions are described.

2. OVERVIEW OF THE ESDI ORGANISATION

2.1. Introduction

The ESDI organisation comprises groups of the following nature:

- ?? Advisory groups (E-ESDI Expert group, COGI and GMES⁸ structures).
- ?? Horizontal Working groups contribute to the formulation of legal requirements (E-ESDI framework legislation and daughter legislation).
- ?? Environmental thematic Working groups (e.g. on water, forestry, ...)
- ?? Co-ordination groups (thematic, technical and cross-sectoral co-ordination) and analysis and support groups (impact analysis and funding).

These groups will provide the key contributions to the definition of the E-ESDI framework legislation. An overview of the different groups and their inter-relation is provided in Figure 1. The Figure shows both which groups will work in the context of the E-ESDI initiative and hence need to be operational in the short run and which group will need to be established for the longer term when E-ESDI will evolve to ESDI.

The E-ESDI organisation is set up mainly for the preparation of phases I and II. It will need to be revised at the end of phase II.

2.2. Role of the different groups

2.2.1. Advisory groups

These groups have either been created for the purpose of the E-ESDI initiative (E-ESDI Expert group) or exist in the context of other initiatives (COGI and GMES Steering Committee and GMES forum).

⁸ Global Monitoring for Environment and Security (COM(2001) 609) Communication from the Commission to the Council and the European Parliament Global Monitoring for Environment and Security (GMES) Outline GMES EC Action Plan (Initial Period: 2001 – 2003)

The E-ESDI Expert group represents the core stakeholders of the Member States to the E-ESDI initiative and closely collaborates with the Commission for the development of the E-ESDI initiative.

The COGI group represents the stakeholders within the Commission. This group will be consulted at important moments during the preparation of the EESDI initiative.

The GMES groups represent the broader community of stakeholders and will be consulted on the substance of the E-ESDI initiative.

2.2.2. Horizontal Working groups

These groups provide the basic substance for the preparation of the EESDI initiative. Each Working group addresses a different aspect of the future E-ESDI framework legislation, described in its mandate. The mandates of the Working group correspond to a set of actions with associated deliverables and are described in part B of this document.

The Chair of the Working group is responsible for the final results of the Working group and for making sure that these are available within the timeframe set out in the action plan (part B of this document). The Chair will also organise the Working group meetings.

The most important contribution to Working groups comes from the Member States and key stakeholders. For the purpose of identifying Experts to the Working groups, the participants to the E-ESDI Expert group determine in which areas described in the mandates of the Working groups they have most experience and interest. For these areas, they identify and propose the Experts for participation to the Working groups. Along with these proposals, information is provided on the experts' profile and their availability.

Based on these proposals, the Commission makes (if needed) a selection amongst the proposed experts, taking into account the need to keep the group sufficiently small and the needs to establish a group with complementary expertise. In case of perceived gaps in expertise, the Commission can also invite additional experts to participate to the Working groups. The overall objective is to establish Working groups gathering the best experts available in Europe for the work to be done. Depending on the profile of the Working group members, the Commission can also decide to merge certain Working group after consultation with the experts concerned.

Once the composition of the Working groups determined, this information will be made publicly available.

2.2.3. Environmental thematic Working groups

The environmental thematic Working groups are really outside the ESDI organisation as their main mandate is linked to the support of other Community initiatives in the field of the Environment. However, in this capacity they have a

privileged position for identifying the user requirements for thematic spatial data and will therefore play a key role in the preparation of the E-ESDI initiative. Their input will ensure that the E-ESDI initiative is driven by the user needs.

Given the diverse nature of these thematic Working groups in terms of status, mandate, calendar, working methods, etc., their contribution needs to be co-ordinated through a separate co-ordination mechanism (see section 2.2.5).

2.2.4. Support structures

The support structures provide baseline information and accompanying measures to support the activities of the various groups involved in the preparation of the E-ESDI initiative. These support structures are composed on the one hand of Working groups that function in the same way as described in section 2.2.2 (funding Working group and impact analysis Working group) and on the other hand of a structure set up by an external contractor for the collection of baseline information.

2.2.5. Co-ordination structures

Several co-ordinating groups will be set up with staff from the Commission and from the EEA. These groups will take care of the overall co-ordination, of the co-ordination for the collection of user requirements for thematic spatial data (in the field of the environment) and for the co-ordination of the discussion between the different sectors (environment, transport...).

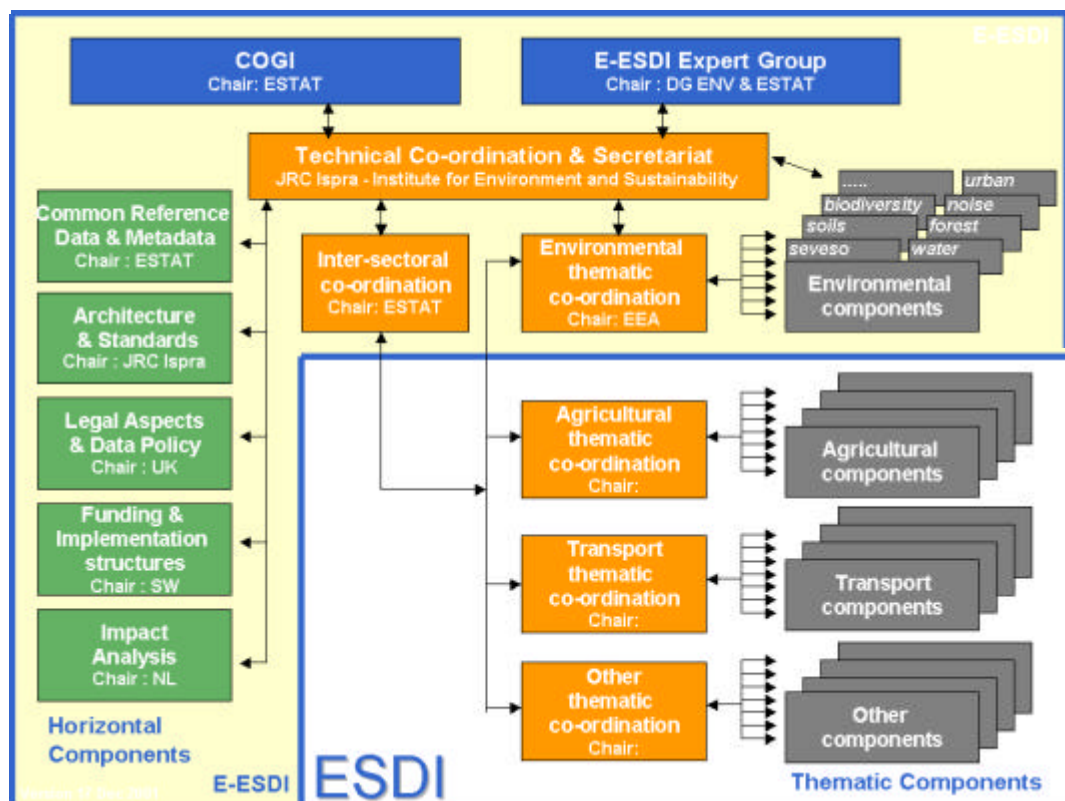


Fig 1 – ESDI Organisation

3. E-ESDI ADVISORY STRUCTURES : COMPOSITION AND MANDATE

3.1. E-ESDI Expert group

Composition

The E-ESDI Expert group is composed of representatives of the Commission, the EEA and of nominated representatives of the Member States' environmental and geographic information communities. A number of observers representing governmental bodies and NGO's are also invited⁹.

The E-ESDI Expert group meetings will be chaired by the Commission and will be organised every 3-4 months. The meetings will be hosted by a volunteering Member State or by the Commission. The meetings will last one or two days depending on the agenda. Additional ad hoc meetings can be organised when needed.

Mandate

The E-ESDI Expert group will support the Commission in the preparation of the E-ESDI initiative by contributing to the following activities:

- identifying background information needs on the situation in the Member States and support the collection of this information
- advise Commission on the organisation and action plan for the definition of the E-ESDI initiative (the present document and its successive versions)
- support for the establishment and operation of the Working groups (e.g. reimbursement of Working group members' travel expenses, chairing and hosting Working group meetings, identify and delegate experts to the Working groups)
- support the organisation of the E-ESDI Expert group meetings (hosting of meetings)
- take position and give views on the outcome of Working group documents and preparatory papers for the development of the E-ESDI initiative

3.2. COGI

Composition

COGI is a Commission inter-service group to co-ordinate and promote the use of geographic information within the services of the Commission, with the aim to improve the

⁹ For the second E-ESDI expert group meeting, observers from accession countries (2) and EFTA Countries (1), EUROGI (1), EuroGeographics (1), UN/ECE Working group on land administration (1), GSDI (1), an environmental NGO (1), a representative of the local level (1), and ESPON (1) have been invited

capacity, cost-effectiveness and efficiency of European policy operations that require spatial data and analysis for the European Territory.

The COGI members are all the Commission services having an interest in the use of Geographic Information. It is chaired by EUROSTAT who also hosts the COGI secretariat. The COGI meetings take place normally twice year. The COGI member will be informed regularly on the progress of the E-ESDI initiative.

Mandate

The E-ESDI initiative will be developed in close collaboration with COGI. The role of COGI will be to facilitate service level co-ordination for

- 1) identifying possible ways of contribution by the Commission services to the E-ESDI initiative (e.g. through funding using existing Community programmes);
- 2) collecting and taking into account the Commission services' views on the outcome of Working group documents and preparatory papers for the development of the horizontal aspects of the E-ESDI initiative (i.e. ESDI).

3.3. GMES Steering Committee and Forum

Composition

The GMES Steering Committee provides guidance on the realisation of the objectives, the focus of the thematic priorities of GMES and the elaboration of plans and proposals to be delivered at the end of the Initial Period. The GSC monitors the on-going activities and co-ordinates with national, ESA, EU and other GMES-related programmes.

The GMES Steering Committee is composed of nominated representatives from the Member States, the EC, ESA, EUMETSAT, EEA, user and industry umbrella organisations. The single representative per Member State or organisation is to represent the combined views those branches of government, users and industry having a stake in the realisation of the GMES objectives.

Mandate

The GMES Forum and Steering committee will be used to organise a broader discussion and communication on the E-ESDI initiative in Europe around the emerging orientations for the E-ESDI initiative.

The discussions will be organised through the GMES Forum events and Steering committee meetings where E-ESDI, one of the GMES priorities, will be put on the agenda.

PART B. E-ESDI Action plan

Contents of Part B and generalities

Part B describes the activities to be undertaken in support of the preparation of the E-ESDI legislative initiative. For these activities, deliverables and to a certain extent resources are identified. Further discussion on resources will take place in the EESDI Expert meeting in Vienna (17 December 2001). The timing aspects of the activities are presented in the chart provided in annex to this document.

The activities can be grouped in the following headings:

?? Overall management and co-ordination

?? Support activities (baseline information collection, funding, impact analysis)

?? Development of horizontal components (Standards & architecture, Data policy & legal issues and Implementing structures)

?? Development of data components (Environmental thematic data and Reference data)

A number of these activities will be supported by specific events (e.g. workshops and conferences) planned specifically for EESDI or in the context of other related initiatives or projects. The outcome of these activities will be the basis for the development of the proposal for a legislative act on E-ESDI by the lead services of the Commission.

This action plan addresses mainly phases I and II of the E-ESDI initiative (see section 1.6).

Key milestones for the phase I of the Action plan are the adoption of present document, the designation of the Experts to the different working groups, the publication of orientation papers by the different Working groups, the publication of the position papers by the Working groups. Key milestones for phase II of the Action plan are the publication of an issues paper by the Commission services and the adoption of the draft Commission proposal.

The activities of this action plan will formally start when this document is accepted, but given the tight action plan schedule, preliminary work can start and has already started before. **All groups involved in the preparation of the EESDI initiative will establish their own detailed action plan** that will be communicated to the Technical co-ordination group. The detailed action plans will identify the actions to be undertaken, the interaction with the other groups, timing, resources, responsibilities etc...

4. OVERALL MANAGEMENT & CO-ORDINATION

The overall management of the preparation of the E-ESDI initiative will be ensured by the lead Commission services, in close collaboration with the Technical co-ordination group.

4.1. E-ESDI Organisation and Action plan

The E-ESDI Organisation and Action plan is described in the present document. A Revised Version will be released after the second E-ESDI Expert meeting in Vienna. The Technical co-ordination group will keep this document up to date as new requirements arise or as changes are decided for the organisation.

4.2. Horizontal consultation meetings

Two horizontal consultation meetings have already taken place. The E-ESDI initiative was discussed during an extra-ordinary COGI meeting in June 2001 and during the first E-ESDI Expert meeting in September 2001.

Further horizontal consultation meetings will take place after the publication of key documents as shown in the table below.

Key Document	Consultation/Discussion
Organisation and Action plan	E-ESDI Expert group, COGI
Orientation papers	E-ESDI Expert group, GMES forum and Steering Committee, GINIE Workshops, EC GI GIS Conference
Position papers	E-ESDI Expert group
Issues paper	COGI

A further E-ESDI Expert meeting will take place in November 2002 in order to prepare for further phase III and IV activities.

4.3. Technical co-ordination & secretariat

The JRC (Institute for Environment and Sustainability)¹⁰ will ensure the overall technical co-ordination and secretariat of the preparation of the E-ESDI initiative. The JRC will constitute a technical co-ordination group of the following staff: Technical co-ordinator,

¹⁰ The Joint Research Centre of the Commission has a long experience in GIS applications requiring the availability of European spatial data. Through its institutional project GI&GIS and its involvement in several EC funded projects (GIPSIE, PANEL-GI, ETEMII, GINIE, GISCO Lot2...) the JRC is dealing with reference data, geographic information standards and architectural aspects since several years. In addition to this technical background the JRC thematic experts are participating in most of the thematic Working groups considered.

Assistant of the Technical co-ordinator, Responsible of Information & Communication, GIS+IT experts, Secretary.

Mandate

The organisation needed to develop the E-ESDI initiative is necessarily complex because the ongoing SDI developments in Member States need to be taken into account and because of the need to rely on existing activities in a wide range of sectors.

The quality of the proposed framework legislation will to a great extent depend on timely delivery and the quality, overall coherence and complementarity of the deliverables from the different Working groups. Achieving this aim is the main task of the Technical co-ordination group. The Technical co-ordination group will develop a number of activities in order to pursue this goal. A non-exhaustive overview of these activities is given below.

The quality of the deliverables of the various Working groups will highly depend on their capacity to communicate with each other. The Technical co-ordination group clearly plays a vital role here for ensuring that all Working groups share a common vision and apply common guidelines, identifying and helping to resolve common problems, monitoring the overall timetable and organising communication between actors in E-ESDI and with the outside world.

The Technical co-ordination group will integrate the action plans of the individual Working groups and its own action plan into an overall action plan. He will analyse the dependencies between the different activities and monitor the overall progress of the activities for the development of E-ESDI. If problems with the activities of certain Working groups would impact the work of other Working groups or the overall project, he will propose to the Commission lead services appropriate remedial measures.

The Technical co-ordination group will prepare (and revise if necessary) simple guidelines for project management that should facilitate information sharing between all members and foster coherence between the various Working groups. The guidelines will include templates, and recommendations for document edition, rules for document archiving and information exchange. The Technical co-ordination group will support the various actors to adopt and follow the project guidelines. If necessary, training sessions will be organised for each Working group.

For the user requirement specifications, a special co-ordination mechanism will be established with the Environmental thematic and the inter-sector co-ordination groups (see section 7.1). User requirements for thematic spatial data are mainly collected and processed (in order to harmonise them) by the Environmental thematic and the inter-sectoral co-ordination groups. The Technical co-ordination group will be the interface with the different horizontal Working groups¹¹.

¹¹ E.g. the Environmental thematic co-ordination group could request to modify the common technical guidelines (developed by the Standards and Architecture Working group, see section 6.3) because their practical application presents some problems in certain groups. The Technical co-ordination group

The Technical co-ordinator shall organise a first co-ordination meeting with the Chairpersons of the working groups beginning of February 2002. Other meetings will be scheduled when necessary.

The secretariat will be based in Ispra at the JRC. The secretariat will support the chair of the E-ESDI expert group for the organisation of the E-ESDI Expert meetings.

The Technical co-ordination group will establish and maintain links with relevant initiatives that can contribute to or facilitate the preparation and adoption of the legislative framework as well as to the development of specifications for the future daughter legislation. Relevant initiatives are EC funded projects (e.g. GMES, GINIE...) and on-going development of SDI at national and international level.

The Technical co-ordination group will set-up and manage various information channels (based on Information Technologies): i) E-ESDI Web site and electronic discussion forum, ii) mailing lists (by topic) and virtual meetings with moderator, iii) an online document repository. All the information channels will have, on a case-by-case decision, open or restricted access (the access will be defined by a Communication strategy).

A Communication strategy document will be prepared. This document addresses the information to be provided to public domain, the Communication media to be used and contains a communication action plan.

5. SUPPORT ACTIVITIES FOR THE PREPARATION OF THE E-ESDI INITIATIVE

These activities provide background information to the working groups and Commission services that are directly involved in the elaboration of the proposal for a Framework legislative act on E-ESDI.

5.1. Baseline information collection

The Commission lead services will launch a project to collect baseline information on the situation in the Member States and accession countries. This project will be subcontracted. The draft invitation to tender will be discussed in the second EESDI Expert Group meeting.

Even if the final results of this activity will only be available by the end of 2002 and can therefore not be fully taken into account into the preparation of Phase I activities, the study will produce interim reports that will be available in time. The further reports will be of use for phase II and III activities.

will discuss with the relevant horizontal Working groups to verify the feasibility and the impact of the proposed modification.

5.2. E-ESDI Impact analysis

Apart from the impact analyses that will be carried out by the different Working groups (see introduction to chapter 6), a specific impact analysis Working group will be set up to examine overall impacts of the E-ESDI initiative.

Composition

The Impact Analysis Working group will be composed of 4-5 experts and of representatives of the various other E-ESDI Working groups and of the Environmental thematic co-ordination group. When relevant, representatives of the thematic Working groups can be invited to join the group when their activities would justify/require so. A representative of DG Environment will give guidance to the Working group. The Chair of the Working group will be chosen by the Working group members at the Working group inception meeting.

The Experts would preferably be those that have been involved at national/regional level in relevant impact analysis work or that have been closely associated in the cases that will be analysed by the group.

Mandate

This Working group will provide an analysis of the possible impacts of the E-ESDI initiative and methodological guidance to the other Working groups for estimating the impacts of various options considered.

The work will be carried out in the context of three phases. Phase I will consist of a general analysis carried out in a few months that is based on information that is readily available. During Phase II and III a more detailed analysis based on newly collected information about the situation in the Member States and Accession countries will be carried out, for the various scenarios envisaged in the context of the proposed E-ESDI framework legislation.

Phase I

During this phase, the group will produce an orientation paper followed by a position paper. The work will be based on case study analysis, impact or cost/benefit analysis already existing in the Member States and on the orientations coming from the other Working groups.

The case study would concern on the one hand cases where SDI's (in Europe) have been or are being implemented with elements that are relevant for E-ESDI. Possible relevant cases could be selected for instance from France, Germany, UK, Spain (region of Catalonia), the Netherlands, Portugal, Belgium (Flanders region) and Italy. On the other hand, European experiences related to the development of European datasets both from Public and Private sectors (e.g. SABE, MapBSR, CORINE, TeleAtlas, NavTech...) could be analysed. Furthermore, existing cost/benefit studies will be examined.

Some of the existing SDI models or related initiatives will be analysed in order to:

- 1) Estimate as far as possible the impacts of a scenario where no action is taken at Community level
- 2) Based on the orientation of the other Working groups, analyse the impacts using examples from the Member States where SDI has been implemented provide indications what their generalisation would mean at the level of EU and Accession countries.
- 3) Provide guidance to the other Working groups for estimating the impact of their orientations and positions taken.

Phase II and III

During phase II and III, the work of the Impact analysis Working group will provide a more in-depth analysis taking into account the information collected through the baseline study and the content of the proposal for framework legislation. The Working group will also give support to the Working groups that develop the daughter legislation provided for by the framework legislation.

6. ACTIVITIES DIRECTLY CONTRIBUTING TO THE DEFINITION OF THE E-ESDI FRAMEWORK LEGISLATION

All the Working groups shall produce a detailed action plan, orientation paper, position paper and a corresponding impact analysis as part of their mandate in the context of phase I activities (preparation of the E-ESDI framework legislation).

6.1. Funding and Implementing structures

The need for provisions on implementing structure in the E-ESDI legislative framework act will be examined by the Funding and Implementing Structures Working group that will address also issues in relation to funding.

Composition

This Working group will be composed of a number of Experts from the Member States plus a representative of the data policy Working group and will be chaired by a Member State expert. The experts should have experience with funding and establishing management and co-ordination structures of SDI's in the Member States and at international level.

Mandate

The task of the Working group will be to consider all relevant aspects related to funding and Implementing Structures to come up with proposals on how these issues can be addressed.

Phase I

By the end of phase I, an analysis at least of the following subjects related to funding will be presented in a report:

- 1) The extent to which efficiency gains for data collection can represent a leverage for existing funding mechanisms.
- 2) The financial aspects of the orientations for user requirements, data policy and standards and architecture (see chapter 6) of the E-ESDI initiative for Member States, taking into account the cost models and funding models currently operated by the main data providers.
- 3) Options for new funding models.

The Working group will also provide its position on the necessary management and co-ordination structures and mechanisms to be included in the E-ESDI framework legislative act, taking into account the principle of subsidiarity. The group will address the structures and mechanisms needed for:

- 1) the implementation of the framework legislation in the Member States
- 2) the development and adoption of daughter legislation
- 3) the further evolution of the framework legislation

By examining existing management and co-ordination structures in the Member States, the Working group will identify common structures and procedures that need to be established both at national (regional/local) level and at the level of the Community for the implementation of the E-ESDI framework. It will also identify the interaction needed between the Community level and the national level.

Phase II

After phase I the need for continuation of the group should be considered.

6.2. Data policy and legal issues

The provisions on data policy and other legal issues that are needed to achieve the objective of the proposed legislation will be identified and examined by the Data Policy and legal issues Working group.

Composition

The Working group will be composed of a small group of experts (5 or 6) recognised at European level for their in-depth knowledge of the field and a representative of the EEA. Representatives of the Commission will guide the group¹².

¹² Representatives of the Commission could be coming from DG Environment, DG Information society and DG Internal market.

Mandate

The task of the Working group will be to consider all relevant aspects related to data-policy and to come up with proposals on what issues should be addressed in the framework legislation and how.

Phase I

During phase I at least the following subjects will be taken into consideration:

- 1) Relation to data-policy initiatives at European level (amongst others the Proposal for a Directive on access to Environmental information¹³, possible proposal for a Directive on the exploitation of public sector information¹⁴, Regulation on access to the documents of the Community Institutions), and at national level.
- 2) Open access for citizens to the information vs. restricted access. Also: coherence with Aarhus Convention¹⁵ and forthcoming Directive on access to Environmental information and consequences of upscaling E-ESDI to other sectors.
- 3) Dissemination modes in accordance with orientations coming from Standards and Architecture Working group
- 4) Cost models for the access to and re-use of the information, varying from low cost high volume to high cost low volume. The point of the pricing of the information should be considered in relation to cost models and funding models operated by the main current data providers and in relation with the other data policy initiatives (point 1). Existing experiences, including the American experience with pricing on the basis of marginal costs for dissemination should be taken into account.
- 5) Intellectual property rights (copyrights, sui generis rights under the database directive). To be considered from two angles: a) concrete ownership relations of the data produced for E-ESDI (specific agreements?). b) general intellectual property rights considerations.
- 6) If necessary, data-protection issues

The Working group will use the workshop on data policy organised in the context of the GINIE project for collecting the broader views on the orientation for policy envisaged by the group.

¹³ Amended proposal for a Directive of the European Parliament and of the Council on public access to environmental information, COM/2001/0303 final

¹⁴ Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions: E-europe 2002: creating an EU framework for the exploitation of Public sector information, COM (2001) 607 final

¹⁵ <http://www.unece.org/env/pp/>

Phase II

After phase I the need for continuation of the group should be considered.

6.3. Standards and architecture

The use of common standards is the most efficient way to achieve interoperability of geographic information (data sharing and data access). The provisions in relation to standardisation and architecture that are needed to achieve the objectives of the proposed legislation will be identified and examined by the Standards and Architecture Working group.

Composition

The Standards and Architecture Working group, chaired by JRC will be composed of a few experts with the following profile:

?? key players in the development of Spatial Data Infrastructures at the Local, Regional, National level in Europe (currently involved in SDI implementation or conception of SDI)

?? the national co-ordinator of similar Working group in Member States

?? representatives of some international organisations developing or promoting standards adoption (e.g. ISO, OGC, GSDI, UNGIWG...) (to be invited only in specific meetings).

Mandate

The remit of this horizontal Working group is to take a clear position on **the architecture and the supporting standards¹⁶ to be proposed for the future E-ESDI** infrastructure considering all the territorial levels, from local to European.

Its work will have to **take into account the orientation for the user requirements, data policy and legal issues, impact analysis and implementing organisation** that are the subject of the activities of other Working groups.

Phase I

In Phase I this Working group will contribute to the drafting of the E-ESDI framework legislation:

?? by defining the E-ESDI architecture, identifying a list of services that are needed for achieving the aims of the E-ESDI initiative for which further specification is required, with indication of the required functions of these services and a feasible timetable for

¹⁶ The use of common standards is the most efficient way to achieve interoperability of geographic information. Interoperability is data sharing and data access. The standards to be considered are both “de-facto” and international standards.

their full specification; the list of services shall include a European Spatial Data Catalogue service and European Spatial Data Portal service¹⁷ and a maybe a European Translation service.

?? by identifying the areas for which standards¹⁸ are needed¹⁹ to achieve the objectives of the E-ESDI initiative, these standards will address concepts of geographical information and information technology²⁰

?? by identifying areas of ongoing technical standardisation work that is relevant to E-ESDI and for which standards should be integrated into E-ESDI if they become mature

The Standards and architecture Working group shall furthermore, in collaboration with the Environmental thematic and technical co-ordination groups, develop common technical guidelines²¹ for the collection of user **requirements**.

The group will furthermore undertake the following activities of the type “daughter preparation” (see section 1.5.3), the result of which will be presented, if possible, along with the results of the “framework preparation” (see section 1.5.1) activities:

?? identifying the technical standards²² that are mature and stable and can be adopted in the context of the E-ESDI framework legislation

?? Elaborate the technical specifications for European Spatial Data Catalogue²³ services (data directory services) including the technical specifications and standards to be

¹⁷ The data portal is the technological component of E-ESDI and is the means by which the data are made accessible. It includes functions such as data discovery, access, data display, data exchange...

¹⁸ E.g. standards for reference systems, data models, data dictionaries, data quality, data access, metadata...

¹⁹ For this purpose, some existing SDI models and related initiatives will be analysed both in Europe: NCGI (NL), SNIG (PT), GDI NRW and CEGI (GE), DNF (UK),.. and out of Europe: ANZLIC-ASDI (Australia and New Zealand), FGDC-NSDI (US), NSIF (South Africa),

²⁰ “Standardisation of Geographic Information can best be served by a set of standards that integrates a detailed description of the concepts of geographic information with the concepts of information technology” (ISO 19101).

²¹ Existing technical guidelines will be analysed (suggestions from the E-ESDI expert group will facilitate the identification of available guidelines) and considered in the light of new or existing ISO standards (e.g. ISO/DIS 19115 – geospatial information - metadata). If necessary the guidelines will be revised to fulfil the E-ESDI needs.

²² The International Standards Organisation (ISO) has a committee structure (ISO TC/211) for GI standardisation.. “The focus of geo-spatial standards is to define the basic semantics and structure of geographic information for data management and data interchange purposes, and to define geographic information service components and their behaviour for data processing purposes” (ISO 19101). Adapting existing standards to European and national needs could save time and effort, with the added advantage of support by the major GIS vendors. The Technical co-ordination group will ensure the link with ISO TC211 development as well with other relevant organisation developing or promoting standardisation (W3C, OGC, ...)

²³ The European catalogue will contain information about data and about organisations in charge of production/maintenance of the data (e.g. custodians). In order to avoid duplication on data collection

adopted to build new or adapt existing National Spatial Data Catalogues Services in order to allow the development of EU-wide Spatial Data Catalogues and propose a feasible timetable for the implementation of the specifications by the Member States

The Working group will use the workshop on spatial data infrastructures organised in the context of the GINIE project for collecting the broader views on the orientation for the technical issues envisaged by the group.

During Phase IV, activities will additionally consist of developing technical specifications for the other services identified during phase I and of proposing further technical standards for adoption as they become mature and stable.

7. USER REQUIREMENT SPECIFICATIONS

One of the key components of E-ESDI is the establishment by the user community of user requirement specifications for harmonised spatial data. E-ESDI will address spatial data that is required for the definition, conception, monitoring and assessment of Community Environmental policies. A distinction is made between thematic data relevant to specific sectors (e.g. for the different themes in the sector of the environment: bio-diversity, water, forestry, soil...) and reference data which are basic data relevant for every sector because they provide a mechanism to integrate and link other geo-referenced data sets and ensure that information is properly related within a spatial context (e.g. administrative boundaries, digital elevation, transport infrastructure...).

The actors involved in the user requirement specifications will identify requirements which have/need to have a binding character for the Member States, as these user requirement are necessary for the development, implementation, monitoring and evaluation of Community Environmental policy. All actors will elaborate at the start of phase I a detailed action plan allowing for proper co-ordination between the different working groups.

The importance and complexity of the user requirement specification activities justifies the establishment of distinct co-ordination activities that are also described in this chapter.

7.1. Co-ordination activities

7.1.1. Environmental thematic co-ordination

Composition

The European Environmental Agency (EEA) will put together a small Environmental thematic co-ordination group of (3-4) environmental GIS experts, which it will chair. The European Topic Centre on Terrestrial Environment will provide technical support.

and gaps in data availability, a clear picture on existing data and data providers is an important first step to be taken. Problems related to semantic or different languages will be addressed but not entirely solved in this phase.

Mandate

The Environmental thematic co-ordination group will organise the cross-thematic verification of spatial data requirements emanating from the existing environmental thematic Working groups. The verification will include amongst other analysis of crosscutting user needs, data resolution requirements, attributes, quality and availability of data. The Environmental thematic co-ordination group will report to the E-ESDI Expert group. The Environmental thematic co-ordination group will ensure a good connection with each specific topic component of the European Environmental Observation Network (EIONET).

The Environmental thematic co-ordination group will examine which issues are of a horizontal nature (e.g. identification of data that can be qualified as reference data) and pass on this information to the horizontal Working groups through the Technical co-ordination group, who will ensure that priorities and user needs established by the thematic Working groups are properly taken into account by the horizontal Working groups.

Phase I

The activities will cover the following steps:

- collect user requirements for spatial data needed for each of the thematic Working groups
- analyse the information collected and separate the reference data needs from the environmental data needs and pass the reference data requirements to the Technical co-ordination group who will ensure its further dissemination.
- evaluate the environmental data requirements needs from different thematic groups in order to identify common elements, check consistency and avoid overlaps.
- formulate a timetable and recommendations for spatial information specification and implementation
- validate the timetable and recommendations with the thematic Working groups (involving also the existing EIONET for each specific areas)

The Environmental thematic co-ordination group will also participate within the inter-sectoral co-ordination group (see below) and will collaborate with the Technical co-ordination group for the common technical guidelines for the collection of user requirement specifications for spatial data.

Detailed specification work will also start for the policies on Water and Seveso (and possibly others to be determined).

Phase IV

Phase IV activities will lead to the detailed user requirement specifications for spatial data for the different themes of environmental policy.

Detailed specification work will eventually cover all environmental policies that have spatial data requirements. If user requirement specifications are sufficiently mature in time, they will be presented together with the proposal for a framework legislative act on E-ESDI.

7.1.2. ESDI inter-sectoral co-ordination group

Composition

The ESDI inter-sectoral co-ordination group is a small group consisting of the focal points for the different sectors chaired by EUROSTAT and supported by the secretariat of the Technical co-ordination group. Each sector interested to participate to ESDI will designate a focal point for the co-ordination of the definition of data requirements. The sectoral focal points will organise and co-ordinate the discussions within their sector. For the environment sector, the focal point will be the Environmental thematic co-ordination group.

Mandate

User requirements for spatial data identified for respective Environmental policy priorities under E-ESDI (e.g. soil, water and forestry) will be co-ordinated by the Environmental thematic co-ordination group. But where such data is of interest to policy areas other than environment, discussion and co-ordination between different sectors (e.g. environment, agriculture, and transport...) is also required.

The inter-sectoral co-ordination group will screen on a regular basis the user requirement specifications presented by the thematic co-ordination groups from the different sectors. Sectors having an interest in the specific user requirements will examine the requirements into more detail and, if appropriate, suggest complementary user requirements. User requirement complements from all sectors will be fed back to the bodies/groups that have been involved in the definition of the user requirement specifications and will be taken into account into the user requirement specifications.

7.2. Reference data specification

By definition, the reference data is made of a basic set of geographical information (GI), standardised at European level used by people involved with GI to carry out their thematic activities (i.e.: mapping, spatial analysis, research).

Composition

The Reference Data Working group will be chaired by EUROSTAT. It will be composed of a small group of experts (5 or 6) recognised at European level for their in-depth knowledge of the field.

Mandate

The remit of this horizontal Working group is to take a clear position on the contents of the **reference data component of the E-ESDI** infrastructure considering all the territorial levels, from local to European.

The Working group will contribute to the drafting of the framework legislation for what concerns reference data. Its work will have to be **based on the user requirements**. Their identification will be carried out within the various thematic Working groups. The synthesis of these requirements will be made by the co-ordination groups (EEA and JRC) and will then be transmitted to the Working group.

The other horizontal working groups will provide complementary information concerning standards, data policy, etc.

Phase I

During phase I (preparation of the framework legislation), the following objectives will be pursued:

- 1) agree on the reference data elements to be taken into account
- 2) according to the requirements expressed by the users, define what are, for the selected elements, the necessary data resolution and quality
- 3) provide, if possible, information on data availability, metadata availability, quality, copyright rules, price, for the selected elements
- 4) measure, if possible, the impact of the various choices of data in terms of accessibility and costs
- 5) provide, if possible, an indication of a feasible time scale for the availability of the selected elements at European level

Phase IV

Phase IV concerns the preparation of daughter legislation following the implementation of the framework legislation.

At this stage, the reference data Working group will specify in detail the necessary reference data to allow the progressive "physical implementation" of parts of the infrastructure, in accordance with common technical guidelines for the collection of user requirements for spatial data. (See section 6.3).

7.3. User requirements specifications for Environmental Thematic data

User requirements for environmental thematic spatial data will be solely specified by Working groups or structures collaborating with DG Environment for the establishment of geographic data requirements to support the definition, implementation, monitoring and evaluation of environmental Community policies, including the review of reporting

requirements²⁴. DG Environment will screen²⁵ its relevant policies and their Working groups in order to identify which ones carry out or have planned identification of data requirements to support the policies that are being developed, implemented, monitored or evaluated.

Mandate

If necessary, the existing mandate of the Working groups and organisations will be complemented so the group takes on the following tasks:

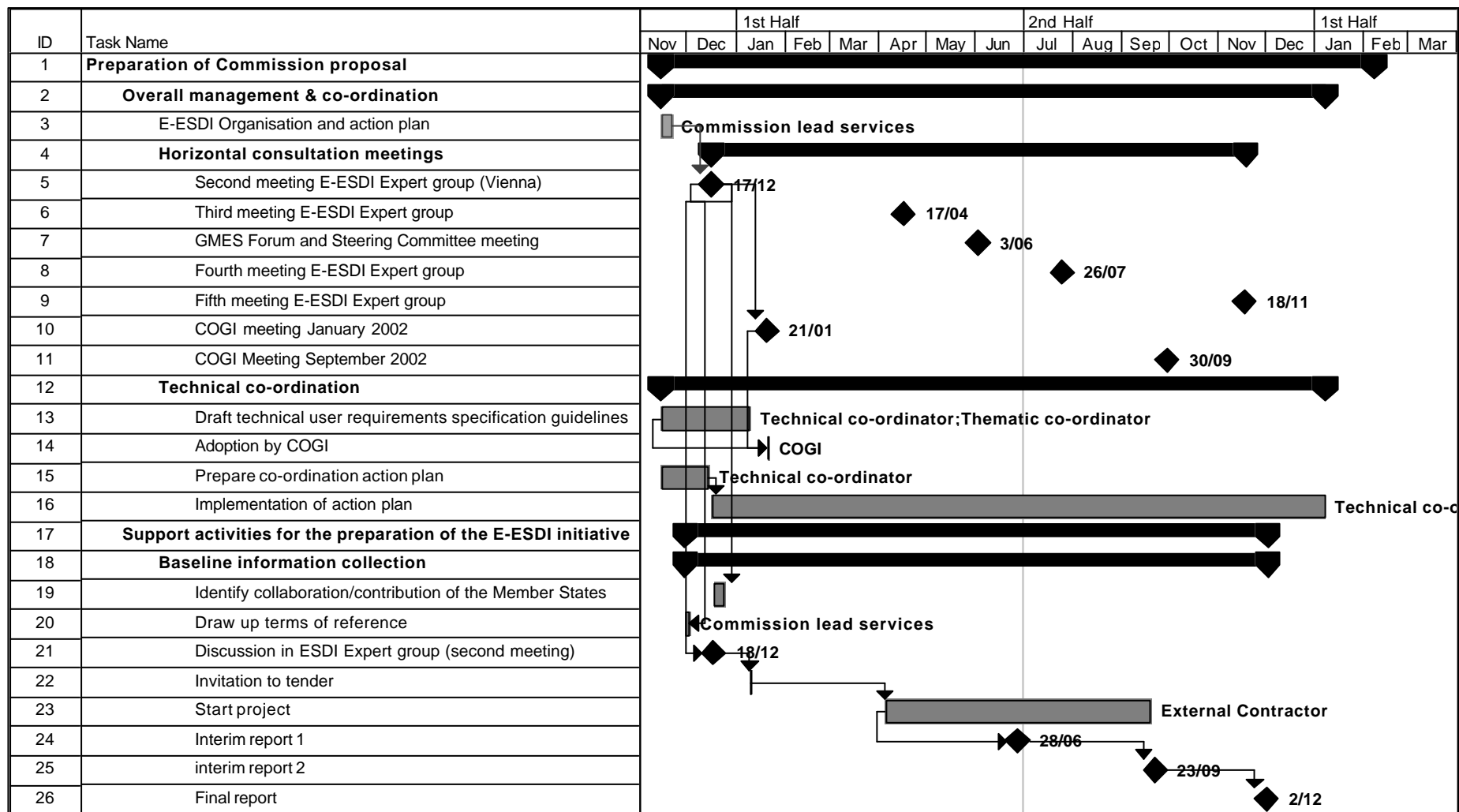
- 1) identify user requirements for thematic spatial data needed for the definition, implementation, monitoring and evaluation of the Community Environmental policy the Working groups are related to.
- 2) identify reference data needs and priorities and examine reference data specifications emanating from the reference data Working group(s).
- 3) formulate user requirements specifications for thematic spatial data in accordance with common technical guidelines for the collection of user requirements for spatial data (see section 6.3)
- 4) prepare where appropriate an impact analyses for the collection of the data specified, addressing its costs and benefits
- 5) report the findings and conclusions of the Working group to the Environmental thematic co-ordination group

The user requirements for thematic spatial data shall cover requirements for data, their characteristics (e.g. data resolution, attributes, and quality...), access regimes and services.

²⁴ Directive 91/692/EEC

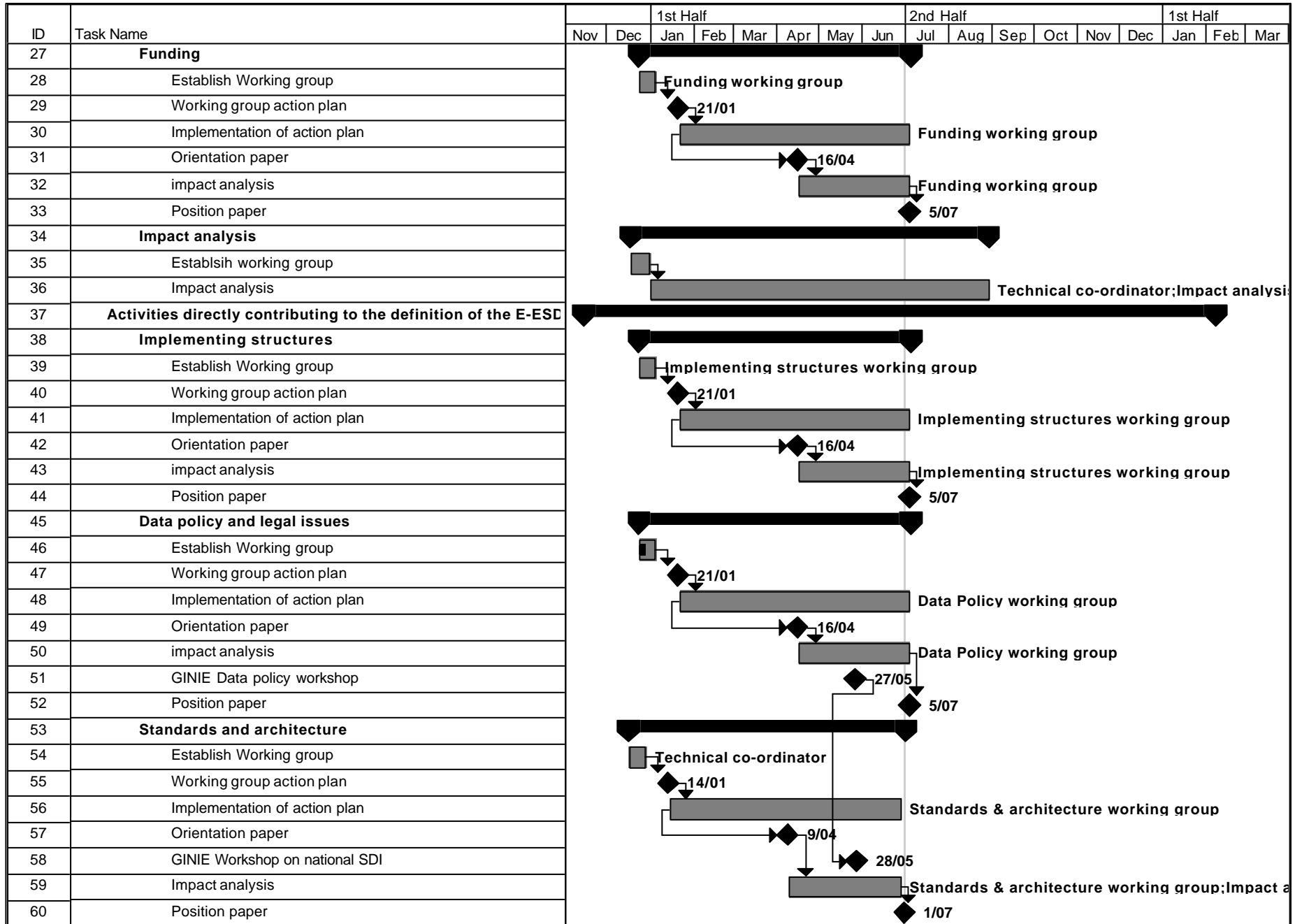
²⁵ The E-ESDI Expert group will be informed about the outcome of this screening process.

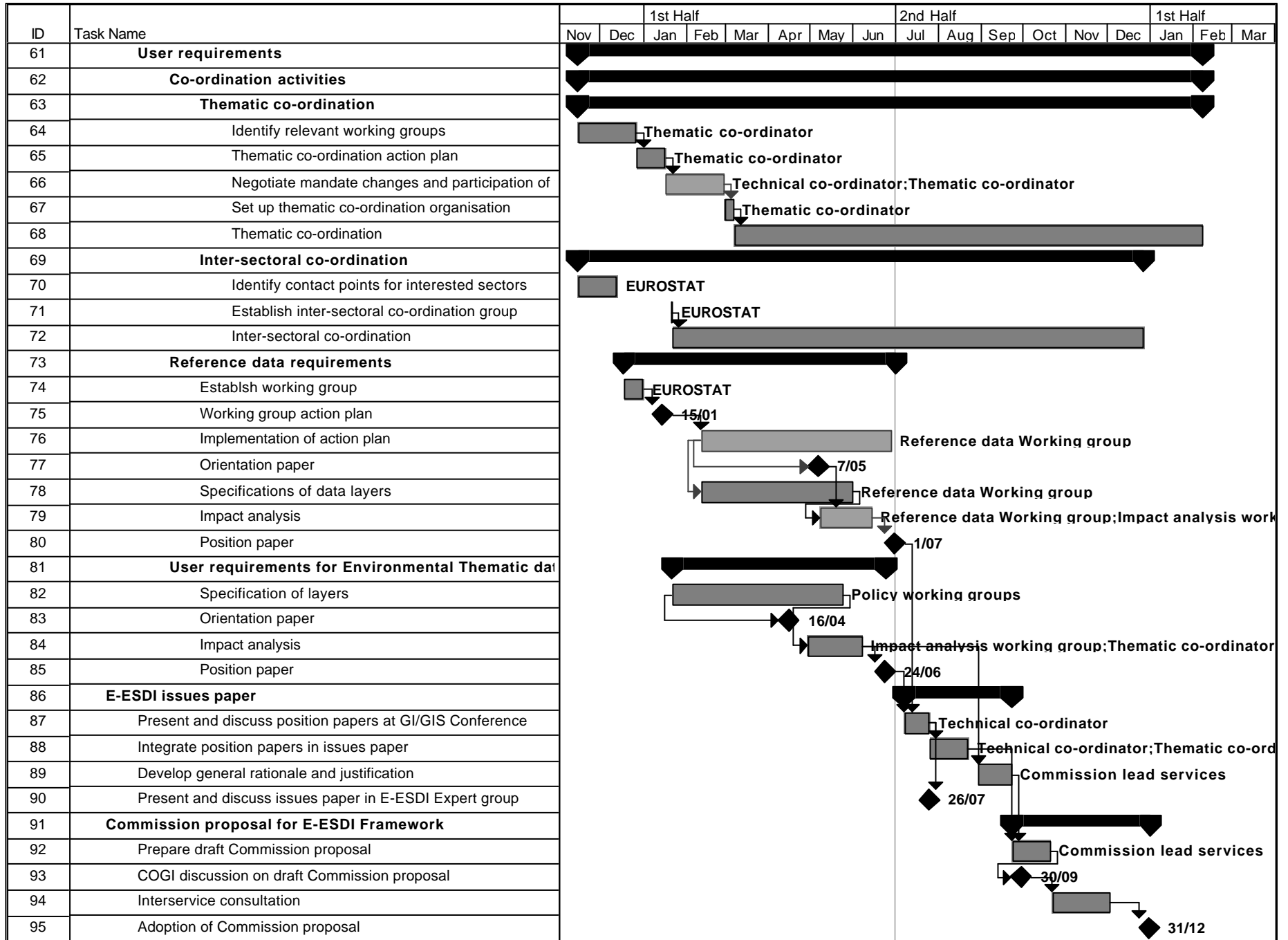
8. ANNEX I. OVERVIEW OF ACTIONS AND THEIR TIMING



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9. ANNEX II RELEVANT ORGANISATIONS AND INITIATIVES

9.1. European Environment Information and Observation Network (EIONET)

The European Environment Agency is a central node of an extended network, the European Environment Information and Observation Network (EIONET). The EIONET institutions are: National Focal Points (NFP) responsible for national co-ordination of activities related to the EEA Work Programme, Main Component Elements (MCE): Main institutions of the national networks, which are regular collectors and suppliers of environmental data, National Reference Centres (NRC): Institutions among MCEs nominated to cooperate with EEA on specific topics, European Topic Centres (ETCs): Consortia with one leading institution, contracted by EEA to execute tasks in the Work Programme. Co-operation amongst EIONET partners is facilitated by an electronic network, e-EIONET. The e-EIONET Portal provides access to e-EIONET services for network partners and other institutions co-operating with EEA <http://eionet.eea.eu.int/index.shtml>

9.2. European Topic Centre on Terrestrial Environment

The European Topic Centre on Terrestrial Environment (ETC-TE) is one of five Topic Centres designated by the European Environment Agency (EEA) for the period 2001 - 2003 to assist in its work of collecting, analysing, evaluating and summarising information relevant to national and international policies for the environment and sustainable development. The ETC-TE is currently co-founded by the Environment Department of Catalanian Government and the Spanish Ministry of Environment. The ETC-TE will concentrate on providing relevant information on past trends, current status and prospective developments relating to land and soil in Europe, in order to support legislative frameworks on sustainable land use, soil protection and integrated coastal zone management. These are priority issues, included in the 6th Environmental Action Programme and the Sustainable Development Strategy. They will be developed further through specific thematic strategies (on soil, land use and urban environment). <http://terrestrial.eionet.eu.int/>

9.3. EUROGI

EUROGI the European Umbrella Organisation for Geographic Information, was set up in November 1993, as a result of a study commissioned by DG Information Society (DG XIII) of the European Commission to develop a unified European approach to the use of geographic technologies. It is established as a European Foundation under Dutch law with its headquarters in Amersfoort, The Netherlands. The Secretariat is currently based in Apeldoorn, The Netherlands. Its mission is 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. <http://www.eurogi.org>

9.4. EuroGeographics

EuroGeographics is the "voice" of the official mapmakers. The Mission of EuroGeographics is to represent Europe's National Mapping Agencies working for the European Geographic Information Infrastructure.

<http://www.eurogeographics.org/index.htm>

9.5. ESPON

European Spatial Planning Observatory Network (ESPON) is one of the twelve measures for implementing the European Spatial Development Perspective (ESDP). The aim of the Observatory is to provide the necessary database to encourage the harmonious development of the entire Community, as laid down in Article 158 of the EC Treaty, and to clarify the concept of territorial cohesion referred to in Article 16 of the Treaty. ESPON activities rely on networking between the Member States (research institutes, public authorities).

9.6. GMES

The Global Monitoring for Environment and Security (GMES) initiative seeks to bring together the needs of society related to the issue of environment and security with the advanced technical and operational capability offered by terrestrial and space borne observation systems. It is a direct response to the growing concerns amongst policy makers to ensure in a timely manner access to information on the environment at global, regional and local scales without sacrificing independence in the following relevant policy areas: Sustainable Development, Global Climate Change, Common Defence and Security Policy, European Research Area, and European Strategy for Space. <http://gmes.jrc.it/>

9.7. GINIE

- Geographic Information Network in Europe (GINIE) is an IST programme Accompanying Measure with the overall aim to establish and promote a European strategy for Geographic Information. The GINIE project sees itself as the main European means for dissemination and awareness raising. The project sets out a framework for a geographic information network in the European Union, the pre-accession countries and the other countries around the Mediterranean basin. To this end, GINIE brings together regional and international bodies, industry, and the research community. The establishment of the GINIE will 1) create a network for the candidate nations for EU membership to discuss their accession requirements in terms of geographic information; 2) create a network for the countries around the Mediterranean basin to discuss common GI issues, 3) be a voice of Europe in the global debate, and 5) be a forum for the GI community (government and industry) to discuss GI strategy and develop new ideas and plans. The activities of GINIE are clustered under five main topics:
 - The development of a European Geographic Information Strategy;
 - GI capacity building and awareness raising;

- The organisation of the 8th EC GI & GIS Workshop around GINIE;
- The establishment of a European View on the Global Perspective Related to GI; and
- Extensive dissemination of the findings and progress of the project.

The GINIE project started in November 2001 and has a duration of two years.
<http://www.ec-gis.org/ginie/>

9.8. Global Spatial Data Infrastructure (GSDI)

The Global Spatial Data Infrastructure (GSDI) was defined at the 5th GSDI conference in June 2001 as: “The Global Spatial Data Infrastructure is co-ordinated actions of nations and organisations that promotes awareness and implementation of complementary policies, common standards and effective mechanisms for the development and availability of interoperable digital geographic data and technologies to support decision making at all scales for multiple purposes.” Put more simply, the purpose of the GSDI is to encourage the growth of compatible Spatial Data Infrastructures capable of supporting collaboration on regional and global issues of importance. Starting from an initiative of a few far-sighted individuals, the GSDI has blossomed into a major and important organisation in developing a global consciousness as concerns geospatial policies. In addition, it provides practical guidelines on how to establish spatial infrastructures. <http://www.gsdi.org/>

9.9. Open GIS Consortium, Inc. (OGC)

OGC is an international industry consortium of more than 220 companies, government agencies and universities participating in a consensus process to develop publicly available geoprocessing specifications. Open interfaces and protocols defined by OpenGIS® Specifications support interoperable solutions that "geo-enable" the Web, wireless and location-based services, and mainstream IT, and empower technology developers to make complex spatial information and services accessible and useful with all kinds of applications. <http://www.opengis.org>

9.10. ISO TC211

The ISO Technical Committee 211 / Geographic information/Geomatics.

<http://www.isotc211.org/welcome.html>

9.11. United Nations Geographic Information Working Group (UNGIWG)

The United Nations Geographic Information Working Group (UNGIWG) was established in March 2000 under the auspices of the Consultative Committee on Programme and Operational Questions (CCPOQ) of the Administrative Committee on Co-ordination (ACC) to co-ordinate activities and formulate policies concerning geographic information within the UN system. The Working Group is chaired by the Chief of the Cartographic Section and consists of task managers and technical focal points from agencies throughout the system. The Working Group received endorsements and pledges of support from various governmental and non-governmental organisations, as well as from industry and

research institutions. This high level of interest from within and outside the system reflects the importance and timeliness of this effort and the need for the United Nations to take a leadership role in this area. <http://www.un.org/Depts/Cartographic/ungis/ungis.htm>

9.12. World Wide Web Consortium (W3C)

The World Wide Web Consortium was created in October 1994 to lead the World Wide Web to its full potential by developing common protocols that promote its evolution and ensure its interoperability. W3C has more than 500 Member organisations from around the world and has earned international recognition for its contributions to the growth of the Web. <http://www.w3.org/Consortium/>