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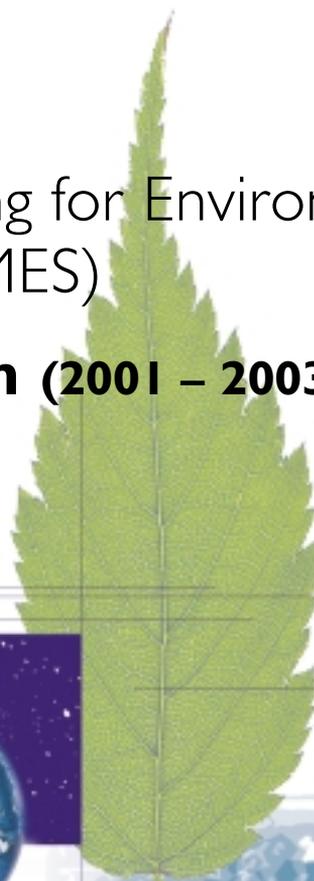


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Global Monitoring for Environment and Security (GMES)

EC Action Plan (2001 – 2003)



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Introduction

In today's globalised and complex world it is more vital than ever for the European Union to have decision-making tools able to meet its information needs in the fields of security and the environment. Major challenges face us in these domains, among them climate change, natural and man-made catastrophes and their consequences, and conflict prevention.

By mobilising scientists, industrialists and politicians and the full range of satellite and terrestrial observation and telecommunications technologies in the GMES (Global Monitoring for Environment and Security) initiative, Europe will, by 2008, have its own genuinely autonomous surveillance capacity.

An initial step has been taken with the approval by EU research ministers of the first phase of a Community Action Plan for the GMES initiative, the details of which are set out in the present brochure.

The very concrete objectives, themes and applications of this plan are designed to be of direct benefit to citizens. In an initial stage (2001-2003) priorities will include managing natural catastrophes (floods, earthquakes, fires, volcanic eruptions, etc.); global surveillance of oceans, vegetation and the atmosphere; supporting regional development aid; environmental stress; evolving land use patterns in Europe; and humanitarian aid. Particular attention will be paid to the area of civil protection.



A primary task in these various areas will be to develop and supply information services that meet users' needs. The necessary lessons will be drawn to structure the supply and demand of information and to develop the infrastructure and knowledge base with which to provide coherent, complementary and systematically updated information services. With the success of the plan depending directly on the commitment of all concerned, the Action Plan is introducing the necessary consultation between all parties in the GMES and is proposing an original organisational structure.

The methodology that the Action Plan is promoting is a concrete example of the application of the European Research Area, which the Union has been busy introducing since the Council of Lisbon, with the aim of achieving a genuine co-ordination of research policies and activities at both national and European levels.

The action plan is also representative of the European space policy which the Community and the European Space Agency have been working together to construct over several months. One objective of this space policy is to allow society and markets to benefit from the space community's unique technologies and resources. Which is precisely what GMES is all about.

Ph. Busquin
European Commissioner for Research



I. Scope and main

■ Environment and security relate to a wide range of concerns. These include the environment, regional development, humanitarian aid, development, sustainable development, civil conflict prevention, mobility, and crisis management, as well as the safety and the protection of the citizens of Europe.

■ In line with the European Strategy for Space⁽¹⁾, the EC and ESA presented to respectively the EU Research Council and to the ESA Council in June 2001 a Working Document on “A European Approach to Global Monitoring For Environment and Security (GMES): Towards Meeting Users’ Needs”⁽²⁾.

■ The current document contains the Outline GMES EC Action Plan, for the Initial Period 2001-2003, hereafter referred to as the “Action Plan”. It presents the background, objectives and the general implementation principles, programme of work and envisaged priorities.

■ The 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

■ Sustainable development has been a paramount objective of the European Union since the Amsterdam Treaty of 1997. At the Gothenburg Summit in June 2001, the European Council endorsed its first strategy on sustainable development, following a Commission Communication⁽³⁾ on “A Sustainable Europe for a Better World”: A European Union Strategy for Sustainable Development”. In this document the Commission calls for “establishing by 2008 a European capacity for global monitoring of environment and security”.

Global Climate Change

■ As the subject of the first priority of the Community’s Sustainable Development Strategy and the proposal for the 6th Environmental Action Programme, Europe is showing leadership in environmental treaties such as the Kyoto Protocol on global climate change. It will be important for the success of these agreements for the EU to have access to independent

(1) COM(2000)597 final and ESA/PB-EO(2001)56, rev. 1 – Joint Commission – ESA document on the European Strategy for Space

(2) SEC(2001) 993 of 16/06/2001 Commission Staff Working Paper – Joint document from the European Commission services and European Space Agency. – <http://gmes.jrc.it/Documents/documents.htm>

(3) COM(2001)264 final



orientations

information on an operational basis, to verify and enforce the treaty and to assess the effects of agreed policies.

Common Defence and Security Policy

■ The “Communication from the Commission on Conflict Prevention”⁽⁴⁾ refers specifically to GMES, acknowledging the role of environmental degradation and competition for natural resources as sources of tension that can lead to civil and international strife. Europe’s ability to play a positive role in conflict prevention will depend on its ability to predict and pre-empt these circumstances on the basis of timely, accurate and reliable information, as set out in the Amsterdam Treaty. Thus, GMES will also contribute to the Common *Defence* and Security Policy, in line with the so-called “Petersberg” tasks. Crisis management is another example of an important area where such information will contribute to the security of European citizens.

European Research Area

■ The Lisbon European Council of March 2000 emphasised the progress to be made by Europe as a competitive, dynamic and knowledge-based economy achieving sustainable growth. The role of research and development, in particular the establishment of a European Research Area was highlighted.

European Strategy for Space

■ In its Communication⁽⁵⁾ “Europe and Space: Turning to a new chapter”, and the corresponding ESA document⁽⁶⁾, the Commission emphasises the increasingly powerful capability of space-based assets in fulfilment of policies serving the European citizen. GMES is a key element in the European Strategy for Space, and is put under the objective “reaping the benefits for markets and society”, explicitly embracing many of the ideas outlined above.

■ The overall aim is to support Europe’s goals regarding sustainable development and global governance, by facilitating and fostering over the next decade the provision of enhanced quality data, information, and knowledge.

■ From a Community point of view, the security component of the present initiative does not include military matters. The “S” in GMES covers the security and protection of citizens related to environmental threats. The issue of crisis management and its bearing on



(4) COM(2001)211 final

(5) COM(2000)597 final

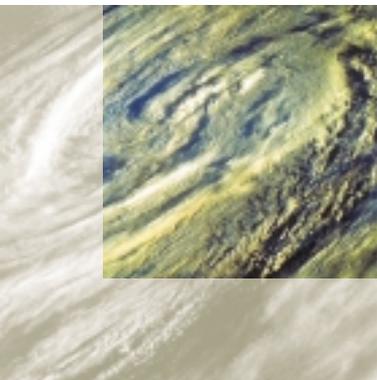
(6) ESA/C(2000)67, rev 1



an EU capacity for GMES will need to be considered at the appropriate time in the appropriate setting.

■ GMES is therefore driven by the information needs of the European society in the fields of environment and security with an initial emphasis on global change, environmental stress and natural and man-made disasters. The political bearing for the definition of its priorities in the field of environment result from the Commission Communication⁽⁷⁾ on “A Sustainable Europe for a Better World”: A European Union Strategy for Sustainable Development” and the associated 6th Environmental Action Plan.

■ The GMES Action Plan shall therefore focus throughout the Initial Period on those priorities where high-quality information input is required, notably with respect to climate change, threats to public health, for a more responsible management of our natural resources and improved land-use management. As such GMES services respond to the environmental priorities established in the 6th Environmental Action Programme supporting the Community response on climate change, nature and biodiversity, environment and health and quality of life, and natural resources and wastes.



■ The development of indicators to measure the state and progress on the sustainable development strategy requires the possibility to access cross-sector and cross-boundary collected data. The GMES services shall provide comparable and accessible data contributing to the generation of cost-effective information required for such indicator development. The GMES services shall therefore strengthen the capacity of the European Environmental Agency to provide timely and accurate indicators on the state of the environment.

■ As such, GMES will establish the foundations for the more efficient collection, integration, and use of geographical information and observations on the state of the environment collected by space, airborne and ground based systems and methods.

■ Under the initiative, services shall be developed, which will support making informed decisions on trade-offs that are required to meet environmental and security objectives at acceptable economic cost and, which will allow launching efficient response actions at local, regional and global level. GMES services should be conceived from the outset as service-oriented and fully integrated with other service infrastructures (communication, navigation, surveillance, etc.). Efforts will be made to benefit from the experience of relevant activities in the past, at national, European and international level.

(7) COM(2001)264 final



Moreover, GMES will develop the market for European industry on the world scene. Operational GMES services may be provided by industry on commercial basis giving the opportunity to develop a strong and innovative industrial pole both for information services and space/terrestrial infrastructure. Revenues have been estimated for data suppliers, value adding companies and other business activities. A structural analysis⁽⁸⁾ of the Earth observation market in Europe estimates revenues in 2002 up to €420 million per annum. Public, governmental and international bodies are clearly dominant users with annual revenues up to €310 million.

The European Commission together with ESA will act in partnership with other stakeholders, who will be invited to participate in GMES. These include the European Environmental Agency, the national public environmental and civil protection organisations of the EU and ESA Member States, EFTA and Candidate Accession Countries, the national space agencies and EUMETSAT. Private industry and the academic sector will have a role, as well as various Non-Governmental Organisations (NGOs). Third countries such as Russia, the US, Canada, Japan have capabilities that are expected to form valuable contributions to a broader international partnership resulting in mutual benefits.

The success of the GMES initiative will rely on a correct articulation of contributions by all partners to make the most possible efficient use of available resources. Throughout the definition, development, implementation and operation of its services, GMES will stimulate and be based on partnership and co-operation between those stakeholders benefiting from it.

The Working Document prepared with ESA described a first proposal for an overall implementation strategy for GMES with the objective to develop operational systems and services by 2008⁽⁹⁾. Both the EC and ESA are now to continue towards developing implementation proposals to be fully consolidated before mid 2003.

Activities will begin before the end of 2001. A report for the Initial Period, jointly prepared with ESA, to be submitted to the Council and the European Parliament, will be prepared for approval by the end of 2003 to prepare for GMES activities in the 2004-2008 timeframe. The review will focus on: (i) the analysis of lessons learned; (ii) the proposal to the relevant authorities and actors of an organisational set-up; (iii) and an analysis of financial requirements with a long-term perspective to establish fully-fledged GMES activity.

The report will be based on a thorough analysis and structuring of user requirements. It will also entail descriptions of the services and system architecture meeting those requirements, the organisational framework and the assessment of the international dimension, to be adopted by the relevant authorities. An analysis of the costs and benefits of GMES will be included.

(8) European EO Industry and Market : 1998 Snapshot (3 December 1998)

(9) COM(2001)264 final



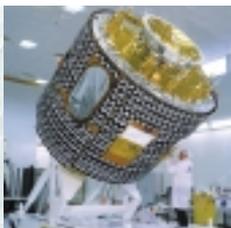
2. Definition and role of

■ This Action Plan describes the activities that require to be undertaken by the EC during the Initial Period, the organisational arrangements for this period and the process by which the stakeholders will be associated with its implementation. It shares common objectives, and is supported by the ESA implementation proposal⁽¹⁰⁾ (such as supply of certain data sets and development of pre-operational information services).

■ EC and ESA have established a clear repartition of roles in line with the Resolution of the Council of Research on 16 November 2000. They will seek to arrive at an efficient framework for co-operation whereby ESA could act as the entity supporting the EU regarding the space and associated ground segments.

■ ESA will in particular:

- Provide the definition and the development of the space related system elements for GMES, taking into account existing and future infrastructure elements and the need to support the networking of centres of expertise and/or excellence;
- Support the definition of the user segment and the corresponding standards;
- Contribute to the development and demonstration of early precursor services to user projects and contribute to the development of exploitation models;



- Ensure the availability of the critical space technologies required for meeting the users' needs.

■ The following activities have to be undertaken by EC as initial promoter for GMES in order to build up the required working environment:

- Defining the European priorities and requirements relating to environment and security to be considered as part of the baseline of the GMES services;
- Creating a platform aimed at federating the various ongoing and planned activities with regard to the users' information and service requirements and building awareness through the development of GMES service centres;

(10) ESA/PB-EO(2001)57, rev. 1 - European Space Agency - Earth Observation Programme Board - The ESA Implementation Proposal for GMES.



the stakeholders

- Involving the users communities through stakeholders projects and federating their requirements through user-led thematic groups;
- Fostering the integration of the space contribution with existing airborne and terrestrial service infrastructures;
- Examining the need for the development of further Commission proposals with respect to the implementation of a European capability for GMES;
- Proposing concerted framework for R&D resources towards the activities to be performed by EC and establishing a GMES Thematic Network in order to facilitate the concentration of available resources and the dissemination of information or data;
- Examining security requirements for the protection of the infrastructure and sensitive or commercial data.

■ EUMETSAT is acknowledged as a successful international organisation providing operational satellite-based meteorological and climatological services. Its experience is expected to be of value within the GMES Steering Committee. Moreover, possible roles in the creation and definition of services will be investigated.

■ The following organisations are considered to be among the main end users and beneficiaries of GMES activities:

- Environmental and civil protection ministries and agencies within the EU and ESA Member States and Accession States at national, regional and local level
- European Environmental Agency
- European Commission

■ User involvement will occur at all levels of the organisation of GMES: in the guidance of the process within the GMES Steering Committee and in the detailed definition of priorities and requirements. Users will supervise the development and the implementation of pilot projects and validate the resulting services. Wherever possible, use will be made of existing fora and experts groups e.g. those of the International Programme on Climate Change. However, dedicated user-led thematic groups will be created wherever necessary to ensure the appropriate level of consultation.





3. Objectives

■ The information needs of society related to environment and security are clearly growing and becoming more important for the implementation of European policies. However, they clearly need to be better structured. In order to develop the appropriate operational products and services, a closer working relationship between potential users and suppliers is necessary.

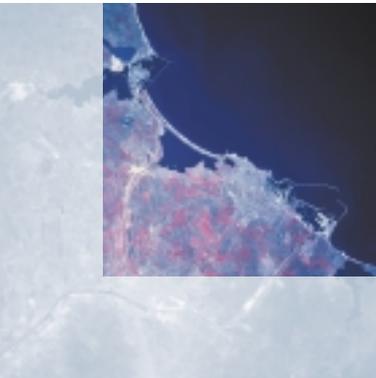
■ Many observation satellites already exist that are capable of delivering useful data, but continuity of service is not guaranteed and they are primarily (with certain exceptions) designed for scientific purposes. Their integration with terrestrial data infrastructures needs to be strengthened.

■ Information users and information service providers must be consulted in order to consolidate the definition of the system architecture needed to gather and deliver the desired products and services. This includes:

- Answering to immediate needs on the basis of currently existing requirements by **delivering a set of pilot information products and services** on priority environment and security topics.
- **Assessing the current capabilities, organisational elements and policies** required for the supply of information and to determine how effectively they allow meeting the requirements.
- **Elaborating the definition of the future system architecture and integrated services – vision 2008** on the basis of requirements, assessments and recommendations for actions of political, technical, scientific and institutional/organisational nature in order to prepare implementation proposals to achieve a full scale European capacity for GMES by 2008. Intermediate milestones will be set at a later stage; a detailed and updated Action Plan will be published before the end of 2003.

■ The objective of the Initial Period of GMES is therefore threefold:

1. To clearly understand what is necessary to put the above mentioned elements in. Following phases will successively develop and implement systems for GMES.
2. To consolidate the user requirements, EC shall elaborate a validated assessment of the needs, which will be regularly updated and be considered as a basis for the development of the corresponding infrastructure and services.
3. To implement the planned activities offering an evolutionary approach that distinguishes between existing and future architecture systems; these activities would also present solutions to organise a smooth evolution from the short term to the longer term.





4. Implementation

■ In order to reach the objectives of the GMES Initial Period actions will be pursued within the strands of activities as described in the joint EC/ESA implementation strategy document⁽¹¹⁾:

Strand 1: – **deliver** specific information and information services on the basis of user driven applications and **learn** from these;

Strand 2: – **assess** the information production processes and structure the demand and supply sides;

Strand 3: – **develop** the required infrastructure and the knowledge base in order to secure and **improve** a sustainable approach to the delivery of information.

4.1 Delivering Information and Services (Strand 1)

■ During the Initial Period, information on EU priorities in the fields of environment and security will be delivered through services in a pilot project framework aiming at supporting wide-scale integration, validation and demonstrations, including data distribution and archiving. Users will supervise the development and the implementation of these pilot services.

■ The global initial definition of potential priority themes (c.f. Annex) was obtained thanks to the consultation⁽¹²⁾ of stakeholders and the results of preparatory work undertaken by the GMES partnership working groups⁽¹³⁾ who prepared requirement briefings on the various subjects. This list of themes will be further refocused according to their relevance to the needs of end users and political priorities.

■ The pilot demonstrator services will deliver representative information products and services that can engage the user fully in the process, to demonstrate what is possible and thereby to understand the issues involved in making products for GMES fully operational. The product ideas will be tested in the context of user-led projects in the broad range of the following areas: **Global change, Environmental Stress, Natural and Man-made Disasters.**

(11) SEC(2001)993

(12) The Stockholm 'GMES Users perspective forum', March 21-22, 2001 hosted by the Swedish Presidency of the EU, The Brussels 'ESF Workshop on Science Issues related to GMES', March 26-26, 2001. The Baveno 'GMES Consultation Meeting', May 3, 2001. <http://gmes.jrc.it/Documents/documents.htm>

(13) GMES Partnership Meetings – Consultation of European Partners and working group papers – <http://gmes.jrc.it/whatsnew/whatsnew.htm>



■ Projects will be of different origins:

(i) Through projects funded in the context of EC and ESA programmes

(ii) Through voluntary presentation of other stakeholder projects – funded under their own resources.

■ Particular attention will be paid to the complementarity of EC and ESA activities; the GMES Steering Committee will be the monitoring structure established to ensure overall management of the activities (see § 5). Issues surrounding the integration of the various data sources (terrestrial, airborne and space-based) will be another priority.

(i) Projects Funded in the Context of EC and ESA Programmes

■ Different financial instruments will have to be mobilised depending on the nature of the activity to be funded. On the EC side and in the short term, the 5th Framework Programme for Research, Technological Development and Demonstration (5th FP) is considered. Regarding the longer term, the new Framework Programme is anticipated as a possible source of funding, in line with the envisaged actions of the Commission proposal⁽¹⁴⁾. Other EC instruments will be investigated for their relevance.

■ The ESA existing and new programmes proposed for adoption at the ESA Council at Ministerial level in November 2001 (e.g. Earth Watch proposal and GMES service element) are identified to support the ESA contribution to the programme.

■ Funding will be co-ordinated, respecting the rules of each source. Joint activities will be initiated, including – for example – joint or co-ordinated Calls for Proposals.

(ii) Voluntary Presentation of Projects by other Stakeholders

■ Various projects corresponding to the GMES priority themes, funded under previous calls of the 5th FP, other EC financial instruments, or directly by stakeholders, are currently running or may be launched in the near future. The integration of such projects, provided they meet or adapt to meet the GMES projects' criteria, may extend significantly the experiences on which the GMES assessments and recommendations will be based. In addition, this mechanism would allow to welcome stakeholders' initiatives involving them closer in the definition of future operational services as well as putting them on the forefront when future operational GMES services will be defined.

(14) COM (2001)94 final



■ In order to be relevant to this initiative, GMES projects should meet the following requirements:

- Fit the thematic priorities.
- Deliver information for supporting policy implementation development or monitoring at global to local level, in the perspective of the supply of regular services after the Initial Period.
- Preferably complement and add value to ongoing or planned activities of information production in support of policy implementation, development, or monitoring.
- Be able to deliver results within the timeframe of the Initial Period.
- Be executed at a scale relevant to European Union policies and appropriate to support the assessment of the technical, political, socio-economic, institutional/organisational and scientific requirements for operational services beyond the GMES Initial Period. To this end, projects based on pan-European partnerships including partners from various disciplines and policy areas are preferred.
- Be based on an active involvement of the actors, both users and service/information providers.

■ The networking of all projects should be rapidly implemented in order to maximise learning and to help the consolidation of the GMES initiative.

4.2. Assessments and Recommendations (Strand 2)

■ The assessment and recommendation tasks will study the various elements associated with establishing and/or improving operational systems for GMES, including the organisational aspects. The user community, organised through a GMES Forum and around thematic working groups, will issue recommendations based on their requirements and experiences acquired within the Strand 1 projects.

■ The following actions will be pursued:

- Assess the obstacles to long term monitoring, efficient production and delivery of information for environment policies, and to identify solutions.
- Establish a structured and sustained dialogue on requirements and services. The collaboration between the stakeholders involved in the processes of data acquisition, production, delivery and use of information needs to be strengthened.





- Assess the ‘dual-use’ possibility of existing and planned infrastructures.
- Measures have to be taken in order to support dedicated technical working groups refining these requirements and assessments through a cross-thematic analysis, leading to recommendations for actions. This will jointly be carried out by the stakeholders and will include:

- **Technical aspects** related to the overall enabling architecture systems;
- **Organisational structures** or changes that could be envisaged for determining responsible organisations or for setting up new ones;
- **International collaboration** and in particular the assessment of a potential partnership between GMES and other initiatives under the lead of other countries such as the US, Russia, and international organisations such as CEOS, UN. This activity will have to propose criteria for participation by third countries or regional organisations in the European initiative;
- **Legal conditions** that may enable or inhibit development of operational systems relevant to GMES and its corresponding services. This includes proposals for a framework for commercialisation, including issues such as Intellectual Property Rights;
- **Costs and financing** – economic and environmental benefits including the identification of revenue streams and the presentation of business plans.

4.3. Develop to Improve (Strand 3)

■ Strand 3 is concerned with political, technological and scientific developments for the production and delivery of better quality information for environment and security policies. The strengths, weaknesses, opportunities, threats, and specifications resulting from the assessment produced throughout Strands 1 and 2 will constitute the basis for the following actions:

- Improving the quality and availability of basic data and services from pilot monitoring programmes and infrastructures; this also includes the scenarios to enable the combined use of data emanating from different sources;
- Complementing and adjusting planned remote sensing and ground-based monitoring activities and infrastructures; developing new ones to achieve coherent and complementary services;



- Implementing and developing information technologies for data transmission, access and processing and for information access;
- Research and development to produce knowledge and models of natural processes and their interactions with human activities, to transform data into information;
- Supporting the standardisation process.

■ The Strand 3 activities will raise, through systematic consultations on strategic orientations, the data collection, archiving and information making processes to higher levels of efficiency.

■ The main results from that area of activities will include proposals for:

- improvements on above services, infrastructures, services and knowledge;
- adjustments needed to the current activities of monitoring infrastructures, of data services, and of GMES related research and development.

■ The work will result in proposals directed to decision-makers within the GMES stakeholder community.

■ Strand 3 activities are not implemented within the Initial Period but the formulation of



such proposals may occur early within the initial period when sufficient inputs are collected, and may focus on individual GMES services.

■ The preparation of long-term implementation proposals could start as early as the mid-term review of the assessment and recommendation actions.



5. Organising the project

■ The organisational structure needed to implement the Action Plan is a confirmation of the organisational arrangements presented in the joint working document of the EC and ESA⁽¹⁵⁾. They will be implemented together with ESA and other stakeholders, making the best use of existing structures.

5.1. GMES Steering Committee

■ The high-level GMES Steering Committee (GSC) will concentrate inputs from the various stakeholders and provide guidance on the objectives, the thematic priorities and plans to be delivered at the end of the Initial Period. It will establish GMES strategic guidelines that influence stakeholders in the planning of their respective activities or contributions. The GSC will monitor the activities, the co-ordination of the tasks, the relations between national, ESA and EU programmes.

■ The GSC will be an informal co-ordination body composed of representatives from the major stakeholders, to be appointed prior to the end of 2001. A Chairman and Vice-chairman will be identified by and from among the committee members.

■ Potential participants will be: EC, ESA and Space Agencies, the EEA, national government representing environment and security departments, EUMETSAT and national Space Authorities. Participation by other key stakeholders, such as industry, will be organised through relevant European umbrella organisations, such as Eurospace and EARSC.

■ The representatives of the GSC will be appointed following a formal request from the European Commission in collaboration with ESA. Proposals for Terms of Reference will be prepared for discussion and adoption at the initial meeting.

5.2. GMES Support Team

■ The GSC will be supported in executing its functions by a permanent Support Team that will prepare the GSC's orientations for implementation and development, the GMES Support Team will organise, animate, and interact with the working groups, the projects, and the GMES Forum.

■ The GMES Support Team will ensure the coherence of the activities undertaken in the three strands, with assistance from the leaders of the strategic applications. It has to ensure that pilot projects results are collated and properly analysed in view of drafting recommendations with respect to data structures and format, architecture needs, interoperability requirements and economical assessment (costs and benefits).

(15) SEC(2001)993



5.3. GMES Forum

■ The GMES Forum will be created to support the involvement of the stakeholder community, especially end-users, in the definition process of future operational services. It will need to consider current or planned initiatives to rally users and/or suppliers around the different priority applications. The GMES Forum will be a crucial element of the communication strategy to the wider user community, the media and European citizens. The forum will also provide assessments and recommendations on requirements and priorities.

■ The Forum is a major element of the GMES Initial Period forming the platform where a broad range of users, suppliers, and service providers will meet. It shall allow the federation of initiatives, currently not associated to GMES, but which are addressing, through users' platforms and other mechanisms, the users' needs in the various thematic areas. In order to establish the Forum, these initiatives will be identified and the GMES activities will be brought to their attention. These activities and the organisations and people participating to them will form the first target group for the dissemination and communication of the results of the individual projects and assessment actions. The Forum will also contribute to define a typology of the users and of their needs.





Annex

GMES initial list of potential priority themes

Note: The GMES Steering Committee will update and advise on these priorities as appropriate, in close consultation with user organisations. This list will be refocused in response to political priorities (e.g. the 6th Environmental Action Plan and Common Defence and Security Policy developments).

European regional monitoring

A. Land cover change in Europe

|| *Goal:* A characterisation of land cover changes (1950-2000) in the European Union and accession countries (EU 15+) of representative nature protection sites, ecosystems and landscapes; urban areas; coastal zones.

|| *Relevance:* 6th Environment Action Programme; European Convention on the protection of landscapes; Common Agricultural Policy; agri-environment measures; the European spatial development perspective; EU coastal zones recommendation.

|| *Potentials Users:* Natura 2000 Committee; European Commission; EEA; European contribution to Millenium Assessment; networks of European cities and regions; European spatial planning Observatory; NGOs.

B. Environmental stress in Europe

|| *Goal:* Identify, map and characterise current “hot spot” areas of EU 15+ environmental stress, with respect to: oil spills; organic pollution in European seas; coastal erosion; soil degradation and desertification.

|| *Relevance:* International conventions on seas; 6th Environment Action Programme; coastal zones recommendation; convention on desertification.

|| *Potential Users:* European Commission; EEA; coastal protection agencies; national and international environment administrations; research organisations.

Global monitoring

C. Global vegetation monitoring

|| *Goal:* Monitoring the conditions of the world’s vegetation in view of:



- detecting events and measuring changes in global forest cover with particular attention to the tropical and boreal forests;
- contributing to assessment of food security world wide;
- assessing carbon fluxes and stocks in the biosphere.

▮ *Relevance:* International Conventions; Development Aid; International Humanitarian Aid.

▮ *Potential Users:* European Commission; G8; administrations of international organisations and conventions; EU associated states; NGOs.

D. Global ocean monitoring

▮ *Goal:* Expand European capacity to producing global ocean information based upon existing monitoring capabilities; in support to seasonal weather predictions, global change research, commercial oceanography and defence.

▮ *Relevance:* Existing operational models, climate studies, economic interests, global security.

▮ *Potential Users:* European Commission; climate research organisations; meteorological services.

E. Global atmosphere monitoring

▮ *Goal:* Deliver regular assessments of state of the atmosphere with particular attention to aerosols, UV radiation and specific pollutants in close co-ordination with ground based networks.

▮ *Relevance:* EU air pollution policy and conventions, health policies.

▮ *Potential Users:* European Commission; research organisations; local authorities; public.

Security-related aspects

F. Support to regional development aid

▮ *Goal :* Contribute to the generation and transfer of know-how and technology in the context of the PUMA programme (Meteosat 2nd generation) focusing on land applications in Africa.

▮ *Key actors:* EUMETSAT, EC, Intergovernmental Regional Organisations, associated countries, Satellite Applications Facilities, RTD in Member States.





■ *Relevance:* Agricultural management; natural disaster assessment; regional approach; exploiting existing technological investments.

■ *Potential Users:* Regional and governmental organisations in ACP; United Nations; European Commission; NGOs.

G. Systems for risk management

■ *Goal:* To deliver operational systems of support to risk management (early warning, impact assessment and reaction) in European sensitive areas for: floods; forest fires; oil spills; stability of man made structures.

■ *Relevance:* Citizen's concerns; public security; pooling resources at EU level.

■ *Potential Users:* All level of government (national and regional civil protection agencies; water basin authorities).

H. Systems for crisis management and humanitarian aid

■ *Goal:* Develop an information system to deal with crises management and humanitarian aid with particular attention to: basic cartographic data with relevant information layers; diffusion, use, and updating of information through interactive systems.

■ *Relevance:* Information critical for planning the delivery of aid and relief operations.

■ *Potential Users:* European Commission; Aid and relief agencies; field operators; NGOs; local authorities.

Horizontal support action

I. Information management tools and contribution to the development of a european spatial data infrastructure

■ *Goal:* A set of actions on information management (acquisition, accessing, sharing and using environmental and geo-referenced data) and the creation of harmonised info-structures with common portals that enable harmonised access to common information services throughout the user community. The actions relate to technology, policies, criteria, standards and qualification necessary to enhance common environmental info-structures and tools, geo-spatial data collection and sharing throughout government, the private and non-profit sectors and academia.



- Data acquisition; emphasis will be on topography (digital terrain models, hydrological network) and land cover at a scale appropriate to support decision making from local to EU+ I5 scale.
- Infrastructures and tools; developments will focus on advanced tools and systems, data fusion, data warehousing, data mining, and topic maps based on platform and domain independent information and meta-information systems with the emphasis on open standards.

■ *Relevance:* data layers are indispensable for spatial and thematic analyses and integration with data collected from ground based networks (air, water, meteorology, etc.) and through space and airborne earth observation systems. Support to the standardisation of IT systems and tools, sustainable development strategy, the 6th Environment Action Programme and the EU environmental liability schemes.

■ *Potential Users:* This priority is in support to various Community actions. All levels of government; the private and non-profit sectors; standardisation bodies; research organisations.

