Statement of work

Scaling-up Consolidated GMES Services for Humanitarian Aid and Atmospheric Monitoring

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1 SCOPE

This document specifies the work to be performed to Scale up consolidated services in stage 2 of the Earthwatch GMES Services Element.

The resulting service portfolios will constitute a subset of the GMES Initial Services, as defined in reference document R-3. They will also contribute to the GMES Fast Track services, as defined by the European Commission, and described in reference document R-5.

1.1 Planned contracts

ESA intends, as a result of this ITT, to place two parallel contracts to scale-up services.

Each contract shall deliver a single portfolio of GMES services to meet common quality and validation standards and to serve international, national, regional and local users for a specific policy sector. The two different service portfolios are as follows:

- Information services for Humanitarian Aid
- Atmospheric Monitoring Services

Each contract shall cover a set of core activities to provide a set of baseline services, as defined in Annexes A and B of this statement of work.

Each contract may, at the Agency’s discretion, include additional activities to provide extension services.

1.2 Document Structure

This document is organized as follows
- Section 1: Explains the document scope
- Section 2: Gives the background and programmatic context
- Section 3: Spells out the Cardinal Requirements for this procurement
- Section 4: Gives an overview the Service Requirements
- Section 5: Specifies how the GMES Services are to be scaled-up.
- Section 6: Defines the tasks to be executed
- Section 7: Specifies the Management Requirements
- Section 8: Lists Reference Documents
- Annexes A-B Specify the requirements applicable to the two service portfolios
- Annex H: Specifies the required contents of major deliverable documents
- Annex I: Tabulates the requirements to simplify compliance checks
2 BACKGROUND

2.1 GMES Background

All consortia should by now have a thorough understanding of the goals and status of GMES as a whole, and the specific objectives of GSE in particular.

General information and background documents on GMES can be found at http://www.gmes.info/.

Information and documents on the GMES Service Element can be found at http://earth.esa.int/gmes/

As a major ESA contribution to GMES, GSE has specific scope that includes:

• to support the implementation, delivery and validation of a limited number of end-to-end services, with the goal of providing support to European policies in the area of environment and security. These will be based primarily on EO data sources, but will make best use of in-situ monitoring data via assimilation modelling and integration.

• to provide for the set-up of the services, and for systematic, robust and reliable delivery for a period, sufficient for users to assess and gain confidence in service adequacy. These services must consistently meet levels of quality, as required by end-users, and must adapt responsively to evolving (more demanding) user needs. User endorsement of all services will be mandatory, as will be extensive user involvement in the service networks.

• to build upon already proven R&D results and applications demonstrations.

• To encourage existing poles of scientific, technical and industrial excellence to work together along with centres of operational competence in the GSE Service Networks.

2.2 GMES Services Status

During stage 1 of GSE ten consortia have worked in parallel with their respective core user groups over a 20-month period in order to consolidate ten different service-portfolios. A further two consortia started consolidation in early 2004. Each service portfolio responds to user needs for information in a different policy-sector.

A policy-foundations-analysis documenting the underlying drivers of the demand for information in each policy-sector and a service-prospectus identifying services that could be offered over a 10-year period have been produced for each of the first 10 service portfolios: These are available on-line at http://earth.esa.int/gmes.

ESA has already awarded contracts to scale-up seven different service portfolios in the following areas: Polar Monitoring; Marine and Coastal monitoring; Land Information services; Fire and Flood Risk services; Ground Motion Monitoring; Food Security information.

The two contracts to be awarded as a result of this tender will run in parallel to those already started.

The European Commission, via the GMES Programme Office, has begun the definition of three Fast Track GMES Services, which are intended to be operational by 2008.
2.3 Basis for Service Requirements

The service requirements applicable for this procurement (Annexes A-B) are derived from user requirements gathered during GSE consolidation, along with documented feedback from users regarding services provided to them, reviews from independent strategic groups and guidance provided to ESA by European bodies responsible for policy definition and implementation. The requirements for humanitarian aid take into account users requirements expressed during the INSCRIT (Emergency Management Fast Track Service) workshop of Nov 07-08 2005.

2.4 Terminology

Terms used in this document and the annexes are to be understood as follows:

**End-user-organization**: An organization that takes delivery of and makes use of services.

**Legally Mandated Organization**: An organization that has a statutory mandate to provide public services or information related to environment or security policy.

**User-Federating Body**: Umbrella organizations that represent the interests of many constituent organizations. They may have been tasked by their member organizations to provide access to new information sources and technology solutions. Such organizations exist at national, regional and local levels. They have an operational rather than a purely consultative role. They can enter into agreements with third parties on behalf of their members. They can distribute services within their community.

**Intermediaries**: are Legally mandated organizations that can define user priorities and standards, but will not be direct recipients, users or distributors of services.

**Pan-European**: indicates EU25 plus ESA member states (for the purposes of this tender)
2.5 GMES Programme coordination

ESA and EC are coordinating their respective GMES activities via the GMES Programme Office (GPO) and are receiving advice from other GMES stakeholder organizations in member states via the GMES Advisory Council (GAC).

GPO is responsible for gathering requirements for GMES and for coordinating all activities contributing to GMES. DG-Environment and EEA, as authorities on European Environmental policy and members of the GPO, play a central role in this process. They, and other members of the GPO may support ESA in the evaluation of proposals responding to this ITT.

Consortia should not contact EEA or DG-ENV regarding participation in, or endorsement of, proposals in response to this tender.

2.6 EEA coordination on GMES Services

EEA is working closely with GMES stakeholders on all environmental aspects of GMES implementation. EEA, as the EU body dedicated to providing sound, independent information to support the development, adoption, implementation and evaluation of environmental policy within EU and more widely across Europe, is one of the major GMES stakeholders, and coordinates the main network through which environmental information in all its forms enters the policy process. EEA has actively provided guidance, independent review and supported coordination for the environmental service consolidation activities conducted to date.

For the future implementation of GMES services, EEA will continue to advise ESA on

- Priorities for Environment monitoring and survey
- Data standards required to ensure consistency of environmental information across EU
- Gateways to environmental data sources, information & services
- Collation, integration and holding of EU wide environmental data sets
- Maintenance delivery and definition of policy relevant indicators at EU level
- Models & Tools relevant for policy assessments
- Maintaining Links with relevant international initiatives and institutions from the environment & policy spheres
- Identifying needs for underlying research (methodological, basic and applied)

2.7 DG-ENV Coordination on GMES Services

DG-ENV will, during implementation, assist ESA and the selected GSE consortia to establish strategic steering with the relevant commission and community institutions.

ESA and DG-ENV intend that the GMES service networks established via this procurement should contribute to the definition and implementation of INSPIRE (R-4), and should be operated consistently with the long-term goal of establishing a shared European spatial data information system.

2.8 Links with parallel activities

2.8.1 EC & National activities
Each consortium is expected to actively seek out and establish project-level cooperation with other project teams conducting relevant R&D and applications demonstration projects within ESA, EC or National programmes.

The GMES Integrated Projects being carried out under FP6 in parallel to the GSE programme are of prime importance in this respect, since they are developing new methods, infrastructures and generic services such as modeling, assimilation and forecasting capabilities, many of which will be necessary to establish a complete and sustainable GMES service portfolio for the policy sectors addressed herein.

Likewise, many of the infrastructure and service components necessary for GMES are being established under National Programmes.

It is therefore important that the activities of GSE consortia are closely coordinated with such activities in order to achieve synergy and maximize the benefits from public expenditure on GMES within Europe.

Co-operation mechanisms that will enable straightforward transfer of new R&D results and methods into an operational service framework, and sharing of data and infrastructure shall be established.

### 2.8.2 GMES Preparatory Activities

ESA intends to make information and deliverables from these contracts available as inputs to other GMES preparatory activities being carried out in parallel. These include
- Study on Socio-economic Benefits analysis for GMES
- Study on Evolution of GMES Services
- Studies on the Evolution of the Ground Segment
- Studies on the “Status and evolution of GMES Space Missions”
- Study on “Long term scenario for the implementation of the EO component”
- Sentinel Mission definition studies

This information exchange will be carried out in coordination with the GPO and will include assessments of present and future EO data availability and needs and required service-provision infrastructure as inputs to GMES Architecture studies, as well as feedback from users on utility and benefits of existing services as input to the overall analysis of GMES Socio-economic benefits.
3 CARDINAL REQUIREMENTS

Each consortium is required to:

- Demonstrate progress towards long-term sustainability for a set of GMES services
- Deliver services and benefits to users on progressively larger scales
- Establish a durable, open, distributed GMES Service Provision Network
- Establish standards and working practices for GMES Services

All tasks in this statement of work originate from this cardinal requirement.

The geographic scope for the services is: global; continental; regional; national and local.

The timescales are: next 3 years, 3-10 years, and beyond.

The target service beneficiaries are:

- **The Citizen** – GMES services should enable Europe’s citizens to access better and more timely information on the state and evolution of the environment and on factors affecting their security
- **The Public Sector** – GMES service should support public authorities and national, local and regional governments to formulate, implement and assess their policies on environmental protection, planning and security of the citizen with increased effectiveness
- **Industry** – GMES Services should support planning, and monitoring of industrial operations and developments that impact environment or security or are subject to environmental standards and regulations
### 4 SERVICE REQUIREMENTS OVERVIEW

The requirements applicable to each service portfolio are given in Annexes A-B as follows:
- Target policy sectors
- Users and key intermediaries
- Services to be provided
- Geographic scope
- Component infrastructure
- Co-operation with complementary on-going activities,
- Heritage

#### 4.1 Target Policy Sectors

Public policies that can benefit from the service portfolio have been identified and analyzed during the GMES consolidation phase. This procurement provides an opportunity for the selected consortia to deliver EO-based services that will have a positive impact within those policy sectors over the next three years.

The requirement is to deliver services and report the impacts within the specific policy sectors listed in each annex.

#### 4.2 User categories and key intermediaries

For each policy sector the responsibilities for implementation, monitoring and assessment are assigned to a range of different organizations within member states. This includes municipal, provincial, regional, national and international authorities within Member States and at European level. Intermediary organizations, whose primary role is to coordinate policy implementation at higher national and European level are also identified.

Each consortium is required to engage and serve the information needs of user organizations and key intermediaries, from the ESA and EU Member states, as categorized in each Annex.

#### 4.3 Services to be provided

Annexes A-B represent the Agency's current best understanding of the priority user requirements for EO-based information service within each policy sector, taking into account the operational feasibility of meeting those needs over the next three years.

The required volume of service to be provided for each service is specified as a service provision target for each individual service.

Bidders should use the service provision targets of each service as a basis for costing their proposals.

The Agency recognizes that the specific requirements of the user communities may, in the course of the next three years, evolve with respect to the detailed specifications and service provision targets specified herein. Such evolution will be taken into account during contract execution and reflected in changes to annual work plans approved by ESA.
4.3.1 Baseline Services

Each annex specifies a set of mandatory Baseline Services that each selected consortium is required to provide under the contract.

Baseline services are services that the Agency recognizes as top priority for this procurement.

Baseline service requirements are mandatory for this procurement.

4.3.2 Extension Services

Each annex also specifies a set of Extension Services.

Extension services are services that the Agency recognizes as being of high interest for the identified user communities and of high relevance for GMES.

Extension services include:
- Delivery of Additional services not included in the baseline
- Delivery of increased service volumes to users to provide a more complete solution
- Delivery of services to users not included in the baseline
- Delivery of services over geographic areas not covered by the baseline

Extension services are not mandatory for this procurement.

Bidders are not obliged to propose them.

4.4 Geographic Scope

Each annex identifies the geographic zones for which the services shall be provided.

These correspond to zones for which user demand has been identified during GSE consolidation phase.

Service networks are expected to expand coverage of services beyond these zones, both in the course this contract, and afterwards.

4.5 Component Infrastructure

Each consortium must deploy facilities, including processing chains, databases, and models, that are adequate for delivery of the service portfolio. Consortia must, in addition, secure access to suitable external and third party facilities and data sources.

The major service infrastructure components to which each consortium should have adequate access, are listed in each annex.

4.6 Complementary on-going activities

It is mandatory, when establishing each service network, to build upon existing relevant and accessible capabilities within member states, where these exist.

Each annex lists on-going activities to develop capabilities of relevance for each service portfolio, as presently known to ESA. The listed activities include many EC funded projects that are being managed via the GPO, in particular the Integrated Projects of FP6 and precursor R&D projects carried out under FP5. The list is not exhaustive, particularly regarding
projects carried out at National level. Consortia are nonetheless expected to ensure coordination with relevant National projects as well as the appropriate European-level activities identified herein.

The coordination should produce tangible outcomes according to agreed schedules. The following mechanisms should be established between projects:

- Exchanging models and model outputs (e.g., hindcast, nowcasts, forecasts)
- Transfer of new algorithms and software
- Sharing of observation data (where consistent with applicable data policy)
- Joint validation of products and generation of validation reports
- Testing new services in the field with operational users
- Specification of standards to be applied to products and services (e.g., quality, formats, parameter definition)
- Documenting a common service portfolio from different projects
- Sharing of data management infrastructure

GSE consortia are **required to take full account** of the capabilities identified, and to ensure that they do not duplicate facilities or services, when setting up the GMES service network.

### 4.7 Heritage

Information on relevant completed projects is provided for information purposes.
5 IMPLEMENTATION LOGIC

5.1 Basic principles

Users shall be encouraged to take a prominent role in all activities carried out under this contract.

Service networks shall plan, prioritize and execute their activities exclusively to serve the documented needs of end-user organizations.

Participating User-organizations shall evaluate and report upon the quality and utility of services delivered and the overall performance of the service-network.

User-organizations shall document their requirements for improvements and additions to the service portfolio provided by each service network.

Each service-network shall assess and respond to documented user requirements and feedback, as identified above.

The benefits for public policy that result from utilization of the services shall be demonstrated, documented and widely communicated.

5.2 Services Network

Under each contract, a network of geographically distributed, co-operating service-providers (companies and institutions), shall be established and operated.

Each service network shall deliver one of the GMES Service Portfolios herein specified in a cost-effective manner.

Each service network shall ensure
- Effective links to its user communities
- Efficient planning and coordination of the activities of all members of the network
- Information sharing and planning with other GSE Service Networks
- Coordination, information exchange and technical transfers with other relevant projects

5.3 Priority User-Organizations

Each Service network shall prioritize serving the needs of legally mandated organizations that have a statutory mandate to provide public services or information related to a specific area of policy:
- To support definition, implementation or assessment in of public policies within the scope of GMES (see annexes)
- For territories within ESA and EU member states
- For external territories and developing countries of specific relevance for the policies of ESA and EU member states.

The applicable policy areas for each service-portfolio are listed in the annexes.
5.4 User-federating bodies

Within each policy sector there already exist bodies and umbrella organizations that have been tasked by their constituent member organizations to facilitate better access to new information sources and technology solutions. Such organizations shall, to the maximum extent possible, be involved in setting-up and validating the GMES service networks.

Each participating user-federating body shall lead the promotion and distribution of the service portfolio to their respective user community and associated decision makers, and shall gather and present user feedback to the service network.

5.5 Service Model(s)

GMES services may be provided both by industry and by public institutions.

Each Service network shall therefore accommodate at least the following models for service provision:

- **Industrial out-sourcing**: in which external industrial or business supplier(s) provide information services to the legally-mandated public authority responsible for the policy

- **Institutional in-sourcing**: in which one or more local, regional, national or pan-national institutions generate and deliver the required information using capabilities developed, supplied (and maintained) by industry

Each participating user-organization shall specify which service model it intends to adopt for service provision during this contract, and longer-term provision following contract completion.

5.6 Industrial Users

The involvement of industrial operators (e.g. civil engineering, transport sector, utilities sector) as users of GMES services has been relatively limited to date.

The Agency encourages wider participation of such industries within the service networks for the following purposes:

- Demonstrating the utility of the services to help industry manage the impact of its operations on the environment and conform to applicable environmental policies and regulations

- Validating the performance of the GMES services by comparison with independent measurements and data available to the industrial sector

- Using GMES services within industrial activities that improve public security

5.7 Access to Services

Information products generated under this procurement shall be made as openly and widely available as possible to legally mandated organizations that commit to evaluate them, to contribute to their validation, to report on the utilization and to promote the benefits of their utilization.
User organizations receiving information products generated under this procurement are expected to integrate the information within their own decision making, reporting and public information services, to actively promote the wider use of the services within their own community, and to gather, analyze and report back on feedback from their own users.

Any restrictions regarding sharing, multiple-use, or onwards distribution of information products generated under this procurement must be fully justified, explicitly specified in the relevant SLA, and formally agreed in advance by ESA.

5.8 Service Sustainability

Progress has been made in growing user engagement and support for individual services during GSE service consolidation activities conducted to date. However, it is recognized that at this point in time, none of these services can be considered as fully sustainable.

To achieve sustainability, all services must ultimately satisfy three critical requirements. They must become:

- **Available**: Readily accessible to users when needed, now & in the future
- **Reliable**: Consistently meeting user-defined quality & standards
- **Affordable**: Benefits justify the costs

When scaling up the services under this procurement service networks shall aim to provide their users with complete operational service packages rather than demonstration or test cases.

User feedback during consolidation phase strongly emphasized the need for improved validation and quality control for the majority of services. Service providers shall therefore identify and resolve the major outstanding issues in these domains during the first year of scaling up services. All reports resulting from this activity shall promptly be made publicly available via the web.

5.9 Service Validation

All services and their constituent data products shall be subjected to rigorous validation before they are made available to end-users. Each service network shall implement and enforce a formal validation protocol that specifies the conditions and procedures for validation that are applicable to all services and all members of the service network. This may include one-off intensive validation campaigns and analyses, as well as routine validation measures built into the operational production cycle.

Dedicated validation reports shall be generated and made available to users for each individual product and service. All geophysical information parameters, and their specified associated limits of accuracy shall be individually validated.

5.10 Service Quality Control

Quality control procedures shall be defined and applied to all services during operational production. The quality procedures shall cover all aspects of service provision: including user ordering, data planning and acquisition, quality checking of input data sources (space and in-situ), archival and retrieval, media handling, data processing, assimilation and modeling, data formatting, product dissemination, error-detection and non-conformance handling. Each service and constituent data product delivered to end-users shall be accompanied by a quality control record.
5.11 Service Partnership
The relationship between service providers within each service-network shall be governed by a Service Partnership Protocol (SPP).

The SPP shall specify conditions for entry to, and exit from, the service provision network. It shall specify the obligations and liabilities of being a partner in the service provision network. It shall specify terms and conditions for sharing of information about users, access to each other’s facilities, data & software, use of IPR, copyrights, external communication policy, and marketing strategy.

The SPP shall be signed by all service providers participating in the service network.

5.12 Service Level Agreement
The relationship between each service-network and each user organization receiving service shall be governed by a Service Level Agreement (SLA).

Each SLA shall be signed by representatives of both parties at the level of Chief Executive Officer or Director.

Each Service Level Agreement shall specify which service model the end-user plans to implement (e.g., in-sourcing, out-sourcing etc).

A single SLA may, where appropriate and feasible, cover the collective needs of a coordinated group of end-user-organizations.

The release of ESA resources to support service provision from a GSE service network to any user organization shall be contingent on approval of both documents (SLA and SPP) by all parties concerned, and upon subsequent approval by ESA.

ESA payments associated with each SLA will be contingent upon satisfactory achievement of and reporting of three major milestones in service delivery:

- **Start**: Finalization of Service Level Agreement including all detailed requirements for information content, information quality, delivery schedules, validation requirements, and engagement of user resources
- **Mid**: Delivery of service to users and confirmation of initial user acceptance
- **End**: Complete User Reporting on service utility including technical validation, and requirements for service improvement, evolution, growth.

The method by which user confirm initial acceptance of services should be as kept simple and effective as possible (e.g., e-mail or ticking boxes on a printed table). It should produce an unambiguous record of what has been received, accepted, or rejected but should not burden users with useless bureaucracy. ESA is to be kept informed on the status of service delivery and acceptance via the monthly status reports from each consortium.

The status of all service deliveries and acceptances will be reviewed, and any impact on payment milestones, will be assessed, during quarterly and annual progress reviews with the Agency.
5.13 Service Expansion

Each service network shall, in the course of the contract, progressively expand the volume of services delivered and extend the geographic coverage. This shall be achieved by extending the volume of service provided to existing users and enlarging the user community it serves.

User-needs for services requiring recurrent national, multinational, multi-regional or European coverage, for which satellite-based monitoring can provide cost-effective solutions, shall be served in priority over more localized or isolated needs.

5.14 Sustainability targets

Each consortium shall set annual measurable targets for improving the availability, reliability and affordability of the service portfolio and its constituent parts.

Specific targets shall be established so that quantified progress towards service sustainability is achieved in the course of the contract.

Progress in achieving these targets shall be reviewed each year on the basis of documented advances in the areas of both the demand and supply that contribute to overall sustainability of the service portfolio.

Annual targets shall be set in at least the following areas:

Demand-side targets
- Increasing evidence of users integrating services within their operational activities, public information services, strategic decision making process and official reports
- Increasing user control of service procurement
- Progressive increase in the uptake of service by significant fraction of the targeted users during the course of the contract
- Reduction in user effort necessary to assure service validation
- Engagement of end-users in accessing third-party programmes and funding sources to maintain service continuity

Supply-side targets
- Incremental expansion of Service coverage to achieve availability over all identified areas of major interest to the target user segments within this contract.
- Planned, progressive reduction in unit costs for each service
- Acceleration of service improvements by coordination with on-going activities (other projects)
- Development of standards for information generation and service delivery
- Joint exploitation of common infrastructure

5.15 Evolution of Service Level Agreement

As the availability, reliability and affordability of the services are progressively improved by activities supported within the contract, the relationship between the service network and the
users should evolve progressively away from a project-based activity towards a service provider – client relationship. This should be based on a set of validated services and associated specifications that have been documented and confirmed as being fit-for-purpose by the user communities concerned, are considered by users to be affordable, and are operationally available from several service providers – at least those participating in the service network - within Europe. Explicit provision for this evolution shall be planned in each service level agreement and annual revisions to it.

This evolution shall enable each user-organization to exercise more direct control over the service procurement process, by e.g. applying its own procurement practises and its own conditions of acceptance or rejection of services. The performance targets achieved each year on service timeliness, validity, quality, and on user standards compliance, shall enable the service network to commit to correspondingly higher quality levels in the SLAs for subsequent years. This iterative process should ultimately enable each end-user-organization, to declare the service(s) as “fit for purpose”.

5.16 Organization of the Service Network
Each service network shall be organised and operated in a manner that is adapted to the documented needs, operational practices and geographical location(s) of the specific user communit(ies) it serves.

The network shall be organised for functional and operational efficiency of service provision, rather than on a project basis.

Each service network shall incorporate existing teams and facilities within a coherent operational framework, in order to capitalise upon previous investments and make best use of already established expertise.

The resulting organisation shall be capable of maintaining a close working relationship with end user organisations in all the countries and regions for which the service portfolio is of highest relevance.

Each service network should, as a general principle and within reasonable limits of cost, include at least two independent operational sources (companies) for each service in its portfolio. This should assure a basic level of service redundancy, provide for future growth and most importantly, guarantee choice for users.

Each service network shall provide an open and transparent mechanism that enables other companies or organizations, with suitable service capabilities, to be assessed to qualify as service providers within the network.

Each service centre network shall define and implement quality and validation processes suitable for the needs of its specific user community.

5.17 Relation to INSPIRE initiative

The EC INSPIRE directive proposal provides an opportunity to participate in the preparation of Implementing rules. GMES Service networks are particularly well placed to contribute to this task as a source of user operational needs and technical expertise.

To this end each service network shall contribute to the INSPIRE Work Programme (INSPIRE WP) Preparatory Phase 2005 – 2006 [ref http://inspire.jrc.it].

This contribution shall be organized following the procedures for stakeholder participation as outlined in the INSPIRE WP, in particular by responding to the open INSPIRE Call for Interest for Spatial Data Interest Communities.

Each GMES service network shall, in the course of this contract, express interest to:

- join or lead (as appropriate) a Spatial Data Interest Community,
- contribute as project with user requirements to the formulation of the draft INSPIRE Implementing Rules,
- respond to the INSPIRE Call for Experts and allocate appropriate resources to this task,
- act as a pilot for testing Implementing Rules specifications as they become available for meta-data, data model harmonization and services,
- participate to the Review Phase of the INSPIRE draft Implementing Rules as they become available.
Through this participation the GMES Service network can not only establish an important user based contribution to the implementation of INSPIRE but also prepare itself timely for the entry into force of the INSPIRE Directive.

5.18 Service Network Infrastructure

Each network shall be sized and equipped with sufficient dedicated technical facilities to meet the foreseen production load for the full duration of this contract. It shall, as necessary, include facilities for

- User Order handling and queries
- Production planning and scheduling
- External data acquisition (EO, in-situ, other)
- Modelling and assimilation
- Product generation
- Data Archiving and cataloguing
- Quality control and validation
- Data Dissemination

Each network shall provide on-line access to all services it provides.

Each network shall guarantee users access to the full set of products and services offered by the entire consortium over a declared set of geographic regions.

The service network, and all its components, shall be maintained under formal configuration control.

The network shall be scalable to accommodate realistic forecasts of growth in demand for its services in the duration of the contract.

5.18.1 Use of Existing and shared infrastructure

Each GSE network shall make maximum use of in-situ monitoring, data gathering and data management and processing infrastructures that already exist, or are under development (e.g. via national environment agencies, via EEA and via publicly-funded projects supported by ESA, EC or National programmes).

Expenditure on new infrastructure within each service network under this contract shall be kept at the absolute minimum level necessary.

Infrastructure related activities shall therefore prioritize:

- Integrating service infrastructure developed elsewhere for exploitation by the service network and user segments
- Building and maintaining links with parallel infrastructure development activities to ensure present and future service provision and demand side utilisation requirements are addressed
- Accessing common infrastructure (in-situ measurement networks, data warehouses, catalogue, archive)
5.18.2 Coordination between GSE Service Networks

The GSE service networks shall share information, on their products, services, users and annual planning in order to:
- Optimize planning and use of resources made available from ESA
- Maximize benefits for users by use of common technical standards wherever possible
- Simplify and unify user access to services by presenting a common service portfolio of GMES services to all users

Each service network shall, in consultation with the other selected GSE networks and their users, define the degree of interoperability needed between GSE networks and specify a common set of technical interface requirements applicable to all GSE service networks.

Each GSE service network shall implement and test the resulting data exchange interfaces.

5.18.3 Coordination with other service providers

Each GSE service network shall coordinate its activities with on-going national and EC funded projects that are relevant for its activities. This co-ordination shall cover
- Exchange of algorithms and software between project teams
- Defining and applying common standards to services delivered
- Optimizing use of public funds and avoidance of duplication in different projects
- Establishing a common Service offering and prospectus to users

Each GSE network shall, in consultation with its users, define its requirements for interoperability with service providers operating within EC-funded GMES projects, particularly integrated projects providing services or developing relevant infrastructure.

5.19 EO Data Procurement

Each service network shall be responsible for procuring all data required for service provision under this contract.

Each service network shall prepare an annual data procurement plan for approval by ESA.

The procurement plan shall be supported by an analysis of the forecast data needs and availability for the coming two years. This shall be derived on the basis of the agreed SLAs.

Each procurement plan shall be fully itemized and costed, and should be supported by data access agreements with all involved data suppliers.

Consortia should note that the GSE program is intended to stimulate demand for future EO-based services, not as a vehicle for procurement of large volumes of data. Consortia should thus keep the costs of data procurements to the minimum possible.

Consortia are expected to maintain a detailed and realistic data procurement plan, taking advantage of data sets (EO and in-situ) or access conditions that may be already available to members of the service network (both providers and users), to exploit a multi-use approach, to make joint data procurements wherever possible, and to rigorously implement a value-for-money approach to data procurement for GSE.
The Agency will make data from ESA missions available to service networks under category 1 terms and conditions.

5.20 Allocation of Resources

The total resources made available from ESA under the contracts awarded, shall be allocated so as to maximize service provision and qualification, and the associated tangible benefits for users achieved via Task 3.

To maintain credibility of the overall GMES process, priority shall be given to satisfying the needs of user organizations that have already engaged in GMES and demonstrate strong commitment to engage resources in GMES.

New user organizations shall be engaged progressively during the contract period, in order to enlarge demand for services and to broaden international scope, whilst incrementally increasing the volume of services delivery and enlarging the network supply capability.

Resources shall be focused onto the most promising services and geographic areas in order to make substantial impact (i.e. demonstrate user benefits) and establish a stable level of recurrent demand for GMES services during the next 3 years. At the same time foundations for future growth shall be established (next 5-10 years).

5.21 Annual Operations Cycle

Each service network shall plan and execute its activities in an annual cycle of service delivery, assessment and improvement, as illustrated in below:

5.22 Communication

The GSE service networks shall implement a joint communications approach, applicable to all promotion activities and promotion materials. This will be agreed with ESA during the first co-location meeting.
5.23 Deliverables

There shall be two types of deliverable:

- Deliverables to *end-user-organizations* – these are products & services from the *Service-Portfolio* and are the responsibility of the service network

  These are the major deliverables items of the contract.

ESA reserves the right to receive a duplicate of all data products delivered under this contract.

- Deliverables to ESA – these are primarily in the form of documentation and are the responsibility of the project manager

All deliverable documents are listed in H.

During stage 1 consolidation phase of the GMES Services Element, considerable resources were expended on documentation. During the second stage of GSE a significantly lower quantity of documentation is required by the Agency as formal deliverables.
6 TASKS TO BE EXECUTED

There are five tasks to be executed under each contract:

- Task 1: User Federation & Strategic Planning
- Task 2: Service Network Coordination
- Task 3: Service Provision & Qualification
- Task 4: Service Portfolio Evolution
- Task 5: Project Management

All tasks shall:

- Start within 1 month of Kick-off
- Run concurrently thereafter throughout the contract

6.1 Task Objectives

**Task 1 Objectives: User Federation & Strategic Planning**

User federation should ensure that GSE services are strongly user-driven and should build acceptance of the service portfolio amongst a larger number of users.

Each service network shall organize presentations, briefings and workshops as necessary to inform new users of the available services and to promote their adoption in wider user communities. The service-prospectus and service-utility-reports shall be used as the major raw materials for this activity. These shall be supplemented by promotion packages derived from them. Consortia shall also offer training opportunities and training packages, specifically related to the GMES service-portfolio, to major prospective new user organizations.

Each consortium should aim, via these activities, to significantly enlarge the number of end-user-organisations making operational use of service-portfolio in the course of this contract.

It is to be noted that substantial progress in raising user awareness was achieved during GSE consolidation. The federation activities under this contract should take stock and build upon this achievement.

The User federation activities should address the interests of ESA and EC member states. User organizations from bordering nations, developing countries, and states that are of importance for the success of the EU policies concerned, should be progressively involved, within the context of appropriate international cooperation frameworks, such as UN programmes and agencies, and international co-operation and development programmes of EU and ESA member states.

User federation should stimulate user expectations that the network can satisfy within reasonable time-scales, and within the resources available to or accessible by the network. Each consortium shall actively investigate complementary programmes of an operational (non-research) nature, for which the service-portfolio could provide appropriate monitoring solutions, and within which the service capabilities could potentially be integrated.
User organisations that are preparing proposals under such programmes shall be supported. Options to adapt the existing service portfolio and to prepare new initiatives that could lead to service sustainability shall be investigated and pursued.

All other tasks shall be planned and prioritised on the basis of the information gathered via the user federation and strategic planning.

**Task 2 Objectives: Service Network Coordination**

The objective of this task is to establish, maintain and manage the organisational and technical infrastructure necessary for a geographically distributed network of GMES service providers to operate collectively on a sustainable long-term basis.

As has been demonstrated during GSE consolidation, a preliminary service network capable of responding to current levels of user demand, can be constituted from facilities that already exist within industries and institutions in ESA and EU member states. Most GSE consolidation consortia have functioned as a loosely coupled association, each with independent production facilities, ordering mechanisms and product lines. This has proven effective by minimising the constraints imposed on individual service operators and allowing existing processing facilities to be used without need for costly modifications or lengthy development of large new systems.

The Agency intends to follow a similar approach during this stage of GSE, i.e by exploiting existing facilities to the maximum. However, in order to achieve the service provision targets called for in annexes A-G, and the quality levels required by users, stronger and more effective coordination and configuration control must be implemented than was the case during GSE consolidation.

Under this task, the network members shall establish coordination mechanisms and implement technical interfaces that will allow greater sharing of facilities (eg archives), more unified approach to the user communities served, and more effective joint access to external data providers (eg commercial) and infrastructures (e.g. monitoring networks).

**Task 3 Objectives: Service Provision & Qualification**

This task constitutes the major activity to be carried out under this contract. Its has two main objectives:

**Service Delivery**: to achieve fully operational, responsive, robust and cost-effective supply of services and enable users to enter into future service level agreements with confidence. This should establish the service network as a reliable source of information for users.

**Service Qualification**: to achieve standards of quality, validation and reliability that match user needs and establish the “fitness for purpose” of each service.

This task should be implemented as a series of subsidiary work-packages, staggered in time, each scoped to completely fulfil one or more Service Level Agreements.

The service delivery activities are primarily the responsibility of the service providers and their partners. The qualification (validation and utility) activities are expected to require significant effort on the part of end-user organizations in order to achieve the required quality.
Each user organization receiving services via this contract will be expected to formally accept or reject services on the basis of the agreed terms of the SLA. In case of services not delivered on schedule, or services rejected on delivery due to quality problems, the users shall raise an anomaly report and the providers take recovery actions to achieve an acceptable response to the user need.

All services accepted by users should be exploited as part of their normal operational activities, at no cost to the Agency.

The major contribution of the users will be, in addition to their normal activities, to make an independent, comprehensive assessment (service-utility-report) of the value of each service with respect to their own (policy related) purposes.

This report should account for all process within the user organization in which the information provided plays a role. This may involve scientific, operational, financial or strategic decision-makers. The service-utility-report should be sufficiently comprehensive and detailed to enable service providers to identify advantages and shortcomings of their products and to improve them accordingly. User organizations should involve staff at appropriate levels of expertise to ensure that this constitutes an authoritative view of the organization, based on which providers can derive requirements for service evolution.

**Task 4 Objectives: Service Portfolio Evolution**

In order to satisfy evolving user needs for better and more complete information on environment and security the GMES services must be continuously improved. This requires that relevant new research results, newly validated algorithms, new modeling and assimilation techniques, newly qualified processing technologies and new operational data sources (EO, in-situ and socio-economic), shall be tested and evaluated as they become available.

The Agency’s preferred approach is that the GSE service networks should establish close cooperation with existing R&D projects to achieve this, rather than embark new & potentially overlapping R&D activities under this contract. The main activity under this task should therefore be to transfer suitably mature R&D results and proto-type software from co-operating research partners and projects into the operational production environment.

Research partners within each consortium should facilitate this transfer between projects.

GSE consolidation has demonstrated that service providers also need to conduct targeted short-term developments, such as updating or replacing existing algorithms or input data sources in order to incrementally improve service quality or reliability or respond to high-priority user feedback. Such activities fall within the scope of the service evolution task.

For non-critical new developments and R&D activities the service network is expected to work collectively to access dedicated R&D and applications programmes that are available for this specific purpose. (e.g EC FP6, national R&D programmes, ESA DUE and EOMD).

Service evolution activities shall not impact the normal operations or configuration of the operational service supply chains.
6.2 Task 1: User Federation & Strategic Planning

**Inputs**
- S3 Service Prospectus
- U4 Service Utility Reports

**Activities**
- **Build user awareness, acceptance and adoption of services**
  - Plan and execute annual service promotion campaigns
  - Promote service portfolio to international user conventions
  - Promote service portfolio to users outside current geographic coverage

- **Gather requirements from new users**
  - Document and analyze needs of new user organizations
  - Evaluate potential benefits of services for new user organizations
  - Evaluate availability of additional in-situ data, modeling capabilities to new users
  - Conduct a limited number of trial cases with new users
  - Agree terms for new users adopting service portfolio on trial basis
  - Define terms of preliminary Service Level Agreements with new users

- **Generate user-oriented promotional materials and packages**
  - Prepare, maintain and distribute Services Brochure
  - Prepare case study presentations based on service-utility reports
  - Prepare video materials based on user feedback
  - Support users to make press & media briefings on results & benefits of GMES services

- **Deliver service-related training**
  - Prepare and distribute training packages for main user segments
  - Deliver training courses to existing user training colleges and centres
  - Deliver briefings to professional associations
  - Support users to promote service benefits within their own organization

- **Support ESA-EC communication activities**
  - Participate to GMES briefings organized by ESA & EC within Europe

- **Engage key users**
  - Participate to relevant policy working groups and advisory bodies
  - Brief European and national bodies on methods, best-practice and technical standards
  - Build links with policy think tanks, NGOs and other organisations
  - Facilitate communication between key user organisations and data providers

**Deliverables**
- U1 Core User Needs and User Standards Dossier
- C7 Draft Service Level Agreements for each user organisation
- C15 Promotion & training plan
- C16 Promotion & training packages
  - C17 Promotion & training reviews
6.3 Task 2: Service Network Coordination

Inputs
- Signed Contract
- C7 Draft Service Level Agreements
- Service network components (e.g., individual supply chains)

Activities
- **Establish and manage a geographically distributed network of service providers:**
  - Establish a user executive body and a service network management structure
  - Maintain the complete set of approved SLAs for the network
  - Prepare and monitor annual production schedules for the entire network

- **Manage Configuration Control of the Service Network**
  - Maintain the Service Partnership Protocol
  - Maintain Service Validation Protocol
  - Maintain the Service Prospectus and Service Portfolio Specifications
  - Maintain configuration control of all supply chains within the service network

- **Integrate and manage common network infrastructure:**
  - Implement and maintain the service network web portal
  - Establish communication between all nodes of service network
  - Ensure interoperability of all service network members
  - Ensure maintenance of common service infrastructure (e.g., archive, catalogue..)

- **Negotiate common access conditions to external data sources**
  - Establish a common data procurement plan (EO & in-situ, other)
  - Negotiate conditions of access to third party data providers
  - Negotiate network access to third party facilities & networks

- **Enforce network-wide quality and validation processes:**
  - Define quality levels to be maintained and ensure consistency with all SLAs
  - Conduct independent audits of service performance against agreed quality levels
  - Establish independent service validation capability at network-level

- **Define and maintain standards for service delivery:**
  - Define applicable service standards (e.g., formats, units, legends, meta-data protocols)
  - Ensure that service standards are applied consistently across network
  - Monitor compliance of network standards with international data harmonization activities (e.g., INSPIRE, user domain standards and agreements)
  - Assess and review service network implementation of INSPIRE principles and participate to appropriate INSPIRE fora

- **Coordinate with other GMES Providers**
  - Coordinate annual data procurement plans with other GSE consortia
  - Draft a common communication policy & define a common approach to users
  - Draft a common service prospectus in cooperation with all GSE consortia

**Deliverables**
- D1 Service Network Annual Work Plan (including Data Procurement Plan)
- D2 Service Network Configuration Master Document
- D3 Service Network Web Portal
D4 Service Network INSPIRE Implementation Technical Note
S3 Service Prospectus; S5 Service Portfolio Specifications (including upgrade specs)
C7 Service Level Agreements (Final)
  • C5 Service Validation Protocol; S4 Service Partnership Protocol (updates)
6.4 Task 3: Service Provision & Qualification

- **Inputs**
  - C7 Service-Level Agreements (approved)
  - C6 Service Validation Protocol
  - D1 Service Network Annual Work Plan
  - S5 Service Portfolio Specifications

- **Activities**
  - **Generate & deliver services**
    - Acquire all necessary EO and in-situ data required for each SLA
    - Execute data ingestion, processing, assimilation, modelling processes
    - Conduct standard quality-control procedures
    - Perform all required routine calibration and validation procedures
    - Detect and rectify all operational production anomalies
    - Generate, format and distribute service packages to end-users
    - Respond to user requests for changes in production or delivery schedule
    - Monitor service production and delivery to users
    - Monitor and respond to user feedback on service deliveries
  
  - **Verify service quality and validation**
    - Conduct regular validation of service information content
    - Generate validation reports in compliance with the agreed service validation protocol
    - Monitor service information content and delivery performance compliance with applicable user domain standards and rectify non-conformance events

  - **Evaluate & report on service utility**
    - Accept delivery of services
    - Utilise services within normal operational cycle of user organisation
    - Assess utility, impact and benefit of services provided with respect to user needs
    - Provide user feedback on service quality, fitness-for-purpose, required improvements to service provided, requirements for new services to be included in portfolio needs
    - Synthesise user feedback, service validation and operational production experience into service portfolio upgrade objectives
    - Specify needs for enhancement of service network throughput and performance

- **Deliverables**
  - **Deliverables to ESA:**
    - S6 Service Operations Reports
    - C6 Service Validation Reports
    - U4 Service Utility Reports
  
  - **Deliverables to End Users:**
    - Information services as specified within all applicable SLAs
    - C6 Service Validation Reports
6.5 Task 4: Service Portfolio Evolution

- **Inputs**
  
  S5 Service Portfolio Specifications  
  D1 Service Network Annual Work Plan

**Activities**

- **Test and integrate new and improved methods**
  
  - Improved algorithms and models  
  - New products to extend the portfolio  
  - New Models and assimilation schemes for now-casting and forecasting services  
  - Verification of new EO data sources as they become available  
  - Verification of new in-situ data sources  
  - Integration of automated methods to improve supply chain efficiency

- **Improve validation of services**
  
  - Verify that methods demonstrated on local tests-sites are valid when scaled-up to provide information over large geographic coverage  
  - Conduct dedicated validation campaigns for key geophysical parameters

- **Improve compliance with user-domain standards**
  
  - Standardize production chains between different service providers  
  - Implement new user-defined formats  
  - Verify compliance with user-domain or relevant industry sector standards  
  - Define network proprietary standards where no applicable user or industry sector standards exist

**Deliverable Documents**

Ad Hoc Technical Notes to accompany Annual Report as required  
S5 Service Portfolio Specifications (upgrade)
6.6 Task 5: Project Management

Inputs

- Signed contract

Activities

- Manage all activities of the consortium
- Identify, rectify, follow-up and close-out all problems or under-performance
- Ensure timely closure of all actions agreed with ESA
- Ensure timeliness and quality of all deliverables
- Take all recovery actions required to maintain schedule & quality of deliverables
- Report to ESA monthly
- Maintain Project Actions Database
- Organise and minute progress meetings with ESA.

Deliverables

Project Management Plan [M1]

Project Quality Plan [M2]

Monthly Status reports [M3]

Quarterly Progress reports [M9]

Annual Report [M10]

Progress meeting Agendas & Minutes [M4]

Project Actions Database [M5]

Project anomaly reports, Recovery action plans, and anomaly close-out reports [M6]

Project History Report [M7]

Project Web-site with all deliverable documents [M8]
7 MANAGEMENT REQUIREMENTS

7.1 Organization

7.1.1 Organization Scope

The team organisation should facilitate:
- Project Management and reporting to the external contract authority (ESA)
- Collaborative management of an autonomous service network

7.1.2 Prime Contractor

Each consortium working on GSE shall be led and managed by a single Prime Contractor.

The Prime Contractor shall appoint a project manager who shall manage and report to ESA on all activities of all contractors and sub-contactors.

7.1.3 Project Organization

It is intended that after completion of this contract, the GSE service networks should be in a position to continue their operations as autonomous self-sustaining entities. This is one of the measures of long-term sustainability.

Thus the project organization established for the next three years, and the roles and responsibilities assigned to members of the service network, should enforce the prime contractor authority at the outset, but over the three-year period of the contract, a transition towards collaborative management of the service network should be achieved.

7.1.4 Service Strategy Group

The work of the consortium and the project manager shall be supported and guided by a
- Service Strategy Group

The Service Strategy group is intended to provide overall, independent high-level guidance to the service network for the duration of the contract, as was the case during service consolidation.

It should assist the network to keep well informed of relevant initiatives and developments in policy and of progress in related fields of science, and should facilitate international and cross-disciplinary contacts between programmes and projects.

The strategy group shall review and comment upon:
- The Service Prospectus (and its evolution)
- The Service Network Annual Report and Annual Plan

The strategy group shall
- have access to all deliverable documents on request.
- be provided copies of the network quarterly reports.
- be invited to participate in the network annual review.
The Service Strategy Group shall have three members.

Each member shall be an internationally recognized authority, holding a high-level position of responsibility in one or more of the following areas:

- The targeted environmental & security policies
- The relevant research fields (space & non-space)
- The relevant user organizations

Each Service Strategy Group member shall come from a different ESA or EU member state.

7.1.5 Service Network Organisation

The service network organization should take account of:
- Workflow and information flow within the network
- Need for proximity to key end-user organizations
- Need for technical coordination and standardization with the network
- Territorial responsibilities of network members
- Commercial and institutional constraints
- Cooperation with other networks

A User Executive Body shall be established within each service network.

This shall be composed of a limited number of users who are actively involved with the network.

This body is intended to play a similar role to that of the Core-User-Group during GSE consolidation. It shall:
- Represent user interests within the Service Network Management Structure
- Participate in annual service network reviews
- Provide an independent, executive summary of users needs and priorities for service evolution to which service providers can respond.

7.1.6 Team Profiles

The service network shall include:
- Operational Service Providers
- End-user-organizations:

Profile of end-users
The end-users shall encompass
- Users and Intermediaries organizations as identified in Annexes A-G
- The relevant European legally mandated end-user-organizations
- The main geographic zones that can benefit from the service-portfolio
- End-user-organizations from relevant developing countr(ies)

Profile of Operational Service Providers
The operational service providers shall include organizations that
- Are operating in the environmental and security information sector
- Have operational experience and capability in EO-based and in-situ-based services
- Have appropriate operational assimilation, modeling & forecasting capability
- Are already delivering operational services to key end-user-segments

Additional network members or associates should include:
- System Partners
- Research Partners
- Expert Consultants (as necessary)

**Profile of System Partners**
*Note that major system development activities are not foreseen under this contract.*
The system partners *shall* ensure coordination with on-going infrastructure development projects (EC-funded & ESA & national) and provide access to those infrastructures for the purposes of service provision by the service network.

**Profile of Research Partners**
*Note that major new research activities are not foreseen under this contract.*
The Research Partners *shall* ensure coordination and technical transfers (algorithms, software, data) with on-going R&D projects that are of specific relevance for the services being delivered and validated by the service network.

**Profile of Expert Consultants**
Expert consultants *shall* include organisations that have detailed knowledge of external funding programmes and sources that may benefit from the services being developed under GMES and that are relevant for the long-term sustainability of GMES.
7.2 Meetings

7.2.1 Meeting types

Each consortium shall participate to two types of meeting:

- Contract progress meetings with ESA
  - Formal status review at each contract milestone
- Co-location working periods
  - Orientation, info exchange & coordination with key personnel from all GSE consortia

7.2.2 Contract Progress Meetings

There shall be 11 quarterly progress review meetings with ESA.

- Kick-Off
- PM-1
- PM-2
- PM-3
- PM-4 Annual review 1
- PM-5
- PM-6
- PM-7
- PM-8 Annual review 2
- PM-9
- PM-10
- PM-11
- Final Review end year 3.

7.2.3 Co-location Working Periods

Key personnel from all GSE consortia shall participate in four co-location working periods, to coordinate and jointly prepare materials for key GMES programmatic milestones:

- Progress on Sustainability I (June 2006)
- Progress on Sustainability II (June 2007)
- Progress on Sustainability III (June 2008)
- Final GSE Co-location (Nov 2008)

The colocation meetings be of maximum duration 4 working days.

7.2.4 Annual Review

The annual review shall cover:
• Progress towards sustainability
• Major lessons learned from documented user feedback on utility of services provided and the requirements for service improvement and evolution,
• Assessment of demand for service from new user segments and key user-organizations.
• Experience over the most recent operations period against the objectives set
• Identification of requirements for recovery actions or other actions to exploit unforeseen new opportunity recently arisen
• Consolidation of action plans for the next operations period and the overall strategic plan

Where progress is deemed to be unsatisfactory, recovery actions shall be identified and implemented.

The user executive board shall participate to the annual review. This executive body shall also approve and endorse any service network upgrade or expansion activities proposed for the following year. In addition, this body shall provide an overall assessment of the expected value and impact of the service portfolio being developed.

Based on the outcome of this review, each consortium shall revise its annual work-plan for the following year. Subject to approval by ESA, the contract ceiling-price for implementation in the subsequent year shall be converted into Firm Fixed price.

The three dossiers delivered from each consolidation phase contract are intended as management & planning support tools, to be used for the entire service operations lifetime (i.e. potentially 10+ years). These shall be maintained on an annual basis.

7.2.5 Meeting locations
The contract kick-off meeting shall be held at ESRIN.

All co-location meetings shall be held at ESRIN

Progress meetings shall be held alternatively at user premises and at provider premises

The Prime Contractor and consortium members shall use video-conferencing, tele-conferencing, and internet-based-meeting facilities in order to minimise travel for regular working meetings with partners.

7.3 Schedule
Each contract shall last 36 months

7.3.1 Phased Implementation
Each contract shall be implemented in three sequential phases of 12 months each.

- Phase 1: Network Set-up and service delivery to first-year service Review
- Phase 2: Services Scaling-up to second-year service Review.
- Phase 3: Service Sustainability Demonstration to third-year service Review.
7.3.2 Split of work between phases
The networks shall maintain a constant level of effort and expenditure of resources over the three-year period of the contract.

7.3.3 Authorisation to proceed to next phase
The contractor shall not commence any Phase II or Phase III work, until the Agency has formally accepted all deliverables due at the preceding annual review and has issued written authorisation for the contractor to proceed.

The Agency will inform the contractor of its decision, to proceed to the next phase or not, after the appropriate annual service review has been completed successfully, and all due deliverables from the previous phase have been fully accepted.
### 7.3.4 Deliverables Schedule

<table>
<thead>
<tr>
<th>Task</th>
<th>Deliverable</th>
<th>code</th>
<th>title</th>
<th>year 1</th>
<th>year 2</th>
<th>year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Federation &amp; Strategic Planning</td>
<td>U1</td>
<td>Core User Needs and User Standards Dossier</td>
<td>TTT</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
<tr>
<td></td>
<td>C15</td>
<td>Promotion &amp; training plan</td>
<td>TTT</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
<tr>
<td></td>
<td>C16</td>
<td>Promotion &amp; training packages</td>
<td>TTT</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
<tr>
<td></td>
<td>C17</td>
<td>Promotion &amp; training review</td>
<td>TTT</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
<tr>
<td></td>
<td>C7</td>
<td>Draft Service Level Agreements for each end user organisation</td>
<td>TTT</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
<tr>
<td>Service Network Coordination</td>
<td>D1</td>
<td>Service Network Annual Work Plan</td>
<td>TTT</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
<tr>
<td></td>
<td>D3</td>
<td>Service Network Web Portal</td>
<td>TTT</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
<tr>
<td></td>
<td>D4</td>
<td>Service Network INSPIRE Implementation Technical Note</td>
<td>TTT</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
<tr>
<td></td>
<td>S3</td>
<td>Service Provision &amp; Qualification</td>
<td>TTT</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
<tr>
<td></td>
<td>S6</td>
<td>Service Operations Report</td>
<td>TTT</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
<tr>
<td></td>
<td>S7</td>
<td>Service Validation Report</td>
<td>TTT</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
<tr>
<td></td>
<td>U7</td>
<td>Service Utility reports</td>
<td>TTT</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
<tr>
<td>Service Portfolio Evolution</td>
<td>S5</td>
<td>Service Portfolio Specification (upgrade)</td>
<td>TTT</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
<tr>
<td>Project Management</td>
<td>M1</td>
<td>Project Management Plan</td>
<td>TTT</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
<tr>
<td></td>
<td>M2</td>
<td>Project Quality Plan</td>
<td>TTT</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
<tr>
<td></td>
<td>M3</td>
<td>Monthly Status Reports</td>
<td>TTT</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
<tr>
<td></td>
<td>M4</td>
<td>Progress Meetings Agenda and Minutes</td>
<td>TTT</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
<tr>
<td></td>
<td>M5</td>
<td>Project Actions Database</td>
<td>TTT</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
<tr>
<td></td>
<td>M6</td>
<td>Project Anomaly Reports, Recovery Action Plans &amp; Closeout Reports</td>
<td>TTT</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
<tr>
<td></td>
<td>M7</td>
<td>Project History Report</td>
<td>TTT</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
<tr>
<td></td>
<td>M8</td>
<td>Project Website with all deliverable documents</td>
<td>TTT</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
<tr>
<td></td>
<td>M9</td>
<td>Quarterly Progress Reports</td>
<td>TTT</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
<tr>
<td></td>
<td>M10</td>
<td>Annual Report</td>
<td>TTT</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
</tbody>
</table>

### 7.4 Documents

#### 7.4.1 Content and Configuration

All documents **shall** be independently reviewed, before delivery to ESA, for:
- Scope, Completeness, Configuration control
- Clarity, consistency, grammar, spelling

All documents delivered to ESA **shall** bear the following information.
- Document title; issue & version number; issue date
- Author(s) name & signature
- Reviewer(s) name & Signature
- Approver(s) name, organisation & signature
- Issuing Authority name & signature

All documents **shall** contain
- Table of contents
- Executive Summary
- Change Record
All documents **shall** refer to a single bibliography list that uniquely identifies each reference doc.

All text revisions **shall** be denoted by change-bars.

All documents **shall** be clear, self-explanatory and self-contained.

No two documents **shall** contain the same information – neither verbatim, nor paraphrased.

All diagrams and illustrations **shall** be clear and easily legible.

All documents **shall** be delivered to ESA in bound hardcopy (2 copies) and in Microsoft Word electronic format.
8 REFERENCE DOCUMENTS

R-1 GMES-Initial Period: "List of GMES priority themes"
http://earth.esa.int/gmes/

R-2 ESA Earthwatch Programme GMES Services Element Public Information Note
EW-GSE-EOAD-INFO-02-0001
http://earth.esa.int/gmes/

R-3 “Reflection paper on GMES Initial Services” GAC(2004)4_Rev1

http://inspire.jrc.it/.

9 ANNEX A: INFORMATION SERVICES FOR HUMANITARIAN AID
Introduction

The objective of the GSE Humanitarian Aid Portfolio is to provide sustainable operational information services, derived at least partly from earth observation data, to assist organisations involved with humanitarian aid, disaster reduction, international development and peace keeping activities, in direct support to European and International humanitarian aid policy objectives.

The target user community of the GSE Humanitarian Aid services are decision makers in non-governmental, governmental and intergovernmental & international organisations who require improved access to maps, satellite imagery and geographic information concerning the areas where they operate - humanitarian aid, disaster reduction, international development and peace keeping – and primarily outside Europe.

The GSE Humanitarian Aid action is expected to contribute significantly to the implementation of Fast Track services being defined by the European Commission. The Fast Track called INSCRIT - Information Service in response to crises, disasters and emergencies - is a contribution to the “EU Action plan for providing rapid response capabilities to deal with disasters” (Council 31.01.05). It is directed at providing the context for a continued support to a range of institutions at national, Union and international levels. In response to this, specific user requirements concerning rapid mapping i.e. service 1 (Basic mapping) and service 2 (Crisis/Damage mapping) have been collected during the INSCRIT Workshop of 7-8 November; these are reflected in sections ‘Services to be provided’ and ‘Component Infrastructure’.

In addition, as a contribution to INSCRIT, the service production capacity shall allow for the production of Basic mapping and Crisis/Damage mapping services in support to emergencies (natural and technological disasters) within Europe, to be coordinated with the GSE Consortia responsible for fire, flood and risk mapping services; this is defined in section ‘Services to be provided - Extension Services’.
9.1 Target policy sector

It should be noted that unlike other GMES domains, the Humanitarian Aid domain is not driven by a series of legally binding policies and their respective monitoring requirements. Rather, a series of political imperatives and targets lead to organisational mandates with associated funding streams and operational practices. The requirement for geospatial information therefore flows from the operational mandates of competent bodies rather than being round in the implementing text of the policies, as with other GMES domains such as those providing services related to the Kyoto protocol or the Water Framework Directive.

International
United Nations (UN) Humanitarian Aid Mandate

<table>
<thead>
<tr>
<th>Policy Name &amp; Web-Site Reference</th>
<th>Area Of Concern For Environment &amp; Security</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Millennium Development Goals on reducing poverty and improving lives (2000)</strong> <a href="http://www.un.org/millenniumgoals/">http://www.un.org/millenniumgoals/</a></td>
<td>The eight Millennium Development Goals (MDGs) form a blueprint agreed to by all the world’s countries and the worlds leading development institutions. The MDGs aim to uphold the principles of human dignity, equality and equity at the global levels.</td>
</tr>
<tr>
<td><strong>The World Summit on Sustainable Development’s principles</strong> <a href="http://www.un.org/esa/sustdev/index.html">http://www.un.org/esa/sustdev/index.html</a></td>
<td>To build a people-centred, inclusive and development oriented Information Society on the principles of the Charter of the UN and Universal Declaration of Human Rights. The World Summit on Sustainable Development was convened 10 years after the Rio de Janeiro “Earth Summit”. It focused on taking steps to implement sustainable development through out the world. The issues examined at the summit included: water, energy health, agriculture and biodiversity (ecosystems).</td>
</tr>
</tbody>
</table>
| **Inter-Agency Standing Committee (IASC)** http://www.humanitarianinfo.org/iasc/ | The IASC represents the humanitarian community at large in its UN and non-UN components and aims to facilitate inter-agency decision making in response to complex emergencies primarily by:  
  • developing and agreeing on system-wide humanitarian policies;  
  • allocating responsibilities among agencies in humanitarian programs;  
  • advocating common humanitarian principles to parties outside the IASC;  
  • identifying areas where gaps in mandates or lack of operational capacity exist, and building consensus between humanitarian agencies on system-wide humanitarian issues. |
| **Executive Committee on Humanitarian Affairs (ECHA)** http://ochaonline.un.org/webpage.asp?Page=662 | The Executive Committee on Humanitarian Affairs (ECHA) is one of the four Committees created by the Secretary-General in the framework of the 1993 UN reform to augment the coordination between UN agencies in various fields |
European Commission Humanitarian Aid Mandate

<table>
<thead>
<tr>
<th>Policy Name &amp; Web-Site Reference</th>
<th>Area Of Concern For Environment &amp; Security</th>
</tr>
</thead>
<tbody>
<tr>
<td>DG ECHO <a href="http://europa.eu.int/comm/echo/index_en.htm">http://europa.eu.int/comm/echo/index_en.htm</a></td>
<td>The European Union’s mandate to ECHO is to “provide emergency assistance and relief to the victims of natural disasters or armed conflict outside the European Union. The aid is intended to go directly to those in distress, irrespective of race, religion or political convictions.” (Council Regulation (CE) no 1257/96).</td>
</tr>
<tr>
<td>Annual Report 2004 on EC Development Policy and External Assistance COM(2004)536, 29 July 2004</td>
<td>“The European Union [...] accounts for 35% of global aid flows – about € 30 billion per year – of which more than a fifth is managed by the European Commission.” “The EC’s strategic goals are based on the Millennium Development Goals (MDGs) agreed by the world’s leaders at the Millennium Summit in September 2000, with the overarching objective of reducing world poverty by half by 2015.”</td>
</tr>
<tr>
<td>ECHO Disaster Preparedness Policy <a href="http://europe.eu.int/comm/echo/field/dipecho/index_en.htm">http://europe.eu.int/comm/echo/field/dipecho/index_en.htm</a></td>
<td>“Where appropriate, disaster preparedness measures will be integrated into ’classical’ relief operations [...]”</td>
</tr>
<tr>
<td>ECHO 2004 Aid Strategy <a href="http://europe.eu.int/comm/echo/information/strategy">http://europe.eu.int/comm/echo/information/strategy</a></td>
<td>“On a global level the number of natural disasters has increased during the last decade, with famine being the single greatest cause of death.” [exec summ] “ECHO also works at promoting disaster preparedness -as part of an overall Commission Disaster Prevention and Preparedness approach- in order to reduce both vulnerability and exposure of people to risks and disasters as well as to reduce economic costs of such disasters.”</td>
</tr>
</tbody>
</table>
National
Humanitarian Aid Mandate at national level:

<table>
<thead>
<tr>
<th>Policy Name &amp; Web-Site Reference</th>
<th>Area Of Concern For Environment &amp; Security</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Kingdom – Department for International Development (DFID) <a href="http://www.dfid.gov.uk/">http://www.dfid.gov.uk/</a></td>
<td>(DFID) co-ordinates and delivers the UK overseas aid programmes. The main humanitarian aid and development objective for the British government is ‘the elimination of extreme poverty’ as defined in the White Paper ‘Eliminating World Poverty – A Challenge for the 21st Century’ (November 1997, later Revised in 2000, “Eliminating World Poverty: Making Globalisation Work for the Poor”). DFID has a strong capability to enable the provision of humanitarian aid and relief, and works closely with humanitarian organisations to provide assistance based on a thorough and proper assessment of needs. The purpose of the DFID humanitarian aid policy is to:</td>
</tr>
<tr>
<td></td>
<td>• Save lives</td>
</tr>
<tr>
<td></td>
<td>• Relieve suffering</td>
</tr>
<tr>
<td></td>
<td>• Hasten recovery</td>
</tr>
<tr>
<td></td>
<td>• Protect and rebuild livelihoods and communities</td>
</tr>
<tr>
<td></td>
<td>• Reduce risks and vulnerability to future crises</td>
</tr>
<tr>
<td></td>
<td>• Eradicate extreme poverty and hunger</td>
</tr>
<tr>
<td></td>
<td>• Achieve universal primary education</td>
</tr>
<tr>
<td></td>
<td>• Promote gender equality and empower women</td>
</tr>
<tr>
<td></td>
<td>• Reduce child mortality</td>
</tr>
<tr>
<td></td>
<td>• Improve maternal health</td>
</tr>
<tr>
<td></td>
<td>• Combat HIV/AIDS, malaria and other diseases</td>
</tr>
<tr>
<td></td>
<td>• Ensure environmental sustainability</td>
</tr>
<tr>
<td></td>
<td>• Develop a global partnership for development</td>
</tr>
<tr>
<td></td>
<td>In the event of a disaster, most lives are saved as a result of immediate local effort. Hence, DFID places a high priority on building disaster response capacity within communities and institutions in disaster-prone, poor countries</td>
</tr>
<tr>
<td>France – The French Ministry for Foreign Affairs <a href="http://www.diplomatie.gouv.fr/index_gb.html">http://www.diplomatie.gouv.fr/index_gb.html</a></td>
<td>French priorities for humanitarian action lie in the provision of medical assistance and medicines, health and social care and nutrition. Child protection and clearance of landmines are also given a high priority. While these actions are carried out by state agencies such as Sécurité Civile, Samu mondial and the armed forces’ health services they are coordinated by the French Foreign Office. France also gives both technical and financial support to UN operations, which often work in association with the French state agencies in humanitarian actions</td>
</tr>
<tr>
<td>Germany – The German Federal Ministry for Economic Cooperation and Development <a href="http://www.bmz.de/en/">http://www.bmz.de/en/</a></td>
<td>The Federal Foreign Office is responsible for Humanitarian Aid abroad – it has over 200 foreign missions with fast modern communication facilities and staff with many years of experience. Generally rapid response humanitarian aid and relief projects are supported, such projects tend to last for only a few months. In 2004 the German Federal Foreign Office task force for humanitarian aid funded around 300 aid projects with around 51 million Euro of funding. Of this around 3.5 million euro were spent specifically on disaster prevention efforts. Aid and money were also given with the framework of the Balkans Stability Pact and Humanitarian Mine Action Projects.</td>
</tr>
</tbody>
</table>
German development policy works within three main themes:
- Fighting Poverty
- Globalisation
- Security/Peace

It promotes the ideals of “democracy and peace, economic growth and fair distribution of the yields, equal opportunities, environmental protection and the safe use of natural resources” (www.bmz.de). These ambitious goals aim to promote a world without poverty, fear or ecological destruction. The BMZ acts to achieve these long term goal via cooperation with the international community and the support of various international development agreements such as the Millennium Development Goals.

As noted above humanitarian aid uses mandate rather than policy as its main driving force. Therefore many of the ‘policies’ listed above do not have specific reporting milestones associated with them.

### NGOs National and International

<table>
<thead>
<tr>
<th>Policy Name &amp; Web-Site Reference</th>
<th>Area Of Concern For Environment &amp; Security</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual NGOs usually operate under their own set of principles and are hence difficult to define as a group</td>
<td>Values</td>
</tr>
<tr>
<td></td>
<td>NGOs believe in:</td>
</tr>
<tr>
<td></td>
<td>• Social justice, equity and respect for human rights.</td>
</tr>
<tr>
<td></td>
<td>• The participation of the populations.</td>
</tr>
<tr>
<td></td>
<td>• The involvement of civil society in the development and relief co-operation.</td>
</tr>
<tr>
<td></td>
<td>• Serving the interests of communities.</td>
</tr>
<tr>
<td></td>
<td>Approach</td>
</tr>
<tr>
<td></td>
<td>NGOs believe in:</td>
</tr>
<tr>
<td></td>
<td>• Taking a professional approach to their work.</td>
</tr>
<tr>
<td></td>
<td>• Building up the capacity of partners and communities.</td>
</tr>
<tr>
<td></td>
<td>• Empowering particularly disadvantaged groups.</td>
</tr>
<tr>
<td></td>
<td>• Working to reduce gender inequalities.</td>
</tr>
<tr>
<td></td>
<td>• Using appropriate fund-raising methods.</td>
</tr>
<tr>
<td></td>
<td>• Ensuring that their actions are sustainable.</td>
</tr>
<tr>
<td></td>
<td>• Engaging in education, awareness-raising and advocacy.</td>
</tr>
<tr>
<td></td>
<td>• Using their bridging capacity to link different sectors</td>
</tr>
<tr>
<td></td>
<td>Structure</td>
</tr>
<tr>
<td></td>
<td>NGOs:</td>
</tr>
<tr>
<td></td>
<td>• Are rooted in civil society.</td>
</tr>
<tr>
<td></td>
<td>• Have a non-profit making aim.</td>
</tr>
<tr>
<td></td>
<td>• Are legal entities.</td>
</tr>
<tr>
<td></td>
<td>• Are independent to pursue their own objectives.</td>
</tr>
<tr>
<td></td>
<td>• Are publicly accountable and transparent.</td>
</tr>
</tbody>
</table>

### Demand Milestones

<table>
<thead>
<tr>
<th>Policy</th>
<th>Millennium Development Goals – Respond will support the UN and its membership in their efforts to reach the Millennium Development Goals by the year 2015.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reporting</td>
<td>Each sector of humanitarian aid (e.g. UN, EC, National, and NGOs) has different reporting requirements. Respond will support its users in their various reporting requirements including internal reporting, reporting to government and international bodies and reporting to donors.</td>
</tr>
</tbody>
</table>
9.2 Users and key intermediaries

Users in Humanitarian Aid Sector:

European and international organisations involved with Humanitarian Aid, Peace Keeping, Disaster Reduction and International Development, for activities primarily concerning areas outside Europe.

<table>
<thead>
<tr>
<th>Operational Level</th>
<th>Example User and Intermediary Organisations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>International</strong></td>
<td>United Nations organisations of the Humanitarian Aid sector:</td>
</tr>
<tr>
<td></td>
<td>• UN Office for Coordination of Humanitarian Affairs (OCHA)</td>
</tr>
<tr>
<td></td>
<td>• the UN High Commissioner for Refugees (UNHCR)</td>
</tr>
<tr>
<td></td>
<td>• UN Department of Peace Keeping Operations (UNDPKO)</td>
</tr>
<tr>
<td></td>
<td>• United Nations Development Programme (UNDP)</td>
</tr>
<tr>
<td></td>
<td>• United Nations Joint Logistics Centre (UNJLC)</td>
</tr>
<tr>
<td></td>
<td>• United Nations Office of Project Services (UNOPS)</td>
</tr>
<tr>
<td></td>
<td>• United Nations Institute for Training and Research (UNITAR)</td>
</tr>
<tr>
<td></td>
<td>• United Nations Children Fund (UNICEF)</td>
</tr>
<tr>
<td></td>
<td>• UN Organization for Education and Science (UNESCO)</td>
</tr>
<tr>
<td></td>
<td>• United Nations World Food Programme (WFP)</td>
</tr>
<tr>
<td></td>
<td>International organisations:</td>
</tr>
<tr>
<td></td>
<td>• International Federation of Red Cross and Red Crescent Societies (IFRC)</td>
</tr>
<tr>
<td></td>
<td>• World Health Organisation (WHO)</td>
</tr>
<tr>
<td></td>
<td>• World Bank</td>
</tr>
<tr>
<td></td>
<td>• Asian Development Bank</td>
</tr>
<tr>
<td></td>
<td>• Donor organisations (e.g. USAID, DFID)</td>
</tr>
<tr>
<td><strong>European</strong></td>
<td>DG ECHO</td>
</tr>
<tr>
<td></td>
<td>DG RELEX</td>
</tr>
<tr>
<td><strong>National</strong></td>
<td>Monitoring and Information Centre (MIC) at DG/ENV - Civil Protection Unit</td>
</tr>
<tr>
<td><strong>International / National / Local</strong></td>
<td>Civil Protection Agencies e.g. Direction de la Défense et de la Sécurité civiles (DDSC) of French ministère de l'Intérieur</td>
</tr>
<tr>
<td></td>
<td>Ministries of Internal Affairs / Civil Protection Department;</td>
</tr>
<tr>
<td></td>
<td>Development and Aid agencies (e.g. Germany’s Techniches Hilfswerk THW)</td>
</tr>
<tr>
<td></td>
<td>Non Governmental Organisations (e.g. Action Contre la Faim, German Red Cross, Care)</td>
</tr>
</tbody>
</table>

In-sector-providers in Humanitarian Aid Sector:

In-sector providers are defined as

- Entities within the humanitarian aid & disaster reduction user community that also provider geo-information services to specific user segments – or:
- Entities external to the user community that are recognized, authorized and formally appointed by user organizations to provide them with geo-information services.

Direct users of the services shall primarily be the already-existing in-sector providers, agencies who support the humanitarian aid community. This strategy aims to avoid duplication of existing services. It also allows the Service Network to concentrate its resources and expertise on EO-based information, rather than on the integration with other geographic data and subsequent expert interpretation.
9.3 Services to be provided

The anticipated volumes for services to be delivered by the GSE Humanitarian Aid Action to its user organisations is provided in the tables below for both Baseline services and Extension services. These tables are based on the level of demand as required by the range of users in all different user segments (including users at EC level, at UN level, at the level of governments and of non-governmental organisations).

The total anticipated volumes for baseline and extension services is derived from the analysis of requirements from user consultation meetings including the RESPOND user workshops of 3rd May and 5 October 2005 and the EC INSCRIT Workshop of 7-8 November 2005.

The breakdown of service volumes for the eight different services of the service-portfolio is a representation of user requirements. It is anticipated that depending upon actual user expectations at the moment of precisely defining what service supply must be performed for all user segments, it may be required to re-organise the distribution of service volumes for all services of the portfolio – provided that the total budget for service delivery for the complete service portfolio remain unchanged.
### Baseline Services:

**Services in Humanitarian Aid Sector:** global services (outside Europe) along different geographical scales from local to regional:

<table>
<thead>
<tr>
<th>Information Service</th>
<th>Description</th>
<th>Service Provision Targets</th>
</tr>
</thead>
</table>
| 1. **Basic mapping / Background mapping (digital, paper, EO, non-EO vector and raster)** | on-line access to:  
- (non-EO) large area geographical information  
- overview (EO based) maps (ex-archive) | Coverage of at least one continent |
| | Production of large area space maps (small scale e.g. 1:200k) | 200 map sheets |
| | Production of small area space maps (large scale e.g. 1:10k) | 50 map sheets |
| 2. **Crisis & Damage Mapping** | Rapid mapping response to emergencies (non-charter) | 20 Crisis Events |
| | Rapid mapping response to Charter activations | 35 Crisis Events |
| 3. **Situation Maps** | Production of enhanced small area image maps (e.g. field activity coordination maps: Who-What-Where); including printing, production and distribution (on-line and hard copies) | 50  
25,000 full size hard copies |
| 4. **Refugee/IDP Support Maps** | Production of small area detailed IDP/Refugee Camp image maps | 35 Camps |
| | Production of context maps in status of IDP/Refugee situations and operations | 30 Camps |
| 5. **Thematic maps for Prevention / Reconstruction and Planning Purposes** | - Vulnerability mapping,  
- Reconstruction and Rehabilitation Mapping,  
- Health Mapping,  
- Environment Status Mapping | 100 maps in total |
| 6. **Alert services** | Operational alerting system | Delivery of products to many users subscribing (at least 100 humanitarian relief organisations) – operation should be near continuous |
| 7. **Communication / Reporting Resources** | inter-active on-line map creation service to assist users for the elaboration of maps for communication/reporting purposes; including assistance & training | to at least 5 regions of interest relevant to humanitarian relief users organisations – operation should be near continuous |
| | Ad hoc map production | 50 map sheets |
| 8. **In-field data collection** | Field mapping and field mapping support | 6 missions |

Note: Units are Unique Map Sheets, unless otherwise indicated.
9.3.2 Extension Services:

Services in Humanitarian Aid Sector: primarily global services outside Europe along different geographical scales from local to regional; in addition: Basic mapping and Crisis/Damage mapping services in support to emergencies (natural and technological disasters) within Europe (EU25) to be coordinated with the GSE Consortia responsible for fire, flood and risk mapping services:

<table>
<thead>
<tr>
<th>Information Service</th>
<th>Description</th>
<th>Service Provision Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Basic mapping / Background mapping</td>
<td>on-line access to:</td>
<td>Coverage of at least one other continent w.r.t. baseline</td>
</tr>
<tr>
<td>(digital, paper, EO, non-EO vector and raster)</td>
<td>- (non-EO) large area geographical information</td>
<td>30 additional map sheets (w.r.t. baseline)</td>
</tr>
<tr>
<td></td>
<td>- overview (EO based) maps (ex-archive)</td>
<td>25 additional map sheets</td>
</tr>
<tr>
<td></td>
<td>Production of large area space maps</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(small scale e.g. 1:200k)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Production of small area space maps</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(large scale e.g. 1:10k)</td>
<td></td>
</tr>
<tr>
<td>2. Crisis &amp; Damage Mapping</td>
<td>Rapid mapping response to emergencies (non-charter)</td>
<td>10 additional Crisis Events</td>
</tr>
<tr>
<td></td>
<td>Rapid mapping response to Charter activations</td>
<td>35 additional Crisis Events</td>
</tr>
<tr>
<td>3. Situation Maps</td>
<td>Production of enhanced small area image maps (e.g. field activity coordination maps: Who-What-Where); including printing, production and distribution (on-line and hard copies)</td>
<td>15 additional 10,000 full size hard copies</td>
</tr>
<tr>
<td>4. Refugee/IDP Support Maps</td>
<td>Production of small area detailed IDP/Refugee Camp image maps</td>
<td>5 additional Camps</td>
</tr>
<tr>
<td></td>
<td>Production of context maps in status of IDP/Refugee situations and operations</td>
<td>5 additional Camps</td>
</tr>
<tr>
<td>5. Thematic maps for Prevention / Reconstruction and Planning Purposes</td>
<td>- Vulnerability mapping,</td>
<td>80 additional maps in total</td>
</tr>
<tr>
<td></td>
<td>- Reconstruction and Rehabilitation Mapping</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Health Mapping,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Environment Status Mapping</td>
<td></td>
</tr>
<tr>
<td>6. Alert services</td>
<td>Operational alerting system</td>
<td>-</td>
</tr>
<tr>
<td>7. Communication / Reporting Resources</td>
<td>inter-active on-line map creation service to assist users for the elaboration of maps for communication/reporting purposes; including assistance &amp; training</td>
<td>to at least 5 additional regions of interest relevant to humanitarian relief users organisations – operation should be near continuous</td>
</tr>
<tr>
<td></td>
<td>Ad hoc map production</td>
<td>10 additional map sheets</td>
</tr>
<tr>
<td>8. In-field data collection</td>
<td>Field mapping and field mapping support</td>
<td>2 additional missions</td>
</tr>
</tbody>
</table>

Note: Units are Unique Map Sheets, unless otherwise indicated.
9.4 Geographic scope and service volume

9.4.1 Baseline Services

Coverage of countries and regions facing or exposed to humanitarian crises including natural and technological disasters, and complex emergencies, globally, outside Europe, in Africa, Asia and Latin America.

9.4.2 Extended Services

Increased Coverage

- globally, outside Europe, further coverage of all countries and regions facing or exposed to humanitarian crises including natural and technological disasters, and complex emergencies, outside Europe
- in Europe (EU25) concerning background mapping services & crisis/damage mapping services in response to natural and technological disasters

New Services

No new specific geo-information services are anticipated but the planned services for Baseline will be subject to service enhancement in order to better meet operational user requirements:
- service availability
- service reliability
- service affordability

In particular enhancing service availability with reduced time for service delivery by means of Near Real Time access and processing of EO data products is key for basic mapping and for crisis/damage mapping (e.g. for Charter activations). This is particularly important for MRO, HRO and SAR missions including ENVISAT ASAR & MERIS data.
## Component Infrastructure

This lists the minimum key service infrastructure that must be available for service delivery in Stage 2.

### Service delivery time
- Service 1: capacity to produce basic (ex-archive) mapping within 6 hours after user request (for background mapping coupled to crisis/damage mapping activation)
- Service 2: capacity to produce crisis/damage mapping within 24 hours after data acquisition (following activation of crisis/damage mapping job, either Charter or not)

### EO data processing
- Accurate geometric correction of optical and SAR data; in particular, orthorectification with accuracy of the order of the size of the resolution cell of the data product — provided utilization of appropriate Digital Elevation Models
- Availability of Digital Elevation Models (EO or non-EO), on a world wide basis, and with cell size better than 100m for geometric correction of HR and VHR EO data (optical and SAR)
- Optical & SAR data combination and data fusion of optical images (e.g. pansharpened images from Multi- Spectral and Panchromatic bands);
- Change detection techniques using Optical & SAR data (for damage mapping);
- Facility for 24/7 bulk map production in the case of a crisis requiring rapid crisis and damage mapping.
- Facility for rapid turnaround of large numbers of datasets and multiple map sheet creation for crisis and damage mapping
- Production of Digital Elevation Models from EO data;
- Low-cost processing chains and Geographical Information Systems (GIS) systems for production, technology transfer and training purposes

### Models
- Automatic classification algorithms on high and very high resolution optical and radar images for a range of applications including thematic applications for prevention / reconstruction planning purposes);
- Access to Alerting systems coupled with mapping response services (e.g. UN OCHA GDACS, ALERTNET, etc)

### In situ data
- Aerial photographs; Ground Control Points; Administrative boundaries;
- Contextual information and cartographic information for basic mapping, Situation Maps, Refugee/IDP Support Maps and Thematic maps for Prevention / Reconstruction and Planning Purposes

### Data integration & assimilation
- Integration of products into User GIS;
- Incorporation of delivered services in the information dissemination tools of partners providers from users organizations (within EC, UN and NGOs) ;
- Web portal providing access to all products;
- Inclusion of delivered services in data dissemination networks for relevant countries or regions (those exposed to humanitarian crisis and natural disasters) i.e. via UN and via regional/local centers;
- Ability to interface with common web-based map platforms (e.g. Google Earth)

### Data access and dissemination
- on-line access to all EO services using resources provided by consortium including resources by in-sector providers (see section ‘Users and key intermediaries’); on-line provision of products to many users – operations should be near continuous
- Back catalogue creation for operational on-line provision of value adding products into operational on-line system, redundant with systems of consortium (VACs and ISPs) – operation should be near continuous
- Interface with recognized web-based alerting system for mapping resources (user supported)
- Facility for rapid data ordering; Access to online non-EO data sources (e.g. GIST); Access to EO data supplier catalogue systems
- secure peer-to-peer delivery of map sheets and other digital files (e.g. for users in crisis situation)
### 9.6 Cooperation with complementary on-going activities

<table>
<thead>
<tr>
<th>Activity Level</th>
<th>Activity Name</th>
<th>Type of Cooperation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EU EC Integrated Projects</strong></td>
<td>IP Sustainability (Building Operational Sustainable Services for GMES - BOSS4GMES - being evaluated) (EC-FP6)</td>
<td>The consortium shall maintain an active coordination with the successful IP Sustainability project from the 3rd EC FP6 call (Aeronautics and Space). The Sustainability IP will have two key objectives. Firstly, the setting-up of a GMES operational first version(s) and secondly, use the analysis and recommendations from this to illustrate and plan a smooth and progressive transfer of GMES into a routine, operational service. BOSS4GMES will assist the analysis of current practices, define commonalities and potential upgrades to service delivery, especially concerning: rapid response, reporting and mapping, service delivery performance, data harmonisation and transverse coordination.</td>
</tr>
<tr>
<td></td>
<td>IP Security (LIMES - Land Sea Integrated Monitoring for European Security - being evaluated) (EC-FP6)</td>
<td>The consortium shall maintain an active coordination with the successful IP Security project from the 3rd EC FP6 call (Aeronautics and Space), which invited proposals for a full IP in the Security and Humanitarian Aid area. An IP in this area is expected to address information provision services and decision support – for Maritime Surveillance, Land and infrastructure monitoring, Humanitarian Relief and Reconstruction - through reviewing the state of the art, existing methodologies and commonalities plus demonstration and training activities. The IP will define and develop pre-operational versions of key services for EU activities dealing with: (a) Critical Resources &amp; Population Monitoring, (b) Humanitarian Support to Crisis Management, and (c) Humanitarian Support to Reconstruction.</td>
</tr>
<tr>
<td></td>
<td>GMOSS (EC-FP6)</td>
<td>The consortium shall maintain an active coordination with GMOSS to rationalise user contacts and ensure complementarity of services. GMOSS is an EC network of excellence under the 3rd EC FP6 Aeronautics and Space call. The aim of the GMOSS NoE is to integrate Europe’s civil security research so as to acquire and nourish the autonomous knowledge and expertise base Europe needs if it is to develop and maintain an effective capacity for global monitoring using satellite earth observation.</td>
</tr>
<tr>
<td><strong>EU ESA projects</strong></td>
<td>International Charter Space and Major Disasters</td>
<td>The consortium shall maintain an active coordination and cooperation with The International Charter for Space and Major Disasters. The International Charter aims at providing a unified system of space data acquisition and delivery operationally to those affected by natural or man-made disasters through authorized users. An authorized user is a civil protection, rescue, defence or security body from the country of a Charter member or the United Nations family of agencies.</td>
</tr>
<tr>
<td></td>
<td>EPIDEMIO (ESA-DUE)</td>
<td>The consortium shall maintain an active coordination or cooperation with EPIDEMIO and ensure complementarity of services. EO services in support to epidemiologists (EPIDEMIO) is an ESA funded DUE activity. It is a demonstration project to provide EO-derived information to epidemiologists in support to the study, monitoring and early warning of human disease.</td>
</tr>
<tr>
<td><strong>HUMAN (Medical Humanitarian Disaster Mapping Service) (ESA-DUE)</strong></td>
<td>The consortium shall maintain an active coordination or cooperation with HUMAN and ensure complementarity of services. HUMAN is an ESA funded DUE activity. The main objectives of HUMAN are to set up a working method and an infrastructure for acquisition, capitalisation and dissemination of geographical information by using space and web based GIS mapping technologies coupled to field experience.</td>
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<tr>
<td><strong>THEVOICE (ESA)</strong></td>
<td>The consortium shall maintain an active coordination with THE VOICE to rationalise user contacts and ensure complementarity of tools and systems. THE Voice: Vertical Organisations and Implementation of Collaborative Environments (THE VOICE) is an ESA funded project to understand the role of collaboration in scientific processes involving Earth Observation (EO) data and to present a framework for implementing a working collaborative environment for such ad-hoc Vertical Organisations. A prototype collaborative environment is being implemented to support a single product catalogue for the ESA GSE consolidation service Respond (Stage 1).</td>
<td></td>
</tr>
<tr>
<td><strong>GMFS (ESA GSE)</strong></td>
<td>The consortium shall maintain an active coordination with GMFS to rationalise user contacts and ensure complementarity of services. GMFS is an ESA GSE action in the GMES framework. The objective of GMFS is to improve the provision of operational and sustainable information services, derived at least partly from earth observation data, to assist food aid and food security decision makers from local to global level.</td>
<td></td>
</tr>
<tr>
<td><strong>Risk-EOS (ESA GSE)</strong></td>
<td>The consortium shall maintain an active coordination with Risk-EOS to rationalise user contacts and ensure complementarity of services. Risk-EOS is an ESA GSE action in the GMES framework. The objective of RISK-EOS is to set-up a European operational servicing capacity, taking benefit of Earth Observation capabilities in combination with other data sources and models, to support the organisations and institutions mandated for the management of Natural Hazards, throughout the prevention, anticipation, response and post-response phases.</td>
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</tr>
<tr>
<td><strong>European / International</strong></td>
<td><strong>INSCRIT (EC)</strong></td>
<td>The consortium shall maintain an active coordination with INSCRIT. The proposed EC GMES Pilot Service (currently named INSCRIT) will reinforce the European Capacity to respond to crises and emergencies associated with natural, technological and humanitarian disasters. In the long term, GMES INSCRIT is anticipated to guarantee that Europe can provide adequate information system capabilities to support early warning, emergency rescue, relief operations, humanitarian aid, reconstruction wherever and whenever they may be required either within Europe and around the world. In the context of INSCRIT Service 2006-2008, the focus will be on the provision of Rapid Mapping and Assessment Services. A first set of types of risks and emergencies and geographical extent (EU25+ and the rest of the world) have been identified.</td>
</tr>
<tr>
<td><strong>UNGWIWG (United Nations)</strong></td>
<td>The consortium shall maintain an active coordination with UNGWIWG. The United Nations Geographical Information Working Group (UNGWIWG) is a network of professionals working in the fields of cartography and geographic information science to building the UN Spatial Data Infrastructure needed to achieve sustainable development.</td>
<td></td>
</tr>
</tbody>
</table>
| **GIST (United Nations)** | The consortium shall maintain an active coordination with GIST.  
The Geographic Information Support Team (GIST) is an inter-agency initiative that promotes the use of geographic data standards and geographical information systems (GIS) in support of humanitarian relief operations. The GIST also identifies data resources to support preparedness and emergency response. |
| **GDACS (UN OCHA)** | The consortium shall maintain an active coordination or cooperation with GDACS ([www.gdacs.org](http://www.gdacs.org)) and ensure complementarity of services.  
GDACS is a joint UN(OCHA)/EC activity; it is a web-based platform that combines existing web-based disaster information management systems with the aim to alert the international community in case of major sudden-onset disasters and to facilitate the coordination of international response during the relief phase of the disaster. It provides near real-time alerts about natural disasters around the world and tools to facilitate response coordination, including news, maps and Virtual Operations On Site Coordination Centre (Virtual OSOCC). |
| **WFP-VAM and FAO** | Shall be consulted for advice on targeting users in priority countries, and for expert opinion on the scientific methods used. |
| **USAID/FEWS, and other NGOs** | Cooperation in collection of field work data, exchange of data sets and methodologies. |
| **GEOSS** | The consortium shall maintain an active coordination with GEOSS.  
GEOSS is a recent global effort that is seeking comprehensive coordination and political commitment to guarantee the wide incorporation and use of space-based technology products and solutions in the 10-Year Implementation Plan for a Global Earth Observation System of Systems (GEOSS) put forward by the intergovernmental Group on Earth Observations (GEO). The GMES initiative has been identified as the major European contribution to GEOSS. |
| **National** | **BNSC EMPA (UK)**  
The consortium shall maintain an active coordination with national projects (e.g. BNCS EMPA).  
Under a UK (BNSC) funded programme known as ESA Ministerial Preparatory Action (EMPA), a project aimed at raising awareness of geo-information applications for humanitarian aid enabled visits to development banks and institutions concerned with funding humanitarian aid and development. |
### Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DG RELEX</td>
<td>Directorate General for External Relations of the European Commission</td>
</tr>
<tr>
<td>DG ECHO</td>
<td>Commission's Office for Humanitarian Aid</td>
</tr>
<tr>
<td>DG ENV/MIC</td>
<td>Monitoring Information Centre of the Directorate General for Environment</td>
</tr>
<tr>
<td>UN OCHA</td>
<td>UN Office for Coordination of Humanitarian Affairs</td>
</tr>
<tr>
<td>UN HCR</td>
<td>UN High Commissioner for Refugees</td>
</tr>
<tr>
<td>HIC</td>
<td>Humanitarian Information Centres of OCHA</td>
</tr>
<tr>
<td>GDACS</td>
<td>UN OCHA Global Disasters Alerting and Coordination System</td>
</tr>
<tr>
<td>UN DPKO</td>
<td>UN Department of Peace Keeping Operations</td>
</tr>
<tr>
<td>WFP</td>
<td>UN World Food Programme</td>
</tr>
<tr>
<td>VAM</td>
<td>Vulnerability Assessment and Mapping units of WFP</td>
</tr>
</tbody>
</table>
10 ANNEX B: ATMOSPHERE INFORMATION SERVICES
10.1 Introduction

This Annex is based on the main results of the project PROMOTE from the GSE consolidation phase and expresses requirements for information services to be scaled up in stage 2 GSE.

The combined usage of satellite and ground-based measurements (following the IGACO strategy) that has been initiated in stage 1 has to be extended in stage 2. Global ground-based network data (e.g. WMO-GAW, NDSC) as well as regional air pollution network data (covering whole Europe) have to used in order to validate, to make the link (adjustment for biases) between different satellite measurements, and to be assimilated together with satellite measurements in order to provide an integrated view of the current state of the atmosphere.

In addition to the satellite instruments already being used in stage 1 the stage 2 atmospheric monitoring services shall exploit data from the following satellite instruments: EOS-AURA/OMI, METOP/GOME2, METOP/IASI, ENVISAT/MERIS, and MSG.

10.2 Target Policy Sectors

International

<table>
<thead>
<tr>
<th>Policy Name &amp; Web-Site Reference</th>
<th>Area Of Concern For Environment &amp; Security</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vienna Convention for the Protection of the Ozone Layer</td>
<td>The Vienna Convention (1985) provides for scientific and technical co-operation and has built the basis for negotiations leading to the Montreal Protocol. The Vienna Convention has been ratified by more than 100 countries worldwide including the European Union, the United States of America, Russia and other former Eastern European countries, OECD countries, and developing countries in Africa, Asia and South America. The implementation of the Vienna Convention is carried out through the Montreal Protocol.</td>
</tr>
<tr>
<td>Vienna Convention for the Protection of the Ozone Layer – the UNCED Agenda 21</td>
<td>The United Nations Conference on Environment and Development (UNCED, 1992) under Agenda 21, produced a plan for achieving sustainable development in the 21st century. It contains a declaration on activities to be undertaken mitigating the effects of increased UV radiation. It recommends to undertake, as a matter of urgency, research on the effects of increased levels of ultraviolet radiation on human health as a consequence of stratospheric ozone depletion and, on the basis of the outcome of this research, to take appropriate remedial action to mitigate the above mentioned effects on human health</td>
</tr>
</tbody>
</table>
### United Nations Conference on Environment and Development: Agenda 21 on the effects of UV radiation

Agenda 21, was adopted by the United Nations Conference on Environment and Development on 14 June 1992 (the Earth Summit, Rio de Janeiro, Brazil, 3 to 14 June 1992) and is to be implemented by Governments, development agencies, United Nations organizations and independent sector groups in every area where human (economic) activity affects the environment. At the World Summit on Sustainable Development (WSSD) held in Johannesburg, South Africa from 26 August to 4 September 2002 the full implementation of Agenda 21 was strongly reaffirmed. The subject of increased surface UV is included in Section I, Chapter 6: Protecting And Promoting Human Health and specifically the programme area E: Reducing health risks from environmental pollution and hazards. The main objective of this area is to ‘minimize hazards and maintain the environment to a degree that human health and safety is not impaired or endangered and yet encourage development to proceed’. Activity 1 deals with the effects of ultraviolet radiation. Apart from an action on research on the effects of increased UV, it urges to consider taking measures to mitigate effects on human health of the increasing ultraviolet radiation due to stratospheric ozone depletion.

### Convention on Long-Range Trans-boundary Air Pollution

The United Nations Economic Commission for Europe (UN/ECE) Convention on Long-Range Trans-boundary Air Pollution (CLRTAP) requires a consistent long-term monitoring programme for air pollution. Since its introduction in 1979 the convention has been ratified by almost all European countries, the Russian Federation, the USA and Canada. Following the convention the EC has introduced controls on emissions of sulphur, nitrous oxides (NOx), volatile organic compounds (VOCs), heavy metals, persistent organic pollutants (POPs). The convention has been extended by 8 Protocols and the most recent one (Gothenburg, 1999) introduces a multi-pollutant, multi-effect approach to reduce emissions of sulphur, NOx, VOCs and ammonia (NH3), in order to abate acidification of lakes and soils, eutrophication, ground-level ozone, and to reduce the release in the atmosphere of toxic pollutants (heavy metals) and Persistent Organic Pollutants (POP).

### UN Framework Convention on Climate Change (UNFCCC)

The United Nations Framework Convention on Climate Change was adopted in June 1992 at the Rio de Janeiro Earth Summit and it entered into force on 21 March 1994. Article 2 of the UNFCCC states that: “The ultimate objective of the Convention is to achieve stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a timeframe sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.” More than 180 sovereign nations have ratified the UNFCCC including USA, Europe, Russia, Australia, China and Japan.

### The Kyoto Protocol to the UNFCCC

The Kyoto Protocol to the UN Framework Convention on Climate Change (UNFCCC) was adopted in Kyoto at the third session of the Conference of Parties (COP-3) on 11 December 1997. The Kyoto Protocol (1997) commits signatories to cut the collective emissions of six key greenhouse gases by at least 5% in the period 2008-2012 compared with 1990 levels. The Kyoto Protocol confines itself to the emission of six main greenhouse
gases, CO2, CH4, N2O, HFC’s, PFC’s and SF6, not covered by the Montreal Protocol. The emission targets apply to those countries listed in Annex I of the UNFCCC. These are OECD countries, including countries in transition to a free market economy. Besides reducing primary emissions the Parties are allowed to reach Kyoto targets by enhancing removal of GHG by sinks (Article 3.3 and 3.4) and by trading their emissions with countries that are exceeding their emission reductions targets (Articles 6, 12, 17). To date the Kyoto Protocol has been ratified by more than 140 countries, including the European Union and Japan. Most recently Russia has ratified the Protocol. Notable exceptions include the US of America, Australia, and China which have not ratified the Protocol.

European

<table>
<thead>
<tr>
<th>Policy Name &amp; Web-Site Reference</th>
<th>Area Of Concern For Environment &amp; Security</th>
</tr>
</thead>
</table>
| EU air quality directives 96/62/EC and its Daughter Directives and Amendments | The general aim of this Directive is to define the basic principles of a common strategy to:
- define and establish objectives for ambient air quality in the Community designed to avoid, prevent or reduce harmful effects on human health and the environment as a whole,
- assess the ambient air quality in Member States on the basis of common methods and criteria,
- obtain adequate information on ambient air quality and ensure that it is made available to the public, inter alia by means of alert thresholds,
- maintain ambient air quality where it is good and improve it in other cases. Pollutants to be studied are sulphur dioxide, nitrogen dioxide, fine particulate matter such as soot, suspended particulate matter, lead, ozone, benzene, carbon monoxide, poly-aromatic hydrocarbons, cadmium, arsenic, nickel, and mercury. |
| Clean Air for Europe (CAFE) | Thirty years of environmental policy in the EU has led to a comprehensive system of environmental controls. The 5th Environment Action Programme (SEAP) 1992 – 1999 brought a broader commitment to an integration of environmental concern into other politics, and guided the strategic focus of the 6EAP. The 6EAP sets out the major priorities and objectives for environmental policy towards 2010 and refers to the development of seven Thematic Strategies, the thematic strategy on air pollution being called “Clean Air for Europe” – CAFE. The Thematic Strategy has the overarching objective to achieve levels of air quality that do not give rise to significant negative impact on and risks to human health and the environment. CAFÉ has the general aim of developing a long-term, strategic and integrated policy to protect against the effects of air pollution on human health and environment. The policy aims at a high level of environmental protection based on the precautionary principle, taking into account of the best available scientific and technical data and the costs of benefits of action or lack of action. The Programme was launched during March 2001. |
The Decision of the European Parliament and of the Council concerning a Mechanism for Monitoring Community greenhouse gas emissions and for implementation of the Kyoto Protocol (280/2004/EC)

The Decision establishes a mechanism (effective since 11 February 2004) for:
- monitoring all anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol on substances that deplete the ozone layer (hereinafter "greenhouse gases") in the Member States;
- valuating progress towards meeting commitments in respect of these emissions by sources and removals by sinks;
- implementation of the UN Framework Convention on Climate Change (hereinafter "UNFCCC") and the Kyoto Protocol, in particular as regards greenhouse gas inventories, national systems and registries of the Community and its Member States; and
- ensuring the timeliness, completeness, accuracy, consistency, comparability and transparency of reporting by the Community and its Member States to the UNFCCC.

<table>
<thead>
<tr>
<th>Other related Policies</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPCC (Intergovernmental Panel on Climate Change)</td>
</tr>
<tr>
<td>GEO (Group on Earth Observations)</td>
</tr>
<tr>
<td>Proposed INSPIRE directive</td>
</tr>
</tbody>
</table>

**Demand Milestones**

The following deadlines and milestones should be taken into account within the proposed service rollout schedule. In particular, service capabilities shall explicitly respond to the identified requirements of partner users in respect of these deadlines and milestones.

<table>
<thead>
<tr>
<th>Policy</th>
<th>Total phase out of Ozone Depleting Substances should be achieved by 2005 in industrialised countries, except for HCFC were a total phase out is scheduled for 2030. For Developing countries total phase out of CFC, halons, fully halogenated CFC and carbon tetrachloride is required by 2010, methyl chloroform and methyl bromide in 2015, whilst HCFC is required to be phased out in 2040. Every five years the status of the implementation of Agenda 21 on UV radiation is monitored through a dedicated Assembly. Air Pollution Protocols give limit values to be reached for emission sources by use of best available technique. The limit values should be reached in 2005 for new installations and in 2011 for existing emission sources. The Gothenburg protocol gives limit values and set ceilings to be reached for nation total emissions of sulphur and nitrogen dioxide, ammonia, and VOC, in 2010.</th>
</tr>
</thead>
</table>
Reporting

Global ozone assessment report at least every four years.
Yearly Regional Air Pollution emission reports.
Yearly Regional Greenhouse Gases emission reports.
Regional air pollution/global ozone forecasting reports.
Regular alerts on health risks via SMS/Internet to EU citizens.

10.3 Users and key intermediaries

Different users segments are directly or indirectly involved in the implementation and applications of the above policies and directives.

<table>
<thead>
<tr>
<th>Operational Level</th>
<th>Example User and Intermediary Organisations</th>
<th>Summary of Main Information Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>International</td>
<td>International Organisations providing global environmental assessment reports</td>
<td>Global total ozone multi satellite time-series spanning the time period from 1979 to now. Special information (e.g. extension, duration) on the evolution of the Antarctic ozone hole over the time period from 1995 until now.</td>
</tr>
<tr>
<td></td>
<td>Private Sector, Environmental Agencies</td>
<td>Global/Regional UV time-series spanning the time period from 1979 to now.</td>
</tr>
<tr>
<td>European</td>
<td>European Weather Forecasting Providers</td>
<td>Near Real Time total ozone information as derived from satellite measurements.</td>
</tr>
<tr>
<td></td>
<td>European Weather Forecast Providers, Regional UV service providers</td>
<td>Total ozone forecasts to be used to derive UV information forecasting.</td>
</tr>
<tr>
<td></td>
<td>Environmental Agencies, Agencies providing support to Aviation Control</td>
<td>Information on air pollution based on satellite measurements. Information on trans-boundary movement of air pollution among continents and within Europe.</td>
</tr>
<tr>
<td></td>
<td>Environmental Agencies, Regional/Local AQ forecast service providers</td>
<td>NRT information about the occurrence, extension and movement of aerosol and SO2 plumes over Europe and Africa.</td>
</tr>
<tr>
<td>National</td>
<td>European citizens, Dermatologists</td>
<td>Air Pollution Forecast/Analysis Information over Europe (EU 25) including clear error information.</td>
</tr>
<tr>
<td>Sub-national</td>
<td>At least 10 Regional Environmental Agencies</td>
<td>Regional Air Pollution forecasting and reanalysis.</td>
</tr>
<tr>
<td></td>
<td>Regional Environmental Agencies in Italy</td>
<td>Dedicated sun-burn time via SMS/Internet for regions covering the full Italian coast.</td>
</tr>
<tr>
<td>Local</td>
<td>European City Councils</td>
<td>Air pollution forecasting on street level.</td>
</tr>
</tbody>
</table>
## 10.4 Services to be provided

### 10.4.1 Baseline Services

<table>
<thead>
<tr>
<th>Information Service</th>
<th>Description</th>
<th>Service Provision Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Ozone Record</strong></td>
<td>Global total ozone time-series as input for ozone trend monitoring.</td>
<td>The overall scope of the service is to provide a consistent global total ozone data set as measured by different satellites (using ground-based measurements for the adjustment between different satellite platforms) covering the time period from 1979 to now with a relative accuracy of 1% per decade. Special information like duration, extension, and deepness of the Antarctic ozone hole has to be provided as well covering the time period from 1995 to now).</td>
</tr>
<tr>
<td><strong>NRT Ozone Column</strong></td>
<td>Global total ozone information in near time to improve operational weather forecasting.</td>
<td>The overall scope of the service is to provide global total ozone columns as measured by satellites with an absolute accuracy of about 3% in near real time (at least within 6 hours – preferable within 3 hours - after measurement time).</td>
</tr>
<tr>
<td><strong>Total Ozone Forecast</strong></td>
<td>Global total ozone forecasting to enable UV forecasting.</td>
<td>Provision of reliable (5% absolute accuracy) global total ozone forecasts up to 5 days based on satellite measurements to enable global and regional UV forecasting services in Europe. The forecasts shall be updated every 12 hours (preferable 6 hours).</td>
</tr>
<tr>
<td><strong>UV Record</strong></td>
<td>Global UV information time-series as input for UV trend monitoring.</td>
<td>Integration of existing UV records based on different satellite observations to form a single multi-sensor long-term UV record covering the time period from 1979 to now with a relative accuracy of 3% per decade. Ground-based measurements shall be used for validations and for the adjustment between different satellite platforms.</td>
</tr>
<tr>
<td><strong>Air Quality Records</strong></td>
<td>Global/regional analyzed/assimilated model records using ground &amp; satellite data of tropospheric NO₂, O₃, AOD/speciation, SO₂, HCHO, CO and PM.</td>
<td>Provision of global and regional (EU 25) assimilated maps (daily, monthly, yearly maps of O₃, NO₂, SO₂, CO, HCHO, Aerosol) of tropospheric species covering the time period 1995 to now. Accuracy levels for all species mentioned shall be in the range 30% - 50%.</td>
</tr>
<tr>
<td><strong>Greenhouse-gasses and Aerosol Records</strong></td>
<td>Global maps of greenhouse-gasses (CH₄, CO, CO₂) and time series of Aerosol information for climate change monitoring.</td>
<td>This service should demonstrate the feasibility to map (monthly maps) by using satellite measurements globally sources and sinks of greenhouse-gasses from the year 2002 onwards and should be used as the baseline for future service definition in this domain. Furthermore global time series of aerosol information should be derived by the combination of ground-</td>
</tr>
</tbody>
</table>
based and satellite measurements covering the time period 1995 until now.

### Pan-European Scale

<table>
<thead>
<tr>
<th>Information Service</th>
<th>Description</th>
<th>Service Provision Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated European Air quality analysis and forecasts</td>
<td>Single European AQ platform.</td>
<td>Harmonized European AQ analysis and forecast capability combining the output from multiple models (at least 3 different models shall be used). Provision of AQ information for the 25 EU states including the uncertainty information gained through the ensemble approach. Satellite and ground-based measurements shall be assimilated together.</td>
</tr>
<tr>
<td>Aviation Control Support</td>
<td>Support to Aviation Control over Europe and Africa.</td>
<td>Provision of NRT SO2 and Aerosol information (occurrence, extension and movement of plume) as derived from satellite measurements over Europe and Africa. Emphasis has to be given to the timely delivery of the information to the user rather than to retrieve high precision geophysical (e.g. SO2 column amount) quantities. The validity of the provided information (service) shall be validated for at least 10 different volcanic eruptions.</td>
</tr>
</tbody>
</table>

### Regional to Local Scale

<table>
<thead>
<tr>
<th>Information Service</th>
<th>Description</th>
<th>Service Provision Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>UV information forecast</td>
<td>Provision of personalised UV information to citizens.</td>
<td>Provision of sun-burn/tanning time directly to citizens in Europe (EU 25).</td>
</tr>
<tr>
<td>Regional/local air quality forecasts</td>
<td>Provision of air quality forecasting to regional environmental agencies and directly to citizens living in major European centres (e.g. London, Paris).</td>
<td>The overall scope of the service is to provide local/regional air quality forecasting to about 10% of the European population including at least 15 selected regions in Europe (e.g. Greater London, Paris, South France, Northern Italy, Switzerland, Macedonia, Northern Germany). Beside web-based information services health alerts via SMS/Internet shall be provided as well (covering at least for London city).</td>
</tr>
</tbody>
</table>
### 10.4.2 Extension Services

#### International Scale

<table>
<thead>
<tr>
<th>Information Service</th>
<th>Description</th>
<th>Service Provision Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone Profile Record</td>
<td>Multi-year 3D assimilated ozone record by combining satellite observations, meteorological data and chemical transport modelling</td>
<td>The scope of this service is to better monitor stratospheric ozone, related species and daily ozone loss at different altitude levels. This service will contribute significantly in fulfilling the general objective to better evaluate and study the chemical composition and dynamics of the middle atmosphere. Users interested in such a service are WMO and SPARC CCMVal.</td>
</tr>
<tr>
<td>NRT Ozone Profile</td>
<td>NRT O3 profiles to improve operational weather forecasting</td>
<td>The overall scope of the service is to provide global total ozone profiles as measured by satellites in near real time (at least within 6 hours – preferable within 3 - after measurement time) to users such as ECMWF.</td>
</tr>
</tbody>
</table>

#### Pan-European Scale

<table>
<thead>
<tr>
<th>Information Service</th>
<th>Description</th>
<th>Service Provision Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>UV Forecast</td>
<td>UV forecast service provided via local environmental agencies to European citizens at the Mediterranean coast and directly via SMS/Internet to European citizens.</td>
<td>Upscale the regional UV services to European UV services.</td>
</tr>
<tr>
<td>AQ Forecast</td>
<td>Provide a European Pollen forecasting Service</td>
<td>Extend the AQ forecasting services by pollen forecasting.</td>
</tr>
</tbody>
</table>

#### Regional to Local Scale

<table>
<thead>
<tr>
<th>Information Service</th>
<th>Description</th>
<th>Service Provision Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local AQ services.</td>
<td>Local AQ services to citizens and local Environmental Agencies.</td>
<td>Upscale the regional/local AQ services to serve 20% of EU citizens</td>
</tr>
</tbody>
</table>
10.5 Geographic Scope

<table>
<thead>
<tr>
<th>Scope</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>European</td>
<td>The geographic scope of the proposed services is pan-European covering the EU-25 member countries and all ESA member states. In addition, the extension to the potential EU-27 area (with the inclusion of Bulgaria and Romania) should be also considered in the medium term. Other areas of interest for the EU, such as the North Mediterranean basin or other European Easter countries can be considered as a potential extension of the service (e.g., Turkey) in the long term.</td>
</tr>
<tr>
<td>National</td>
<td>The priority countries at national scale include all those in EU-25 and the ESA member states. In addition, the services could be extended to other countries in the EU area of influence (EU-27, Mediterranean basin), if proper justified (e.g., trans-boundary issues).</td>
</tr>
<tr>
<td>Sub-national</td>
<td>The priority countries at national scale include all those in EU-25 and the ESA member states. In addition, the services could be extended to other countries in the EU area of influence (EU-27, Mediterranean basin), if proper justified (e.g., trans-boundary issues).</td>
</tr>
<tr>
<td>Local</td>
<td>Priority should be given to urban functional areas with more than 100,000 inhabitants (following EU policies).</td>
</tr>
<tr>
<td>Outside Europe</td>
<td>The provision of services outside Europe (e.g. Support to Aviation Control over Africa) can be also taken into account to support European and National development policies.</td>
</tr>
</tbody>
</table>

10.6 Component Infrastructure

Minimum key service infrastructure that should be available for service delivery:

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EO data processing</td>
<td>ESA/EUMETSAT/NASA ground-segments, DUE processing facilities, national value-adding product generation chains</td>
</tr>
<tr>
<td>Models</td>
<td>CTMS, GTMS and assimilation techniques developed within EU and national projects.</td>
</tr>
<tr>
<td>In-situ data</td>
<td>• In-situ data collection network at International, pan-European and local level;</td>
</tr>
<tr>
<td>Data integration &amp; assimilation</td>
<td>Integration and assimilation of EO and ground-based data to generate higher level information products.</td>
</tr>
</tbody>
</table>
## 10.7 Cooperation with complementary on-going activities

<table>
<thead>
<tr>
<th>Activity Level</th>
<th>Activity Name</th>
<th>Type of Cooperation</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU EC Projects</td>
<td>GEMS</td>
<td>Model development and intercomparison as well as R&amp;D results feeding into PROMOTE. PROMOTE making links to users.</td>
</tr>
<tr>
<td></td>
<td>GATO</td>
<td>Input for PROMOTE Strategy.</td>
</tr>
<tr>
<td></td>
<td>EVERGREEN</td>
<td>Provision of R&amp;D results on Greenhouse gases.</td>
</tr>
<tr>
<td></td>
<td>SCOUT-O3</td>
<td>Provision of R&amp;D results on O3 retrieval.</td>
</tr>
<tr>
<td></td>
<td>ASSET</td>
<td>Provision of R&amp;D results on data assimilation techniques.</td>
</tr>
<tr>
<td></td>
<td>ACCENT</td>
<td>Provision of R&amp;D results on satellite data.</td>
</tr>
<tr>
<td></td>
<td>CREATE</td>
<td>Provision of ground-based aerosol data.</td>
</tr>
<tr>
<td></td>
<td>DAEDALUS</td>
<td>R&amp;D results on aerosol retrieval from satellite measurements.</td>
</tr>
<tr>
<td>ESA projects</td>
<td>TEMIS</td>
<td>PROMOTE precursor service Development</td>
</tr>
<tr>
<td></td>
<td>GLOBAER</td>
<td>Provision of global time series of satellite measurements derived aerosol information.</td>
</tr>
<tr>
<td></td>
<td>CAPACITY</td>
<td>Input for PROMOTE Strategy.</td>
</tr>
<tr>
<td>National</td>
<td>UV FORECASTING</td>
<td>Addition to existing PROMOTE UV Services</td>
</tr>
<tr>
<td></td>
<td>Service of national Met. Offices</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AO/Category I projects</td>
<td>R&amp;D results on using ESA atmospheric data - <a href="http://eopi.esa.int">http://eopi.esa.int</a></td>
</tr>
</tbody>
</table>
ANNEX H: DESCRIPTION OF MAJOR DELIVERABLE DOCUMENTS

User-side Dossier
U1 Core User Needs and User Standards Dossier
U7 Service Utility reports

Common Dossier
C5 Service Validation Protocol
C6 Service Validation Report
C7 Service Level Agreements for each end user organisation
C15 Promotion & training plan
C16 Promotion & training packages
C17 Promotion & training review

Supply-side Dossier
D1 Service Network Annual Work Plan
D2 Service Network Configuration Master Document
D3 Service Network Web Portal
D4 Service Network INSPIRE Implementation Technical Note
S3 Service Prospectus
S4 Service Partnership Protocol
S5 Service Portfolio Specifications
S6 Service Operations Report

Management Dossier
M1 Project Management Plan (not described)
M2 Project Quality Plan (not described)
M3 Monthly Status Reports (not described)
M4 Progress Meetings Agenda and Minutes (not described)
M5 Project Actions Database (not described)
M6 Project Anomaly Reports, Recovery Action Plans & Closeout Reports (not described)
M7 Project History Report (not described)
M8 Project Website with all deliverable documents (not described)
M9 Quarterly Progress Reports
M10 Annual Report
U1 Core User Needs and User Standards Dossier

The Core User Needs Dossier contains the most detailed and specific definition of needs of end user organisations. It documents, for each end-user-organisation in the core-user-group:

- The specific policy drivers, working practices & decision-making cycles
- The existing geo-spatial monitoring capacity & evolution potential
- The specific information needs of the organisation & measures of their impact
- The interaction & influence on national, local & international partner organisations
- The applicable existing standards and accepted best practice
- The scope for cost-saving or performance improvement via services

It documents the specific requirements of each end-user-organisation for products and services from the service partners:
- For each of the operations period for the duration of the contract
- For each of the following three years

It records the range of standards with which the service portfolio must comply for each user to enable operational adoption of the services. It includes, for example:

- Definitions of parameters to be observed
- Measurement units and standards
- Classification standards, definitions and references
- Instrumentation standards
- Standard methods and algorithms for data analysis and modelling
- Mapping projections, definitions and format standards
- Calibration and validation standards, references, procedures and protocols
- Reference data sets
- Certification procedures and standards
- Standards for handling confidential information
- Reporting standards and requirements
- Documentation standards
- Communication and data-exchange standards

It identifies, for each standard:
- The applicability
- The definitive lower-level technical specification documents
- The body responsible for definition and maintenance of the standard
- The criticality of compliance for user acceptance
### U7 Service Utility Reports

Each Service-Utility-Report documents the complete use and life-cycle and impact of products and services delivered to a single *end-user-organisation* over a fixed period of time.

It includes:

- Cases studies of utilisation
- Account of integration with other information sources
- Examples of user end-products (e.g., assessments reports, forecasts, warnings)
- Assessment of impact and benefit. This shall include consideration of the following elements:
  - What is the nature of the impact or benefit (e.g., more cost effective approach to meeting organisational mandate, unique enabling support to achieving organisational mandate, critical part of response to new mandate etc)
  - How critical is this impact or benefit
  - What is the contribution of the product or service provided to realising this benefit
- Critical analysis of utility for end-user-organisation. This shall include consideration of at least the following elements:
  - Perceived value of service performance level against level required to generate identified benefits
  - Conformance or compliance of product/service delivered with working practices, operational standards, information validation procedures and reporting requirements
  - Ease of integration with additional information sources
- Comparison with alternative services and information sources including:
  - Identification of divergences in service performance levels and capabilities
  - Assessment of the impact of the performance variations between the service network and alternative providers on user capacity to meet operational mandate and reporting requirements
- Recommendations for service improvements, including coverage, response time, latency time etc
- Recommendations for product improvements, including expanded information content and enhanced validation
- Record of Complaints, Problems, resolutions
- Value statement
C5  Service Validation Protocol

The Service Validation Protocol is the top-level definition of the approach for validating all constituents of the Service Portfolio. It establishes validation principles that are universally applicable to all products and services.

It is formally agreed by all members of the service supply partnership, including research partners, operational providers, and system developers. It endorsed by the most authoritative possible group of end-user-organisations. This includes, as absolute minimum, all members of the core-user-group. It defines;

- Rules to ensure unbiased and independent validation (eg who can do the validation)
- Definition of different levels of validation
- Definition of the top-level validation criteria, review process and decision sequence
- Requirements for validation reference data sources
- Approach for validating brand new products
- Approach for re-validating upgrades
- Approach for long-term and short term validation
- Approach for getting endorsement of validation from key external user-bodies
- Approach for validating services (as opposed to data products)
- Required, validation documentation
- Access, Distribution and availability of validation documents
- Maintenance of validation standards, reports and data sets for service -portfolio

Progressive adoption of user driven standards common to the service network is a key objective of the stage 2 GSE activities. This deliverable shall contain the definition, specification and planned approach for monitoring compliance with user requirements for adherence to the standards identified within the Core User Needs and User Standards Dossier (U1)

The service validation protocol defines and scopes the Service Validation report.
C6 Service Validation Report

Each Service Validation Report documents the results of an independent expert technical audit to assess the compliance the products delivered to a single end-user-organisation with the applicable technical specifications and SLA. The audit and report are in accordance with the Service-Validation Protocol.

Service Validation may be conducted on a sampled basis or systematically.
**C7  Service Level Agreements for each end user organisation**

Each *Service Level Agreement* specifies the quality, quantity and terms of access for *Service-Portfolio* items to be delivered by the service partners to one or more *end-user-organisations* for a period of time not less that one year.

It is a committing agreement between parties.

It includes, at least:
- details of the services to be provided from the service portfolio
- details of the levels at which the services are to be provided eg 24hr response; 2-day turnaround; annual delivery etc.
- Acceptability thresholds for: ordering; confirmation; cancellation; delivery; quality
- Support service needs; Training; Installation, Maintenance etc.
- Agreed terms of access
- lists of equipment that exists, that is to be sold, that is to be leased, that is to be provided to the Service Provider to be used in the provision of the services, etc
- lists of software owned by the Customer, owned by third parties, etc that is to be used in the provision of the services, etc
- relevant plans (Transition; Quality; Management; Disaster Recovery; Disengagement, etc)

It specifies precisely the role of both the supplier and the user. For the latter it records:
- Terms under which the service network shall have access to user owned or operated data gathering infrastructure
- Responsibilities of the user to integrate the service within their operational mandate and complete a service utility evaluation and report
- Responsibilities of the user to undertake and provide service validation support

The Service Level Agreement shall be an evolving document in line with the changing conditions under which services are supplied and used. This shall address the following elements for each operations period:
- An identification of the target model for service delivery (in-house or outsourced)
- Licencing and maintenance agreements for service generation and delivery infrastructure provided by the service network where service generation is undertaken in-house
- Reporting agreements, applicable standards, critical processes to be adhered to and data to be provided by the user where service delivery is outsourced
- Service performance levels, back-up provisions and recovery procedures and timescales
- Procedures for dispute resolution by either party to the agreement, including escalation procedures
- The role of the user in managing the service procurement process for the operations period addressed by the agreement
- The level of financial contribution from the user to cover service delivery costs and where applicable a list of rates, details of fees to be paid etc
- The nature and extent of in-kind contribution from the user including lobbying support to access third party funding, promotion of service capabilities and utility to collaborating organisations within the same demand sector and operation and maintenance of in-situ data gathering networks and service support infrastructure (eg data warehouses)
- The nature of the increased responsibilities of the service network for service validation and certification
C15 Promotion & training plan

The Promotion and training plan is a mechanism for
- actively federating the potential community of end-user-organisations
- identifying new and evolving user needs
- increasing awareness and acceptance of the service-portfolio
- building the capacity of individual users to adopt the appropriate elements of the service portfolio

The plan includes activities of scale and timing consistent with
- the priorities established in the strategic plan and in response to the sustainability review
- the timescales and major milestones of the strategic plan and sustainability review
- past, present & forecast demand for different end-user-segments
- The countries and geographic zones with highest interest in the service-portfolio
- The contents of the service-prospectus and service prospectus appraisal
- Service-Utility Reports from the core-user-group
- Shared Linguistic and cultural characteristics in different end-user-segments

The Promotion Plan follows priorities that are established in the original strategic plan and in subsequent annual reviews of sustainability. It identifies:
- target audiences for promotion, based on end-user-segments identified in the Global-User-Needs Directory and in the Key-user-segment profiles
- promotion and communication requirements among funding bodies to facilitate links in support of additional funding opportunities for service development and delivery and target audiences to be addressed and engaged
- Priority end-user-organisations requiring support to develop the internal capacity needed to exploit the service-portfolio

In addition to user entities, the communications plan shall define promotion objectives, tools and milestones for the following target audiences:
- The environmental, public health and sustainable development science communities including large scale cooperative science programmes
- The European citizen
- Industrial operators, for example in the transport, civil engineering and energy sectors

It defines:
- suitable communication mechanisms and channels and establishes a coherent approach to these audiences over a period of 5 years
- a modular training curriculum that corresponds directly to the service-portfolio & the end-user-segments for which training is most required

It prioritises the use of existing communication channels that are already used by the key end-user-segments, rather than setting up new single-purpose channels for the service portfolio only. This includes identification of end-user-organisations that are already federating demand or providing training services for one or more of the key end-user-segments and exploits mechanisms via which they can also provide training for the service portfolio.

It identifies:
- a common approach to promotion for the service-portfolio that is followed by all members of the service consortium
• communication requirements, target audiences and appropriate interlocutors to support both migrating towards service network sustainability and building awareness and acceptance of the overall GMES initiative
• different types of training materials suited to the needs of each end-user-segment (eg courses for professionals, introductory courses, advanced courses, overview lectures, on-line courses, self-learning materials, tele-learning modules etc) as well as an inventory of all available training materials and resources for the service-portfolio.

It takes into account the recommendations of the Promotion and Training Review from previous years.

It highlights testimonials and results from the core-user-group.

It includes a detailed annual schedule of communication objectives, actions, tools, channels and events for the coming year, along with associated costs. This shall include identified geographic and volume targets for delivery of training.

It makes specific provision for the training needs of end-user-organisations in Developing Countries, based upon to the benefits that specific countries can derive from the service portfolio.

It identifies existing national, regional and international training programmes, initiatives and organisations with which cooperative training activities can be organised.
C16 Promotion & training packages

The Communication package contains at least one copy of all promotional and communication materials generated for the service-portfolio. This shall meet professional audio-visual and publication standards and support:
- building awareness of the service portfolio capabilities and benefits among potential users
- building understanding of potential benefits offered by the service portfolio among potential users

This shall include:
- Brochures, case studies and other decision support material
- Web material
- CD-ROMs, DVDs and other dynamic material

Promotion and communication material shall also include material developed in support of overall promotion and communication activities executed as part of an overall GMES promotion and communication activity. This shall include:
- Examples of products and services
- Promotional videos and animations
- User testimony

The training package includes all training material developed in support of the service-portfolio uptake by core users. This shall include:
- Case studies and exercises tailored to specific user communities to build experience in service portfolio utilisation
- Demonstrations and information sessions on service chain operations, validation and certification processes and data access conditions
C17 Promotion & training review

The Communication and Training Review accounts for all promotion, communication and training actions carried out in the previous year. It assesses the impact of the actions compared to the targets set in the communication and training plan.

It shall include recommendations on

- Effectiveness of specific promotion materials or channels for each end-user-segments
- Consistency of promotion actions
- Attractiveness of the service-portfolio and service-prospectus
- New and evolving user needs
- Potential new end-user-organisations and end-user-segments
- Progress with respect to third party funding organisations with respect to awareness and engagement in relation to both the individual service network and the overall GMES initiative

With respect to training, this shall include:

- Critical analysis of the impact of training already delivered wrt planned targets
- Analysis of the demand for training (who, where, what, why, when, trends)
- Feedback from end-user-organisations that already received training
- Recommendations for improvement of training service & materials
S3 Service Prospectus

The Service Prospectus is the top-level, complete, definitive description of the service-portfolio. It is the main source of information for users on what is available now, and what will be available in future. It shall be a public commitment of each GSE Service Network to users.

It is factual, explicit, precise and committing with regard to the information content, quality, availability, reliability and terms of access for the service-portfolio.

It is the prime vehicle for promotion of the service portfolio, for dialog with and federation of users. It shall be made freely publicly available and shall be widely disseminated. It describes

- All services and products available today
- All services and products that will be available in the next three years (target month)
- New services & products being developed for availability in 3-5 years (target quarter)
- Prospects for service continuity, improvement & enlargement in 5-10 years (target year)

All technical specifications and design documents for products and services in the service-portfolio shall be derived from and consistent with the service prospectus.
S4 Service Partnership Protocol

The Service-Partnership Protocol defines the working rules of cooperation and working practices that all members of the partnership commit to follow for the service-portfolio. It includes guidelines, rules and procedures covering at least:

- Partnership mission statement
- Partnership organisation and membership list
- Partnership management, reporting, administrative and financial rules & procedures
- Partnership decision-making, escalation and conflict-resolution procedures
- Partnership commitments towards end-users
- Entry of new members into the service partnership
- Exit of current members from partnership
- Operations procedures for integrated supply chain involving different partners
- Handling and sharing information on end-users
- Ordering-handling and tracking procedures
- Production and distribution planning procedures
- Troubleshooting procedures
- Quality-control procedures
- Pricing & costing rules
- Customer care plan
- Rules of Access for other partners to IPR items and data owned by one partner
- Mechanisms for transferring results from research partners to operational partners
- Procedures for jointly identifying & prioritising new R&D actions
- Targets, Milestone and mechanisms for transition from public-funding to independently-funded, sustainable service provision
- Annual planning and review processes & milestones
- Shared agenda for utilising and accessing available public R&D funds
- Procedures for identifying and working with associated-projects (see strategic plan)
- Guidelines for external communications
S5 Service Portfolio Specifications

The Service Portfolio Specifications is the definitive technical specification for the entire Service Portfolio, the standards to be applied to service generation and delivery and the upgrades to be implemented. It contains all technical detail that would be necessary to fully implement, test, verify or audit the performance of:

- All product generation and quality systems for all products
- All service provision, support systems, external interfaces and facilities
- All compliance with user domain and industry sector standards, working methods, legal requirements and recommended best practices

For each product:

- Complete technical specification for each product equivalent to ESA IODD documents
- Complete technical specification for all processing algorithms
- Complete technical specification of all data inputs required to generate the product
- User handbook for each product

For each service:

- Specification of the service package
- Specification of the service level available

For all support Services:

- Specification of the support service
- Definition of the service levels available

It is supported by:

- Identified Quality, calibration and validation procedures applicable for each product
- Identified subsidiary spec, design and test documents for all production systems

For all standards defined and applied within the service network it shall include:

- Applicable software and hardware system standards (eg ECCS)
- Configuration control standards for software, data, hardware, document
- Quality standards for products
- Quality Standards for services
- Calibration Standards
- Validation Standards
- Customer Care Standards
- Management and Reporting Standards
- Training Standards
- Promotion Standards
- Communications Standards

This shall include consideration of compliance with the applicable user standards in force including:

- Definitions of parameters to be observed
- Measurement units and standards
- Classification standards, definitions and references
- Instrumentation standards
- Standard methods and algorithms for data analysis and modelling
- Mapping projections, definitions and format standards
• Calibration and validation standards, references, procedures and protocols
• Reference data sets
• Certification procedures and standards
• Standards for handling confidential information
• Reporting standards
• Documentation standards
• Communication and data-exchange standards

With respect to service portfolio upgrades these shall be considered and defined in the following areas as required:
• Service network technology development (eg improved visualisation software, more robust classification software, faster assimilation schemes, near real time processing, access to improved modelling and data fusion capabilities,)
• Service network performance enhancement including access to additional EO data/information sources, validation of key datasets and performance improvements to be implemented through upgrade of key elements of the supply chain, through expansion of the service network partnership to bring in new capabilities (eg providers of complementary EO services, operators of in-situ networks, organisations collecting demographic, economic and other categories on non-geophysical data (eg health,
• Service delivery cost reduction initiatives including migration to greater use of common infrastructure (datasets, archives, catalogues, processing chains), implementation of common standards and processes, increased automation in service generation and delivery, …)
• Service delivery, distribution and packaging upgrades (eg setting up licence agreements, franchising or reseller networks, implementation of a web based service delivery generation of datasets for easy assimilation into specific GIS tools, product and service warehouses etc)
• Enhanced compliance with user standards and improved validation assurance
• Financial structuring to be implemented (eg pricing strategy during initial service uptake, requirements and constraints associated with accessing third party funding sources, reduction of unit cost of service delivery etc)
S6 Service Operations Report

This gives a complete report of all activities executed by the service partners to deliver operational services to *end-user-organisations* over a fixed period of time.

With respect to service delivery, it documents

- Operations planned versus the services agreed in the SLA
- Order handling, Acquisition, production & dissemination plans
- Data procurements, Quality control, operations scheduling
- Anomalies, delays, problems, operational solutions
- Customer complaints & resolution
- Maintenance & upgrade planning execution & verification

With respect to exploitation of external and common infrastructure it reviews:

- Over or under-capacity of any of the infra-structure elements
- Over or under performance, availability or reliability of any infrastructure elements
- Redundant or unnecessary elements
- Missing elements, needed to make the overall infrastructure more efficient

With respect to compliance with standards defined by the service network, it reviews experience including issues encountered in compliance with

- service network measurement standards
- data analysis, processing and modelling standards and standard methods and algorithms
- certification procedures and standards including comparison with reference data sets
- projection standards, including interpolation standards
- reporting and documentation standards, including standards for handling confidential information
- communication and data exchange standards
- metadata standards
D1 Service Network Annual Work Plan

This shall be agreed by the Service Network partners prior to the start of each operations period. It shall be reviewed and endorsed by the User executive body.

It shall define the proposed activities and budgets for the following operations periods and shall address the following elements:

- Volumes of each product and service to be delivered to each user
- Performance levels of each service to be achieved
- Terms of access to third party infrastructure and systems including data sources (EO and in-situ), models, service chains, archives and service delivery infrastructure
- Validation activities to be implemented including dedicated validation exercises and routine validation within the service network
- Service upgrades to be implemented over the next operations period including acceptance testing of new capabilities and infrastructure and integration within the operational service network
- Common standards to be implemented and complied with

The work plan for service upgrades and evolution shall include the following elements:

- Elements of the integrated service chain to be improved, the nature of the improvement to be implemented, and the impact on user acceptance of the upgrade. This shall include:
  - Service performance enhancement including expanded information content, augmented service delivery performance (response and delivery times, service coverage, accuracy and reliability, service unit cost, etc)
  - Service infrastructure enhancement including assimilation of new data sources, exploitation of new processing infrastructure,
  - Service validation enhancement including greater responsibility within the service network for validation activities and an identification of the required roles and responsibilities to be assigned within this activity
  - Wider application of common standards within the service network
- Identification of entity responsible for implementing upgrade, a deadline for completion of the upgrade and a validation plan to ensure the upgrade generates the expected improvement in service capability

The work plan for network wide standards implementation shall include consideration of the following elements:

- The timescale for the implementation of the standards and the actions required by each service network partner
- The approach by which compliance with the standards shall be monitored and enforced
- The role and responsibilities of the service network partners in implementing the standards and monitoring and enforcing compliance
- The responsibilities of core users and third party auditors in providing initial and continued independent verification of service network standards consistency with applicable user domain or industry sector standards and of service network partners compliance with the standards agreed
D2 Service Network Configuration Master Document

This shall be the reference document on the service network status. It shall include at least the following elements:

- A comprehensive list of all members and partners of the service network and a definition of their roles within the service network
- A list of all services provided by the service network including a matrix mapping of services and service providers within the service network
- A list of all hardware operated by the service network or accessed from external partners. This shall include a hardware configuration specification and an identification of all relevant interface control documentation
- A list of all quality control procedures applied within the service network and an identification of all relevant documentation defining the procedures
- A comprehensive list of all IPR and patents held by members of the Service Network
- A comprehensive list of all data holdings within the service network together with data sets held by third parties and accessed by members of the service network. This shall include an identification of all related specification documentation. For each data source required to support service delivery and identified in the initial service portfolio specification, this document shall record the terms and conditions of access. This shall include:
  - Source Data & product types
  - Service category definitions
  - Copyright and distribution conditions
  - Access and distribution mechanism and priorities
  - Source Commitments on quantity, quality, availability, reliability per product
  - Period of validity for access conditions
  - Applicability of conditions per user category
  - Volume discounts, price wavers etc where applicable
- A complete list of all software operated by the members of the service network and all software operated by external partners to which the service network has access. This shall include version numbers and an identification of all relevant documentation containing specifications.
- A complete list of all support services provided to the service network by external partners including an identification of the relevant service level agreement documentation
D3 Service Network Web Portal

This shall be the primary tool through which users access the service network and the services provided.

It shall provide a one-stop shop through which all users from the target demand segments can access the information products and services offered by the service network.

It shall provide catalogue and browse functionality to support new users investigating service availability, performance characteristics and adoption.

It shall act as a data warehouse for all data products delivered to users during the contract.

It shall support ease of access to service validation reports, service standard specifications and service prospectus.

It shall function as a delivery channel through which information services and supporting documentation and data are transferred to the users.

It shall provide all necessary functionality to support user promotion of service capabilities to peer organisations within the same demand segment, including trial service availability, access to promotion and training material and access to technical support documentation as well as evaluations and utility assessments provided by other users.

It shall support rapid response to queries and response to user difficulties in exploiting the information provided.
D4 Service Network INSPIRE Technical Note

This document shall address the following elements:

- synthesis of requirements of the service network with respect to the implementation of INSPIRE
- review from the service network perspective of the effectiveness of INSPIRE compliant measures already implemented by Member States
- elaboration of elements to be put in place within the service network to ensure full compliance with the requirements of the INSPIRE Framework Directive once it is transposed

It shall form an input both to the INSPIRE Committee and to the appropriate Groups of Experts during the Development and Transposition Phases of the INSPIRE Framework Directive

It shall support early impact assessment during the initial stages of INSPIRE implementation as well as more precise definition of specific requirements from particular spatial data communities as the implications of INSPIRE implementation become more clear

It shall cover the following infrastructures affected by the INSPIRE Framework:

- metadata including implementation requirements, interoperability requirements and utilisation experience etc in elements such as language, thesaurus functionality, certification and accuracy requirements and
- spatial data sets and spatial data services, including:
  - Requirements of the service network on data harmonisation, progress within the service network on data harmonisation within the services being delivered and experience in exploiting harmonised data sets created and managed by other INSPIRE stakeholders
  - Arrangements for the exchange of spatial data
- network services and technologies, including requirements on and experience in utilising:
  - Upload services;
  - discovery services;
  - view services;
  - download services;
  - transformation services,
  - “invoke spatial data services” services, enabling data services to be invoked
- agreements on sharing, access and use including requirements on and experience encountered in the following areas:
  - Implementing Rules to increase the potential of re-use of spatial data sets and services by third parties
  - Implementing Rules governing access and rights of use to spatial data sets and services for Community institutions and bodies
M10 Annual Report

This shall be the basis for an annual review of the service network achievements and identification of priority elements for the following period of operations.

It shall include an assessment of the following elements against the objectives set for the operations period under completion:

- **Service utility:**
  - A consensus high-level view of several different *end-user-organisations*, based on their individual experiences, as documented in the *Service-Utility-Reports* for the same period, from each organisation
  - A comparative Assessment of benefits for each *user-segment* of *core-user-group*
  - A consensus value-statement on *service-portfolio* for each *user-segment* and recommendations for improvements to *service-portfolio*

- **User engagement**
  - Volume of service uptake as a fraction of the total target user community in each demand sector
  - Volume of service uptake per demand sector against planned targets at the start of the operations period under review and assessment of issues encountered
  - Level of activity by each core user in promoting service value to cooperating organisations within the same demand sector
  - Progress towards user control of the service procurement process, including:
    - Transfer of validation responsibility to the service network
    - User acceptance of standards being enforced within service network
    - Implementation of standard service delivery model (in-house or outsourced)
    - User financial contribution to cost of service delivery
  - User and intermediaries engaged in effective lobbying for continuity of data sources

- **Service performance levels**
  - Service information content and delivery performance evaluated against the conditions specified in the SLA and identification of requirements for content and delivery performance improvement over the next operations period
  - Service information content and delivery performance against service roll-out strategy and elements to be resolved during the next operations period
  - Service coverage expansion in relation to major areas of interest to the target user segments, priority areas to be addressed through further expansion and requirements for new partners, infrastructure and validation
  - Unit cost per service and progress in reducing this level over the period under review

- **Service Network cooperative implementation**
  - Performance level and functionality of common web portal as basis of service delivery chain
  - Extent of migration towards joint exploitation of common infrastructure within the service network. Examples include archive, catalogue and data access tools as well as data warehouse and information product repositories. Issues constraining the degree of common infrastructure utilisation shall be identified and mitigation options elaborated. Elements identified for common exploitation that remain under development shall be identified and a timescale for their acceptance and integration into the service network operations shall be defined
  - Progress in implementation of common standards and effectiveness of compliance monitoring and enforcement. Identification of requirements for recovery actions
Financing
- Commercial revenue received for delivery of services based on capabilities developed within GMES and prospects for future continuity of this funding
- Progress in accessing third party non-R&D funding sources and identification of additional lobbying, communication and service expansion requirements to
- Progress in gaining access to user operational budget lines where appropriate

Communication:
- Assessment of impact of promotion and communication activities conducted during period under review including:
  o How appropriate was the target audience
  o What changes in attitudes have occurred
  o What is the result of these changes in attitudes
  o What lessons have been learned and how do these translate into future actions
- Identification of areas and audiences not addressed:
  o User segments targeted by the service portfolio (functional and/or geographic), including local and regional government
  o Citizen awareness and acceptance of the value and benefits from the portfolio of the service network and for the overall GMES initiative
- synthesis of communications and training review with respect to sustainability objectives
- Actions required for next operations period - Definition of lobbying promotional and other activities to encourage implementation of the required legislative and political responses and the necessary international cooperation
- Actions required over longer time scales

Service portfolio evolution
- this shall assess progress in each upgrade area identified within the service portfolio specification. It shall:
  o Review progress in implementing common service network capabilities and infrastructure against the service network plan for the operations period under review, identify discrepancies and propose mitigation solutions
  o Specify service delivery support capabilities to be implemented by cooperating teams under parallel R&D programmes and elaboration of milestones and a timetable for their delivery
  o Assess progress against agreed milestones for infrastructure and service capability development activities being executed under parallel programmes (eg integrated projects, user funded research and development programmes etc), highlight any issues expected over the next operations period and propose options for their mitigation
  o Report on qualification and validation of service support capabilities already delivered for transfer to operational utilisation

- For each service capability upgrade, the following elements shall be considered
  - Service element name & description
  - Location(s) of installation
  - Precursor services supported (product name(s), service nam(s))
  - Class: research; proto-type; Demonstration; Trial; Pre-operational; Operational
  - Input Data sources
- Algorithms supported
- Requirements, Design, specification & test documentation
- System standards compliance (eg PSS-05; ECCS, etc)
- Size; Throughput; Capacity; Scalability;
- Availability, Reliability; Performance measures
- Access; Open source; Public domain; Proprietary; Licensed
- External Interfaces
- Operations pre-requisites (manpower, operational environment)
11 ANNEX I  SUMMARY OF REQUIREMENTS

11.1 Implementation requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Reference</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
<td>Section 1.1 (page 1)</td>
<td>Each contract <strong>shall</strong> deliver a single portfolio of GMES services to meet common quality and validation standards and to serve international, national, regional and local users for a specific policy sector.</td>
</tr>
<tr>
<td>R2</td>
<td>Section 1.1 (page 1)</td>
<td>Each contract shall cover a set of core activities to provide a set of <strong>baseline services</strong>, as defined in Annexes A-G of this statement of work.</td>
</tr>
<tr>
<td>R3</td>
<td>Section 2.4.1 (page 4)</td>
<td>Co-operation mechanisms that will enable straightforward transfer of new R&amp;D results and methods into an operational service framework and sharing of data &amp; infrastructures shall be established.</td>
</tr>
<tr>
<td>R4</td>
<td>Section 5.1 (page 8)</td>
<td>Users shall take a prominent role in all activities carried out under this contract.</td>
</tr>
<tr>
<td>R5</td>
<td>Section 5.1 (page 8)</td>
<td>Service networks shall plan, prioritize and execute their activities exclusively to serve the documented needs of end-user organizations.</td>
</tr>
<tr>
<td>R6</td>
<td>Section 5.1 (page 8)</td>
<td>Participating User-organizations shall evaluate and report upon the quality and utility of services delivered and the overall performance of the service-network.</td>
</tr>
<tr>
<td>R7</td>
<td>Section 5.1 (page 8)</td>
<td>User-organizations shall document their requirements for improvements and additions to the service portfolio provided by each service network.</td>
</tr>
<tr>
<td>R8</td>
<td>Section 5.1 (page 10)</td>
<td>Each service-network shall assess and respond to documented user requirements and feedback, as identified above.</td>
</tr>
<tr>
<td>R9</td>
<td>Section 5.1 (page 10)</td>
<td>The benefits for public policy that result from utilization of the services shall be demonstrated, documented and widely communicated.</td>
</tr>
<tr>
<td>R10</td>
<td>Section 5.2 (page 10)</td>
<td>Under each contract, a network of geographically distributed, co-operating service-providers (companies and institutions), <strong>shall</strong> be established and operated.</td>
</tr>
<tr>
<td>R11</td>
<td>Section 5.2 (page 10)</td>
<td>Each service network <strong>shall</strong> deliver one of the GMES Service Portfolios herein specified in a cost-effective manner.</td>
</tr>
<tr>
<td>R12</td>
<td>Section 5.2 (page 10)</td>
<td>Each service network shall ensure - Effective links to its user communities - Efficient planning and coordination of the activities of all members of the network - Information sharing and planning with other GSE Service Networks - Coordination, information exchange and technical transfers with other relevant projects.</td>
</tr>
<tr>
<td>R13</td>
<td>Section 5.3 (page 10)</td>
<td>Each Service network shall prioritize serving the needs of <strong>legally mandated organizations</strong> that have a statutory mandate to provide public services or information related to a specific area of policy.</td>
</tr>
<tr>
<td>R14</td>
<td>Section 5.4 (page 11)</td>
<td>Within each policy sector there already exist bodies and associations that have been tasked by their constituent member.</td>
</tr>
</tbody>
</table>
organizations to facilitate better access to new information sources and technology solutions. Such organizations shall, to the maximum extent possible, be involved in setting-up and validating the GMES service networks.

R15 Section 5.4 (page 11) Each participating user-federating body shall lead the promotion and distribution of the service portfolio to their respective user community and associated decision makers, and shall gather and present user feedback to the service network.

R16 Section 5.5 (page 11) Each Service network shall therefore accommodate at least the following models for service provision:
- **Industrial out-sourcing**: in which external industrial or business supplier(s) provide information services to the legally-mandated public authority responsible for the policy
- **Institutional in-sourcing**: in which one or more local, regional, national or pan-national institutions generate and deliver the required information using capabilities developed, supplied (and maintained) by industry.

R17 Section 5.5 (page 11) Each participating user-organization shall specify which service model it intends to adopt for service provision during this contract, and longer-term provision following contract completion.

R18 Section 5.7 (page 11) Information products generated under this procurement contract shall be made as freely openly and widely available as possible to legally mandated organizations that commit to evaluate them, to contribute to their validation, to report on the utilization and to promote the benefits of their utilization.

R19 Section 5.7 (page 12) Services generated under this contract shall be made as openly and widely available as possible to legally mandated organizations that commit to evaluate them, to contribute to their validation, to report on the utilization and to promote the benefits of their utilization.

R20 Section 5.8 (page 12) When scaling up the services under this contract service networks shall aim to provide their users with complete operational service packages rather than demonstration or test cases.

R21 Section 5.8 (page 12) User feedback during consolidation phase strongly emphasized the need for improved validation and quality control for the majority of services. Service providers shall therefore identify and resolve the major outstanding issues in these domains during the first year of scaling up services.

R22 Section 5.9 (page 12) All services and their constituent data products shall be subjected to rigorous validation before they are made available to end-users. Each service network shall implement and enforce a formal validation protocol that specifies the conditions and procedures for validation that are applicable to all services and all members of the service network.

R23 Section 5.9 (page 12) Dedicated validation reports shall be generated and made available to users for each individual product and service. All geophysical information parameters, and their specified associated limits of accuracy shall be individually validated.

R24 Section 5.10 (page 12) Quality control procedures shall be defined and applied to all services during operational production. The quality procedures shall cover all aspects of service provision: including user ordering,
### Table: Data Planning and Acquisition

<table>
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<tr>
<th>Section</th>
<th>Page</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>R25</td>
<td>5.11 (page 13)</td>
<td>The relationship between service providers within each service-network shall be governed by a <strong>Service Partnership Protocol (SPP)</strong>.</td>
</tr>
<tr>
<td>R26</td>
<td>5.11 (page 13)</td>
<td>The <strong>SPP shall</strong> specify conditions for entry to, and exit from, the service provision network. It shall specify the obligations and liabilities of being a partner in the service provision network. It <strong>shall</strong> specify terms and conditions for sharing of information about users, access to each other’s facilities, data &amp; software, use of IPR, copyrights, external communication policy, and marketing strategy. The SPP shall be signed by all service providers participating in the service network.</td>
</tr>
<tr>
<td>R27</td>
<td>5.12 (page 13)</td>
<td>The relationship between each service-network and each user organization receiving service shall be governed by a <strong>Service Level Agreement (SLA)</strong>.</td>
</tr>
<tr>
<td>R28</td>
<td>5.12 (page 13)</td>
<td>Each <strong>SLA shall</strong> be signed by representatives of both parties at the level of Chief Executive Officer or Director. Each Service Level Agreement shall specify which service model the end-user plans to implement (e.g., in-sourcing, out-sourcing etc.).</td>
</tr>
<tr>
<td>R29</td>
<td>5.13 (page 14)</td>
<td>Each service network <strong>shall</strong> progressively expand the volume of services delivered and extend the geographic coverage.</td>
</tr>
<tr>
<td>R30</td>
<td>5.13 (page 14)</td>
<td><strong>User-needs for services requiring recurrent national, multinational, multi-regional or European coverage, for which satellite-based monitoring can provide cost-effective solutions, shall be served in priority over more localized or isolated needs.</strong></td>
</tr>
<tr>
<td>R31</td>
<td>5.14 (page 14)</td>
<td>Each consortium <strong>shall</strong> set annual measurable targets for improving the availability, reliability and affordability of the service portfolio and its constituent parts. Specific targets shall be established so that quantified progress towards service sustainability is achieved in the course of the contract.</td>
</tr>
<tr>
<td>R32</td>
<td>5.14 (page 14)</td>
<td>Progress in achieving these targets <strong>shall</strong> be reviewed each year on the basis of documented advances in the areas of both the demand and supply that contribute to overall sustainability of the service portfolio.</td>
</tr>
<tr>
<td>R33</td>
<td>5.14 (page 14)</td>
<td><strong>Annual targets shall be set in at least the following areas:</strong></td>
</tr>
<tr>
<td><strong>Demand-side targets</strong></td>
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<tr>
<td>• Increasing user control of service procurement</td>
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<tr>
<td>• Increasing contributions to service delivery costs from non-R&amp;D budgets</td>
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</table>
### Supply-side targets

- Incremental expansion of Service coverage to achieve availability over all identified areas of major interest to the target user segments within this contract.
- Planned, progressive reduction in unit costs for each service.
- Engagement of end-users in accessing third-party programmes and funding sources to maintain service continuity.
- Development of common standards for information generation and service delivery.
- Joint exploitation of common infrastructure.

<table>
<thead>
<tr>
<th>R34</th>
<th>Section 5.15 (page 15)</th>
<th>Explicit provision for this evolution <strong>shall</strong> be planned in each service level agreement and annual revisions to it.</th>
</tr>
</thead>
<tbody>
<tr>
<td>R35</td>
<td>Section 5.15 (page 15)</td>
<td>This evolution <strong>shall</strong> enable each user-organization to exercise more direct control over the service procurement process, by e.g. applying its own procurement practises and its own conditions of acceptance or rejection of services.</td>
</tr>
<tr>
<td>R36</td>
<td>Section 5.15 (page 15)</td>
<td>The performance targets achieved each year on service timeliness, validity, quality, and on user standards compliance, <strong>shall</strong> enable the service network to commit to correspondingly higher quality levels in the SLAs for subsequent years.</td>
</tr>
<tr>
<td>R37</td>
<td>Section 5.16 (page 16)</td>
<td>Each service network <strong>shall</strong> be organised and operated in a manner that is adapted to the documented needs, operational practices and geographical location(s) of the specific user communit(ies) it serves. The network <strong>shall</strong> be organised for functional and operational efficiency of service provision, rather than on a project basis. Each service network <strong>shall</strong> incorporate existing teams and facilities within a coherent operational framework, in order to capitalise upon previous investments and make best use of already established expertise. The resulting organisation <strong>shall</strong> be capable of maintaining a close working relationship with end user organisations in all the countries and regions for which the service portfolio is of highest relevance.</td>
</tr>
<tr>
<td>R38</td>
<td>Section 5.16 (page 16)</td>
<td>Each service network <strong>shall</strong> provide an open and transparent mechanism that enables other companies or organizations, with suitable service capabilities, to be assessed to qualify as service providers within the network. Each service centre network <strong>shall</strong> define and implement quality and validation processes suitable for the needs of its specific user community.</td>
</tr>
<tr>
<td>R39</td>
<td>Section 5.17 (page 16)</td>
<td>To this end each service network <strong>shall</strong> contribute to the INSPIRE...</td>
</tr>
</tbody>
</table>
This contribution shall be organized following the procedures for stakeholder participation as outlined in the INSPIRE WP, in particular by responding to the open INSPIRE Call for Interest for Spatial Data Interest Communities.

Each GMES service network shall, in the course of this contract, express interest to:

- join or lead (as appropriate) a Spatial Data Interest Community,
- contribute as project with user requirements to the formulation of the draft INSPIRE Implementing Rules,
- respond to the INSPIRE Call for Experts and allocate appropriate resources to this task,
- act as a pilot for testing Implementing Rules specifications as they become available for meta-data, data model harmonization and services,
- participate to the Review Phase of the INSPIRE draft Implementing Rules as they become available.

Each network shall be sized and equipped with sufficient dedicated technical facilities to meet the foreseen production load for the full duration of this contract. It shall as necessary include facilities for

- User Order handling and queries
- Production planning and scheduling
- External data acquisition (EO, in-situ, other)
- Modelling and assimilation
- Product generation
- Data Archiving and cataloguing
- Quality control and validation
- Data Dissemination

Each network shall provide on-line access to all services it provides.

Each network shall guarantee users access to the full set of products and services offered by the entire consortium over a declared set of geographic regions.

The service network, and all its components, shall be maintained under formal configuration control.

The network shall be scalable to accommodate realistic forecasts of growth in demand for its services in the duration of the contract.

Each GSE network shall make maximum use of in-situ monitoring, data gathering and data management and processing infrastructures that already exist, or are under development (eg via national environment agencies, via EEA and via publicly-funded projects supported by ESA, EC or National programmes).
Expenditure on new infrastructure within each service network under this contract shall be kept at the absolute minimum level necessary and should typically not exceed 5% of total contract costs.

Infrastructure related activities **shall** therefore prioritize:
- Integrating service infrastructure developed elsewhere for exploitation by the service network and user segments
- Building and maintaining links with parallel infrastructure development activities to ensure present and future service provision and demand side utilisation requirements are addressed
- Accessing common infrastructure (in-situ measurement networks, data warehouses, catalogue, archive)

<table>
<thead>
<tr>
<th>R42</th>
<th>Section 5.18.2 (page 18)</th>
</tr>
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</table>
| The GSE service networks **shall** share information, on their products, services, users and annual planning in order to:
- Optimize planning and use of resources made available from ESA
- Maximize benefits for users by use of common technical standards wherever possible
- Simplify and unify user access to services by presenting a common service portfolio of GMES services to all users

Each service network **shall**, in consultation with the other selected GSE networks and their users, define the degree of interoperability needed between GSE networks and specify a common set of technical interface requirements applicable to all GSE service networks.

Each GSE service network **shall** implement and test the resulting data exchange interfaces.

<table>
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<tr>
<th>R43</th>
<th>Section 5.18.3 (page 18)</th>
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</table>
| Each GSE service network shall coordinate its activities with ongoing national and EC funded projects that are relevant for its activities. This co-ordination shall cover:
- Exchange of algorithms and software between project teams
- Defining and applying common standards to services delivered
- Optimizing use of public funds and avoidance of duplication in different projects
- Establishing a common Service offering and prospectus to users

Each GSE network shall, in consultation with its users, define its requirements for interoperability with service providers operating within EC-funded GMES projects, particularly integrated projects providing services or developing relevant infrastructure.

<table>
<thead>
<tr>
<th>R44</th>
<th>Section 5.19 (page 18)</th>
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<tbody>
<tr>
<td>Each service network shall prepare an annual data procurement plan for approval by ESA.</td>
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</table>
The procurement plan shall be supported by an analysis of the forecast data needs and availability for the coming two years. This shall be derived on the basis of the agreed SLAs.

Each procurement plan shall be fully costed and supported by data access agreements with all involved data suppliers.

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<tr>
<th>R45</th>
<th>Section 5.20 (page 19)</th>
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</table>
|      | The total resources made available from ESA under the contracts awarded, **shall** be allocated to so as to maximize service provision and qualification, and the associated tangible benefits for users achieved via (i.e. Task 3).

To maintain credibility of the overall GMES process, priority **shall** be given to satisfying the needs of user organizations that have already engaged in GMES and demonstrate strong commitment to engage resources in GMES.

New user organizations shall be engaged progressively during the contract period, in order to enlarge demand for services and to broaden international scope, whilst incrementally increasing the volume of services delivery and enlarging the network supply capability.

<table>
<thead>
<tr>
<th>R46</th>
<th>Section 5.20 (page 19)</th>
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</table>
|      | Resources shall be focused onto the most promising services and geographic areas in order to make substantial impact (i.e. demonstrate user benefits) and establish a stable level of recurrent demand for GMES services during the next 3 years. At the same time opportunities for foundations for future growth shall be identified (next 5-10 years).

<table>
<thead>
<tr>
<th>R47</th>
<th>Section 5.21 (page 19)</th>
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</table>
|      | Each service network shall plan and execute its activities in an annual cycle of service delivery, assessment and improvement

<table>
<thead>
<tr>
<th>R48</th>
<th>Section 5.2.2 (page 19)</th>
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</table>
|      | The GSE service networks **shall** implement a joint communications approach, applicable to all promotion activities and promotion materials. This will be agreed with ESA during the first co-location meeting.

<table>
<thead>
<tr>
<th>R49</th>
<th>Section 6 (page 21)</th>
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</table>
|      | All tasks shall:
|      | • Start within 1 month of Kick-off
|      | • Run concurrently thereafter throughout the contract

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<tr>
<th>R50</th>
<th>Section 6.1 (page 21)</th>
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</table>
|      | Each service network shall organize presentations, briefings and workshops as necessary to inform new users of the available services and to promote their adoption in wider user communities. The service-prospectus and service-utility-reports shall be used as the major raw materials for this activity. These shall be supplemented by promotion packages derived from them. Consortia shall also offer training opportunities and training packages, specifically related to the GMES service-portfolio, to major prospective new user organizations.

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<tr>
<th>R51</th>
<th>Section 6.1 (page 21)</th>
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</table>
|      | Each consortium shall actively investigate complementary programmes of an operational (non-research) nature, for which the service-portfolio could provide appropriate monitoring solutions,
and within which the service capabilities could potentially be integrated.

User organisations that are preparing proposals under such programmes shall be supported. Options to adapt the existing service portfolio and to prepare new initiatives that could lead to service sustainability shall be investigated and pursued.

| R52 | Section 6.1 (page 22) | All other tasks shall be planned and prioritised on the basis of the information gathered via the user federation and strategic planning. |
| R53 | Section 6.1 (page 22) | The network members shall establish coordination mechanisms and implement technical interfaces that will allow greater sharing of facilities (e.g. archives), more unified approach to the user communities served, and more effective joint access to external data providers (e.g. commercial) and infrastructures (e.g. monitoring networks). |
| R54 | Section 6.1 (page 23) | In case of services not delivered on schedule, or services rejected on delivery due to quality problems, the users shall raise an anomaly reports and the providers take recovery actions to achieve an acceptable response to the user need. |
| R55 | Section 6.1 (page 23) | This requires that relevant new research results, newly validated algorithms, new modeling and assimilation techniques, newly qualified processing technologies and new operational data sources (EO, in-situ and socio-economic), shall be tested and evaluated as they become available. |
| R56 | Section 6.1 (page 23) | Service evolution activities shall not impact the normal operations or configuration of the operational service supply chains. |
| R57 | Section 7.1.2 (page 30) | Each consortium working on GSE shall be led and managed by a single Prime Contractor. The Prime Contractor shall appoint a project manager who shall manage and report to ESA on all activities of all contractors and sub-contractors. |
| R58 | Section 7.1.4 (page 30) | The work of the consortium and the project manager shall be supported and guided by a Service Strategy Group. The strategy group shall review and comment upon:
- The Service Prospectus (and its evolution)
- The Service Network Annual Report and Annual Plan
The strategy group shall
- have access to all deliverable documents on request.
- be provided copies of the network quarterly reports.
- be invited to participate in the network annual review.
The Service Strategy Group shall have three members. Each member shall be an internationally recognized authority, holding a high-level position of responsibility in one or more of the following areas:
- The targeted environmental & security policies
- The relevant research fields (space & non-space)
- The relevant user organizations

Each Service Strategy Group member shall come from a different ESA or EU member state.

| R59 | Section 7.1.5 (page 31) | A **User Executive Body** shall be established within each service network.
This shall be composed of a limited number of users who are actively involved with the network.

This body is intended to play a similar role to that of the Core-User-Group during GSE consolidation. It shall:
- Represent user interests within the Service Network Management Structure
- Participate in annual service network reviews
- Provide an independent, executive summary of users needs and priorities for service evolution to which service providers can respond.

| R60 | Section 7.1.6 (page 32) | The **end-users shall** encompass

- Users and Intermediaries organizations as identified in Annexes A-B
- The relevant European legally mandated **end-user-organizations**
- The main geographic zones that can benefit from the **service-portfolio**
- **End-user-organizations** from relevant developing countr(ies)

The operational service providers **shall** include organizations that

- Are operating in the environmental and security information sector
- Have operational experience and capability in EO-based and in-situ-based services
- Have appropriate operational assimilation, modeling & forecasting capability
- Are already delivering operational services to key **end-user-segments**

Additional network members should include:
- System Partners
- Research Partners
- Expert Consultants (as necessary)

The system partners **shall** ensure coordination with on-going infrastructure development projects (EC-funded & ESA & national) and provide access to those infrastructures for the purposes of service provision by the service network.

The Research Partners **shall** ensure coordination and technical transfers (algorithms, software, data) with on-going R&D projects that are of specific relevance for the services being delivered and validated by the service network.
Expert consultants **shall** include organisations that have detailed knowledge of external funding programmes and sources that may benefit from the services being developed under GMES and that are relevant for the long-term sustainability of GMES.

| R61 | Section 7.2.1 (page 33) | Each consortium shall participate to two types of meeting:
|     |                         | ▪ Contract progress meetings with ESA
|     |                         |   - Formal status review at each contract milestone
|     |                         | ▪ Co-location working periods
|     |                         |   - Orientation, info exchange & coordination with key personnel from all GSE consortia

| R62 | Section 7.2.2 (page 33) | There shall be 11 quarterly progress review meetings with ESA

| R63 | Section 7.2.3 (page 33) | Key personnel from all GSE consortia shall participate in five co-location working periods, to coordinate and jointly prepare materials for key GMES programmatic milestones

| R64 | Section 7.2.4 (page 34) | The annual review shall cover:
|     |                         | • Progress towards sustainability
|     |                         | • Major lessons learned from documented user feedback on utility of services provided and the requirements for service improvement and evolution,
|     |                         | • Assessment of demand for service from new user segments and key user-organizations.
|     |                         | • Experience over the most recent operations period against the objectives set
|     |                         | • Identification of requirements for recovery actions or other actions to exploit unforeseen new opportunity recently arisen
|     |                         | • Consolidation of action plans for the next operations period and the overall strategic plan

Where progress is deemed to be unsatisfactory, recovery actions **shall** be identified and implemented.

| R65 | Section 7.2.4 (page 34) | The user executive board shall participate to the annual review. This executive body **shall** also approve and endorse any service network upgrade or expansion activities proposed for the following year. In addition, this body **shall** provide an overall assessment of the expected value and impact of the service portfolio being developed.

| R66 | Section 7.2.4 (page 34) | Based on the outcome of this review, each consortium shall revise its annual work-plan for the following year

| R67 | Section 7.2.4 (page 34) | The three dossiers delivered from each consolidation phase contract are intended as management & planning support tools, to be used for the entire service operations lifetime (i.e. potentially 10+ years). These **shall** be maintained on an annual basis.

| R68 | Section 7.2.5 (page 34) | Progress meetings shall be held alternatively at user premises and at provider premises
|     |                         | The Prime Contractor and consortium members shall use video-conferencing, tele-conferencing, and internet-based-meeting
facilities in order to minimise travel for regular working meetings with partners.

<table>
<thead>
<tr>
<th>R69</th>
<th>Section 7.3 (page 34)</th>
<th>Each contract shall last 36 months. Each contract shall be implemented in three sequential phases of 12 months each</th>
</tr>
</thead>
<tbody>
<tr>
<td>R70</td>
<td>Section 7.3 (page 35)</td>
<td>The networks shall maintain a constant level of effort and expenditure of resources over the three-year period of the contact. The contractor <strong>shall not</strong> commence any Phase II or Phase III work, until the Agency has formally accepted all deliverables due at the preceding annual review and has issued written authorisation for the contractor to proceed.</td>
</tr>
</tbody>
</table>
| R71 | Section 7.4 (page 36) | All documents shall be independently reviewed, before delivery to ESA, for:  
  - Scope, Completeness, Configuration control  
  - Clarity, consistency, grammar, spelling  
  
  All documents delivered to ESA shall bear the following information.  
  - Document title; issue & version number; issue date  
  - Author(s) name & signature  
  - Reviewer(s) name & Signature  
  - Approver(s) name, organisation & signature  
  - Issuing Authority name & signature  
  
  All documents shall contain  
  - Table of contents  
  - Executive Summary  
  - Change Record  
  
  All documents shall refer to a single bibliography list that uniquely identifies each reference doc.  
  
  All text revisions shall be denoted by change-bars.  
  
  All documents shall be clear, self-explanatory and self-contained.  
  
  No two documents shall contain the same information – neither verbatim, nor paraphrased.  
  
  All diagrams and illustrations shall be clear and easily legible.  
  
  All documents shall be delivered to ESA in bound hardcopy (2 copies) and in Microsoft Word electronic format. |
11.2 Service delivery requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Service Portfolio</th>
<th>Requirement</th>
</tr>
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<tbody>
<tr>
<td>R72</td>
<td>Humanitarian Aid</td>
<td>Services delivered shall address the target policy sectors and demand milestones specified in Annex A, section 9.1</td>
</tr>
<tr>
<td>R73</td>
<td>Humanitarian Aid</td>
<td>The following services shall be delivered as baseline services to the level specified in Annex A, section 9.3.1:</td>
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<tr>
<td></td>
<td></td>
<td>A1) Wide coverage using Basic mapping / Background mapping services (digital, paper, EO, non-EO vector and raster) to humanitarian aid users globally in Africa, Asia and Latin America in regions exposed to humanitarian crisis. In addition Basic mapping / Background mapping in areas for which Crisis &amp; Damage Mapping actions are undertaken (service 1 is also support to service 2)</td>
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<td>A2) Rapid Crisis &amp; Damage Mapping to users of the humanitarian aid and disaster reduction communities (in particular for preparedness, relief, recovery, rehabilitation and reconstruction) worldwide - outside Europe - for those regions exposed to major disasters (natural, technological) and humanitarian crisis. This shall fully take into account precursor systems that can utilize crisis/damage mapping - in particular GDACS (organised by UN OCHA)</td>
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<td>A3) Rapid Crisis &amp; Damage Mapping actions to be undertaken and coordinated as baseline services shall fully take into account actions undertaken and coordinated by the International Charter Space &amp; Major Disasters</td>
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<td>A4) Situation Maps to humanitarian aid users globally in Africa, Asia and Latin America</td>
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<tr>
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<td></td>
<td>A5) Refugee/IDP Support Maps to humanitarian aid users, in particular UN HCR, globally in Africa, Asia and Latin America</td>
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<td>A6) Thematic maps for Prevention / Reconstruction and Planning Purposes to humanitarian aid users globally in Africa, Asia and Latin America</td>
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<td></td>
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<td>A7) Alert services to humanitarian aid users fully taking into account precursor systems such as in particular: ALERTNET (organised by Reuters Foundation) and GDACS (organised by UN OCHA)</td>
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<td></td>
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<td>A8) Communication / Reporting Resources to humanitarian aid organisations</td>
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<td></td>
<td></td>
<td>A9) In-field data collection in support to humanitarian aid users globally in Africa, Asia and Latin America</td>
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</tbody>
</table>
| R74 | Humanitarian Aid | The following services shall be delivered as priority extension services to the level specified in Annex A, section 9.3.2:  
A10) Wide coverage using Basic mapping / Background mapping services (digital, paper, EO, non-EO vector and raster) to humanitarian aid users globally in Africa, Asia and Latin America in regions exposed to humanitarian crisis. In addition Basic mapping / Background mapping in areas for which Crisis & Damage Mapping actions are undertaken (service 1 is also support to service 2)  
A11) Rapid Crisis & Damage Mapping to users of the humanitarian aid and disaster reduction communities (in particular for preparedness, relief, recovery, rehabilitation and reconstruction) world wide - inside and outside Europe - for those regions exposed to major disasters (natural, technological) and humanitarian crisis. This shall fully take into account precursor systems that can utilize crisis/damage mapping - in particular GDACS (organised by UN OCHA)  
A12) Rapid Crisis & Damage Mapping actions to be undertaken and coordinated as priority extension services shall fully take into account actions undertaken and coordinated by the International Charter Space & Major Disasters  
A13) Rapid Crisis & Damage Mapping shall include enhanced service with reduced delivery time by means of Near Real Time access and processing of available and forthcoming EO missions relevant to crisis mapping that will be available within the three years following the start of the activity – and in particular EO data associated with the International Charter Space & Major Disasters  
A14) In particular, enhanced rapid Crisis & Damage Mapping with Near Real Time access to EO data shall concern ENVISAT ASAR and MERIS for plain flood monitoring  
A15) Situation Maps to humanitarian aid users globally in Africa, Asia and Latin America  
A16) Refugee/IDP Support Maps to humanitarian aid users, in particular UN HCR, globally in Africa, Asia and Latin America  
A17) Thematic maps for Prevention / Reconstruction and Planning Purposes to humanitarian aid users globally in Africa, Asia and Latin America  
A18) Communication / Reporting Resources to humanitarian aid organisations  
A19) In-field data collection in support to humanitarian aid users globally in Africa, Asia and Latin America |
<p>| R75 | Humanitarian Aid | The consortium shall deliver services for the geographic areas specified in Annex A, section 9.4 |
| R76 | Humanitarian Aid | The consortium shall use the component infrastructure described in Annex A, section 9.5 as the basis for delivering services |
| R77 | Humanitarian Aid | The consortium shall establish effective cooperation and exchange procedures with the complementary on-going activities specified in Annex A, section 9.6 |
| R78 | Atmosphere | Services delivered shall address the target policy sectors and demand milestones specified in Annex B, section 10.2 |</p>
<table>
<thead>
<tr>
<th>Issue No.</th>
<th>Atmosphere</th>
<th>Services Provided</th>
</tr>
</thead>
</table>
| R79       |            | The following services shall be delivered as baseline services to the level specified in Annex B, section 10.4.1:  
B1) Total Ozone Record to enable ozone trend analysis covering the time period from 1979 to now.  
B2) NRT Ozone Column to improve European Weather Forecasting.  
B3) Total Ozone Forecast to enable global and regional UV forecasting services in Europe.  
B4) UV Record to enable global and regional UV trend monitoring.  
B5) Air Quality Records to support air pollution monitoring in Europe.  
B6) Greenhouse-gasses and Aerosol Records to demonstrate the feasibility to monitor globally sources and sinks of greenhouse-gasses.  
B7) Integrated European Air quality analysis and forecasts by combining the output from multiple models.  
B8) Aviation Control Support by the provision of NRT SO2 and Aerosol over Europe and Africa.  
B9) UV information forecast to inform European citizens about sun-burn/tanning time.  
B10) Regional/local air quality forecasts to enable regional air quality monitoring and health alert services. |
| R80       |            | The following services shall be delivered as priority extension services to the level specified in Annex B, section 10.4.2:  
B11) Ozone Profile Record to enable environmental assessment and to study the chemical composition and dynamics of the middle atmosphere.  
B12) NRT Ozone Profile to improve operational weather forecasting.  
B13) Extended UV Forecast in order to provide via local environmental agencies UV information to European citizens at the Mediterranean coast and directly via SMS/Internet to all European citizens.  
B14) European Pollen forecasting Service.  
B15) Extended Local AQ services to upscale regional/local AQ services to serve 20% of EU citizens. |
| R81       |            | The consortium shall deliver services for the geographic areas specified in Annex B, section 10.5 |
| R82       |            | The consortium shall use the component infrastructure described in Annex B, section 10.6 as the basis for delivering services |
| R83       |            | The consortium shall establish effective cooperation and exchange procedures with the complementary on-going activities specified in Annex B, section 10.7 |