DIAS
European DIgital upper Atmosphere Server
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Annex I - Description of Work

Proposal abstract

The goal of DIAS is to develop a pan-European digital data collection on the state of the upper atmosphere, based on the existing five different historical data collections and on the real-time information provided by all five operating European digital ionospheric stations (digisondes) that belong to public sector institutes. DIAS consortium will develop all necessary actions for the efficient promotion of this collection through new added value products, to the world market. Currently, the existing digital European stations operate independently, failing to address the increased demands for a unified collection of historical and real time upper-atmosphere data, especially nowcast and forecast services for all Europe. DIAS will overcome this problem by operating a server similar to those that exist already for the US. Furthermore, the two private companies of DIAS consortium will ensure the viability of the project beyond the phases of the work sponsored by EU, through the creation of a competitive management structure and a detailed business plan.

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Project Overview

Objectives

a) To develop a pan-European digital data collection on the state of the upper atmosphere based on five different historical data collections and on the real-time information provided by all the existing European digisonde stations. This collection will be managed and distributed by a new digital server (DIAS).
b) To develop, through the collaboration of the private sector companies that belong to DIAS consortium, all necessary actions for the efficient promotion of this pan-European digital data collection and new added value products based on the raw data, to the European and worldwide market.

Description of the work

To meet these objectives:

a1) The DIAS digital server will integrate in the same environment all the raw ionospheric data gathered by all existing European digisondes that belong to the five public sector institutes that participate in the DIAS consortium;
a2) The DIAS system will be open, capable to integrate in the future any new digital collection that will be created by the operation of any new digisonde in Europe;

b1) The current situation in the market will be determined by a comparative study of existing information on the Upper Atmosphere, and the techniques used worldwide to organize digital data will be evaluated. The users requirements will be determined and new competitive added value products and services will be defined and released through DIAS server in static and mobile platforms;
b2) The policies needed for the effective exploitation of digital ionospheric data and added value products will be defined and a business plan will be proposed for the exploitation of services after the end of the project, through an Agora type management of DIAS; a clear pricing policy and data accessibility report will be released;
b3) A network of users and information providers will be established as the base of commercial exploitation activities. This network will constitute the main channel of interaction between the five public institute that provide the data, and users from the private sector, already expressed their interest on DIAS services, working together to bring out the full potential of the information;
b4) Intense dissemination and awareness activities of different forms will be developed in order to stimulate the access in this new pan-European data collection.

Milestones and expected results

Important milestones: state of the art report, cartography of the market and user needs assessment report, development of new added value products and services, final business plan for DIAS exploitation, establishment of users network, release of the final Digital upper Atmosphere Server.

Expected results are: a) the establishment of a unified pan-European digital data collection on the state of the upper atmosphere, b) the creation of new added value products and services, c) the expansion of the relevant European market with the release of European products and services competitive to US and Australian products.

1. Rationale and Objectives

The purpose of **DIAS (DIgital Upper Atmosphere Server)** is:
(a) The development of a pan-European digital data collection on the state of the upper atmosphere based on five different historical data collections and on the real-time information provided by all the existing European digisonde stations.
(b) The efficient promotion of this pan-European digital data collection and new added value products based on the raw data, to the European and worldwide market.
Systematic real-time measurements of the upper atmosphere in Europe are obtained by five digital ionospheric stations (digisondes), suitable for research and commercial use. These digisondes –all operated by DIAS partners - have the capability of automatically scaling and transmitting in real-time all-important parameters characterising the state of the upper atmosphere and the propagation of radio waves in the ionosphere. At the moment these digisondes operate independently, and knowledge on the state of the upper atmosphere is generated for a limited area around each station only. This independent operation creates several barriers for the transforming this information into usable data, products and services. Considering the increasing demand for upper-atmosphere nowcast and forecast services by various commercial users, the need to develop a system like DIAS is pressing, especially since similar systems already exist in the US and Australia. It is noteworthy that although networks for real-time monitoring of lower-atmospheric layers (troposphere and stratosphere) operate in the European region, relevant attempts for the upper atmosphere were never made, despite the increasing demands from groups of users in the commercial and industrial sector. For these reasons we propose the DIAS project, which will lead to the development of new European added-value products and services, to the effective use of observational data in operational applications and consequently to the expansion of the relevant European market. **Note that all existing European public digisondes belong to the five institutes that participate in the DIAS consortium.**

Knowledge of the state of the upper atmosphere is very important in several applications. The space effects on radio frequency (RF) communications and satellite positioning and navigation applications are determined by the ionospheric electron density structure and the total electron content (TEC). Ionospheric-space weather effects can also cause time-varying ionospheric currents causing problems in ground systems such as systems for power generation and supply, oil and gas pipeline distribution, aerial surveying for minerals oil and gas, drilling for oil and gas, railways, especially in the northern latitudes. Lately there is an increasing interest of the seismic hazards research community in identifying electromagnetic phenomena in the upper atmosphere, as predecessors of seismic events. In fact a network of digisonde stations has been developed in Japan for the study of seismic precursor events in the upper atmosphere.
Overall, the community of potential users is quite extended. The most important R&D sectors interested in this type of information are:

- Aviation industry (civil and military) is interested in two types of risk from space events. First, interruption to GPS navigation for positioning on approach for landing and, second, loss of high frequency (HF) communications for positioning report. Civil aviation is interested in predictions of the ionospheric current systems and their rate of change and on predictions of ionospheric scintillations, radar clutter and TEC errors, location and severity.
- Defense has many applications that are affected by ionospheric disturbances due to space weather. First, in HF communications, loss of signal path between transmitter and receiver, loss of direction finding, radiowave absorption and blackout. Second in the over-the-horizon-radar, enhanced clutter at high latitudes. Third, in navigation by GPS and other positioning systems, scintillations. Fourth, in submarine communications, disruption to ELF and VLF communications.
- Satellite operators need to identify the cause of satellite anomalies, and determine whether or not they are related to space weather effects. A problem related to ionospheric scintillations, mainly at equatorial and polar latitudes, is the loss of phase and amplitude lock for remote sensing applications, GPS navigation and altimetry.

- Commercial satellite designers are concerned with the accuracy of existing mathematical models since they are based on questionable old data from the 1960s. The development of DIAS server will allow this group of users to measure the important parameters in the upper atmosphere, thus satisfying the main requirement before they can develop procedures to modify the design of future satellites.
- HF Broadcasters are interested to provide listeners with accurate real-time advice of the best frequency for the next program
- Trans-ionospheric systems operators (GPS, GLONASS, Sarcomm) provide real-time data on phase path variations and forecasts of system accuracy or capacity for use by service managers and users
- HF Communications System Operators assess in real-time the performance of automatic link establishment. They also assess in real-time the channel bandwidth and perform short-term forecasts to aid automatic or manual communications link management.
- Non ionospheric HF systems operators perform real-time forecasts of skywave interference in surface wave or space wave applications
- HF equipment manufacturers develop accurate 3D modelling of both small-scale and large-scale variations to aid systems development and testing.
- Upper atmosphere researchers are interested in developing models for more accurate prediction of ionospheric disturbances; predicting the physical quantities that affect various human activities based on technological systems; continuously monitoring the upper atmosphere; and performing post-event analysis.
- Seismic hazards researchers need to analyze high-resolution historical and real-time ionospheric data, since convincing evidence has been accumulated on the presence of seismo-electromagnetic phenomena that would be useful for future earthquake prediction. It is very important to note that two of the five digisondes participating in the DIAS project are located in Rome and Athens, areas with very high seismic activity. Therefore ionospheric data from these two digisonde are ideal for correlation studies with seismic data.
- Ground-based systems managers and operators (e.g., power generation and supply, oil and gas pipeline distribution, railways) are interested in predictions of magnetic field fluctuations and geomagnetically induced currents caused by time varying ionospheric currents.

The strong interest that exists in some of these industry and commercial sectors is also evident in the **letters of interest and support** for DIAS that have been provided by several companies and institutes from both Europe and the U.S. and are attached to this proposal.

Considering the needs for information on the upper-atmosphere in several domains, and the currently unsatisfactory level of availability of high-quality added-value ionospheric data in Europe, it is proposed to establish a distributed information server capable of supporting the acquisition, elaboration, evaluation, dissemination and archiving of the upper atmosphere information, in order to be able to expand the European market and to offer services competitive to US and Australians. Furthermore, operation of the system should be carried on a firm, economic and competitive ground, so that is sustained and evolves beyond the duration of the proposed project. The architecture of the system will ensure scalability towards European coverage, if more real-time digisondes will operate in the future.

The proposed system has four major objectives

(a) to generate and distribute **added value products** such as radio propagation characteristics for the European region, ionospheric maps, alerts and warnings for ionospheric disturbances, useful for large number of users such as HF communication users and navigation systems;
(b) to promote access to upper atmosphere digital data – historical and real time- exemplifying the potential of this information;
(c) to promote the commercial exploitation of these added value products and to develop an extensive users community;
(d) to upgrade the available European products in this area and make them **competitive** to similar U.S and Australian products.

To meet these objectives, the following activities will take place:

(a) The DIAS digital server will integrate in the same environment all the raw ionospheric data gathered by all existing European digisondes that belong to the five public sector institutes that participate in the DIAS consortium;

(b) The DIAS system will be capable to integrate in the future any new digital collection that will be created by the operation of any new digisonde in Europe;
(c) The current situation in the market will be determined by a comparative study of existing information on the Upper Atmosphere, and the techniques used worldwide to organize digital data will be evaluated. The users requirements will be determined and new competitive added value products and services will be defined and released through DIAS server in static and mobile platforms;
(d) The policies needed for the effective exploitation of digital ionospheric data and added value products will be defined and a business plan will be proposed for the exploitation of services after the end of the project, through an Agora type management of DIAS;
(e) A network of users and information providers will be established as the base of commercial exploitation activities. This network will constitute the main channel of interaction between the five public institute that provide the data, and users from the private sector, already expressed their interest on DIAS services, working together to bring out the full potential of the information;
(f) Intense dissemination and awareness activities of different forms will be developed in order to stimulate the access in this new pan-European data collection.

Through these actions, we believe that DIAS will contribute to the beneficial exploitation of the currently collected information, overcoming the present fragmentation and providing **pan-European data and services**.

DIAS is based on raw data from public sector institutes. The system that will be developed will have as result the production and distribution of added value products to potential users. All DIAS partners ensure that users will still have access to their raw data in the same conditions as currently, meaning that will be no restriction or special handling of the raw data. This will prevent from the creation of a monopoly situation on the market.

2. Baseline and results

As we have already mentioned, the state of the upper atmosphere in the European region is continuously monitored by five digisondes having the capability to transmit sounding results in real-time. They are operated by five public-sector research institutes: the Leibniz Institute of Atmospheric Physics (IAP) in Germany, the National Institute of Geophysics and Volcanology (INGV) in Italy, the National Observatory of Athens (NOA) in Greece, the Rutherford Appleton Laboratory (RAL) in the United Kingdom and the Swedish Institute of Space Physics (IRF).
The available data from these digisondes are:

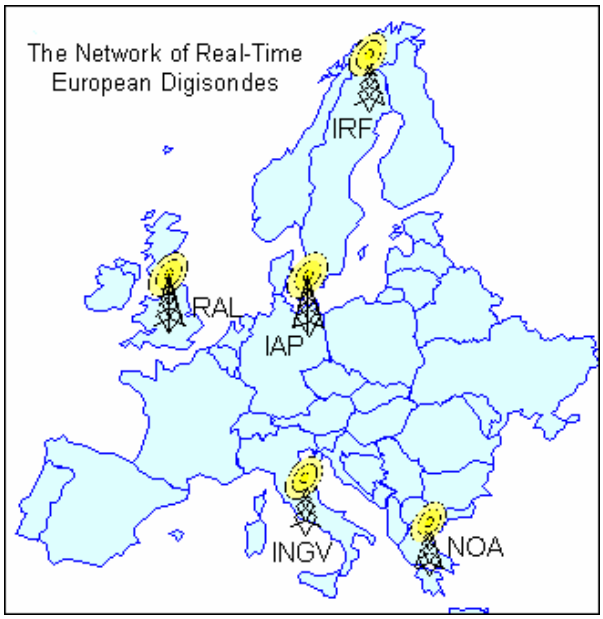
- Ionograms: This is the primary output of each sounding and gives information on the structure of the ionosphere. Each station has long-range but still, limited coverage. So in order to cover the European region completely, superposition of the effective areas of all five stations is required.
- Electron density distribution versus atmospheric heights: This is the most important output from each sounding. Its calculation is based on the information obtained by the ionogram, converting the raw ionogram data into a function of the distribution of the electron density versus the atmospheric height, from 80 km to 1000 km. The state of the ionosphere can be thus fully determined (height and thickness of ionospheric layers, electron density in various height, and the total electron content of the ionosphere over the digisonde).
- Scaling parameters: All the above information is expressed quantitatively with the derivation of 49 different characteristic ionospheric parameters from each sounding. The most important groups of scaling parameters for operational use are:
  The critical frequencies of various ionospheric layers used for radio-propagation (foF2, foF1, foEs, foE)
  Parameters for the oblique propagation (MUF(D), M(D))
  The virtual height of various ionospheric layers (h'F, h'F2, h'E, h'Es)
  The true height of F1 and F2 ionospheric layers (hmF2 and hmF1)
  The total electron content (TEC) of the ionosphere above the station
  Parameters that characterize the thickness and profile shape of ionospheric layers (B0, B1, D1)

Despite the large amount of information generated by each digital ionospheric station, it is not possible for the user to have a comprehensive view over Europe due to the restricted coverage of each station, and the different data structures and data base schemes used by them. Furthermore, only a small part of historical and real-time data is available though the web site of each institute for public access. As a result there is currently no capability of providing real-time and historical information for all of Europe, unlike the US and Australia, which are appropriately covered by comprehensive US and Australian data servers.

The National Observatory of Athens (NOA) maintains the web site http://www.iono.noa.gr through which the following data are available: (a) real-time ionograms with results of automatic scaling (b) ionograms with the results of the automatic scaling for the past seven days (c) historical raw ionosonde data of the automatic scaled parameters, in a SAO format that must be processed with special software tools.
The National Institute of Geophysics and Volcanology (INGV) maintains the web site http://dps-roma.ingrm.it through which the following data are available: (a) real-time ionograms with results of automatic scaling (b) ionograms with the results of the automatic scaling for the past seven days.
The Rutherford Appleton Laboratory (RAL) maintains the web site http://www.wdc.rl.ac.uk/ionosondes/ionosondes.html through which the following data are available: (a) real-time ionograms with results of automatic scaling (b) historical ionograms with the results of the automatic scale (c) historical data of autoscaled parameters, manual scaled parameters and true height profiles (d) raw ionosonde data of the automatic scaled parameters that must be processed with special software tools.
The Leibniz-Institute of Atmospheric Physics (IAP) maintains the web site http://www.ionosonde.iap-kborn.de/ionogram.htm through which the following data are available: (a) real-time ionograms (b) the latest 24 hour ionograms (quarterhourly) (c) the latest 7-days ionograms (hourly)
The Swedish Institute of Space Physics (IRF) maintains the web site http://www.irf.se/~ionogram through which (a) the 24 latest ionograms are available in gif animation format (b) through an interactive system there is a possibility to scale online a specific ionogram and handle scaled parameters.

Clearly, there is a large amount of digital information characterizing the upper atmosphere. Nevertheless, there are several barriers for the transformation of the digital information into usable data products and services:

- Fragmentation of information across different institutes
- Differences in the procedures established by each web site for accessing real-time data and the different internal and external schemes used by each web site for the databases of historical data.
- Differences in the policies applied by each organization for the distribution of digital information.
- Complexity of the present form of the data and, therefore, of the corresponding analysis procedures, which is tolerable for the needs of researchers but not for the needs of industrial applications found in the private sector.
- Lack of added value products on top of the raw information, oriented towards the needs of the private sector



These barriers lead to uncertainties, which in turn lead to lack of investment, degrading the level of service available to end users. Given the increasing interest from various groups of end-users due to the development of new applications requiring this type of information, the development of a system like DIAS seems mandatory. A major advantage of the DIAS project, essentially ensuring its success, is that **all European institutes** that operate digisondes capable of transmitting the sounding results in real time **participate in the consortium of the project**. The geographical distribution of the five digisondes (see figure to the left) provides almost full coverage of the upper atmosphere over Europe.

The expected results from the implementation of the DIAS project are:

- Homogenization of information and harmonization of different procedures and policies for data access existing in different institutes, with the operation of a unique server in the European region.
- Production of value-added products that will cover the needs of operational applications of the private sector.
- Definition of a common marketing policy that will substitute the different policies applied by each organization.
- Expansion of the particular European market through the supply of new products and services.

In the context of DIAS, software development will include modules for file transformation from one data format to another, modules for data integration to obtain a European-level coverage from more local information, modules for data-product generation based on post-processing of observations, and modules for answering user requests for specific products and services. For portability, all software development will be in **Java** and associate technologies. With respect to data formats, DIAS will deal with all data formats used by the participating institutes to store data, and establish one of them or a combination of them as the standard for its internal storage and for communication with its own users. Data transfer will be over the Web, with information bundled into **HTML** or **XML** pages when sent to users, or simply as byte-streams when sent between systems. **HTTP** will be the protocol for most transfers, while **SMS** or **WAP** will be used for transfers of alert or other messages to mobile users. The overall server will be based on one of the widely available web servers (most likely, apache) and the metadata will be stored in one relational database system.

3. Workplan

3.1 Introduction and general description

In order to achieve the objectives of the project, its workplan must include five different groups of activities:

- Financial and technical project management
- Design and development of the digital server
- Assessment of the users needs for competitive added value products
- Conception, development, production and integration of new added value information products that met the market needs
- Promotion and commercial exploitation of DIAS in order to ensure the practical viability of the project beyond the phases of the work sponsored by EU.

For that reason, we have divided the total project effort in four different management, research, technological, and dissemination activities, distributed over six different workpackages. The main objectives and expected results of each type of activity are the following:
Management activities: These activities must cover the financial, administrative and technical management, the assessment of progress and evaluation of results, the contacts with the European Commission officers, and the creation of an effective communication network between the participants.
Technological activities: These activities must cover the determination of the state of the art in this area, and all required actions for the physical development of the digital server (information transformers and generators, information integrator, etc.), the production of the new added value products, and the development of the required information networks for the effective operation of the server.
Commercial exploitation activities: These activities must cover the determination of the market needs for DIAS products, the development of a clear pricing policy and data accessibility, the determination of the business basis to ensure the financial viability of the project beyond the phases of the work sponsored by EU and the building of the DIAS network of users that will provide the feedback needed to maintain high quality and up to date services and will act towards the expansion of the European relevant market.
Dissemination activities: These activities must cover the effective distribution of the information to new groups of users with the release of high quality informative material, the development of a web demonstrator, the publication of articles and the organization of a final conference.

In addition, these activities would lead to the creation of the main deliverables of DIAS, which will be:

- A pan-European digital data collection on the state of the upper atmosphere
- The digital server in operation
- New competitive added value products and services
- A network between the data providers and the most important users
- A business plan to make available the DIAS products and services to the worldwide market

The total project effort was divided into several workpackages that include all the activities mentioned and follow the natural life cycle of a project. We give a workpackage overview in the next section.

3.2 Workpackage Overview

The total project effort is divided into six workpackages, each one consisting of several tasks. The workpackages have been defined in dependence on the specific approaches, the competencies required, the persons involved, and with the intention to define clear responsibilities. Due to the specific nature of the project all participants will co-operate in the completion of the work, with one of them taking the leading role and being responsible to carry out most of the work in each work package. The lead contractor in each workpackage is indicated below:

WP1 - Project Management, Assessment and Evaluation: NOA (P1)
WP2 - State of the Art: IRF (P5)
WP3 - Content Generation: RAL (P3)
WP4 - Infrastructure and Technology: UOA (P2)
WP5 - Commercial Exploitation of DIAS products: 01P (P8)
WP6 - Awareness, Dissemination and DIAS management structure: INGV (P4)

Workpackage Overview

Work-package No	Workpackage title	Lead contractor No	Person-months	Person-months of AC partners permanent staff	Start month	End month	Deliv-erable No
WP1	Project management, assessment and evaluation	NOA	39	6	0	24	D1.1-D1.11
WP2	State of the art	IRF	19	7	2	9	D2.1
WP3	Content generation	CCLRC	74	10	4	15	D3.1-D3.2
WP4	Infrastructure and technology	UOA	80	7	1	21	D4.1-D4.2
WP5	Commercial exploitation of DIAS products	01P	48	3	2	22	D5.1-D5.5
WP6	Awareness, dissemination and DIAS management structure	INGV	49	11	1	24	D6.1-D6.8
	TOTAL		309	44			

WP1: Project Management, Assessment and Evaluation

This workpackage has as objective the administrative, financial and technical management of the project, the assessment of progress and the evaluation of results. The processes that will be used to manage the development of the DIAS project will ensure the delivery of products on time, on budget and at the required quality level. Control processes are used to encourage adherence to agreed plans and provide timely feedback of project issues or deviations from the plan. The workpackage is divided into three tasks: The Financial Management, the Technical Management and the Assessment and Evaluation.

The financial management will be held by P1 (NOA) which will be the lead contractor of this Workpackage. The administrative department of NOA will take care of the financial management of the project (collecting cost statements, and distributing payments made by the European Commission). NOA will co-ordinate production of progress reports and will act as the interface for all general communication from the project to the EC and vice versa. WP leaders are responsible for the financial management of their part of the project, in collaboration with their Administrative Departments.

For the most effective technical management, assessment and evaluation of DIAS, a **Steering Committee** (SC) will be established having as main responsibility to supervise the functioning of DIAS. The SC will ensure that the Project has well-articulated objectives, the achievement of which is capable of being measured and will monitor the progress of the Project in meeting those objectives. The SC is composed of one representative of each partner.
The Technical Management is composed of a number of tasks and milestones:

- Steering committee establishment and kick-off meeting (Milestone)
- Staff in place (Milestone)
- Elaboration of detailed project plan
- Creation of Inter-DIAS communication WEB
- Steering committee meetings (Rolled-up Milestone)

The Assessment and Evaluation of DIAS has the following major task:

- Biannual assessment and evaluation reports (Rolled-up Milestone)

It is planned that five biannual meetings of the SC will be held during the course of the project. Of particular important is the SC kick-off meeting held to formally start the project. During this meeting the detailed plan will be discussed and the project staff will be appointed.
For managing the administrative issues, and for an optimal communication flow in the project, a Web Site will be installed in the first three months of the project, which will be maintained and updated until the Contract expired date. Said site will provide project overviews and highlights; up-to date information on intermediate and final project results, including public reports and synthesis reports drawn from selected confidential material; project events, including e.g. user group meetings, conferences and workshops; contact details, etc. The Website will be crossed linked from/to other relevant EC and EC sponsored sites.
Within three months from the start of the project, a MS-Power Point or HTML Presentation will developed, detailing all the key features of the project. A final, augmented version of this Presentation will be transmitted to the Commission with the project's final report.
The workpackage leaders will submit their progress reports to the project manager before the Steering Committee meetings. The project manager will review on progress during the SC meetings, aiming to monitor the progress against the main deliverables and to raise any issues discovered. The assessment reports, adopted by the SC will be consolidated in the biannual and final reports. Based on the workpackage leaders reports, the project manager will prepare the biannual reports and the Final report on progress and deliverables, which will be approved by the steering committee and submitted to the European Commission Officers. WP leaders are responsible for the progress within their workpackages and they are responsible for the timely provisioning of the relevant deliverables.
During the course of the project, quality measurements will be defined to test DIAS products against the view of user needs, to evaluate the DIAS prototype and the digital server and to monitor the impact of the awareness and dissemination activities to the users community.

WP2: State of the Art

The major goal of WP2 is to study and analyse the operation of similar systems developed worldwide, mainly in US and Australia and to record the added value products that are delivered in the commercial, industrial and scientific community of users.
This workpackage is divided in the following tasks and milestones:

- Collection of the information
- Compilation of the information
- State of the art report (Milestone)

The collection of information will include an overview of the organizations involved in the generation of digital information for the Upper Atmosphere, of the techniques they are using to generate the digital content and to transmit the information to the users and of the products delivered in the scientific, commercial and industrial community. All DIAS partners have long-standing relations to academic institutions, science councils, research and development centres and private companies in many countries worldwide, ensuring access to all relevant information. Of special interest will be the analysis of the existing situation in Australia and in United States, where operational systems for nowcasting and forecasting the state of the upper atmosphere already exist.

Currently the main categories of products released by similar servers operated in US, Australia and Japan are:
- archived values in ASCII and graphical representation of the main ionospheric parameters
- ionospheric maps of specific geographic areas in hourly resolution based on long term models
- forecasts of ionospheric disturbances based on solar observations and geomagnetic predictions

To collect the information the consortium will draft a structured list of issues on which information is needed. Based on this list the working team of this package will collect the information, mainly through discussions and contacts with representatives of major organisations and research institutes, as well as through literature and Internet search.

The tasks of this workpackage will be accomplished in a seven-months period, under the leadership of P5 (IRF), and the main deliverable will be a report on the state of the art in digital information availability and accessibility regarding the Upper Atmosphere, notifying possible ways to improve the existing infrastructures, containing also a list of organizations activated on that field. This report will be mainly used for the specification of the content planned to develop in WP3 and for the DIAS prototype development in WP4.

WP3: Content Generation

The main objective of this workpackage is the design and development of competitive added value products, best adapted to the needs of the world market than the existing, which will be based on the raw digital ionospheric data provided by all operating European digisondes that belong to institutes participating in the DIAS consortium.

This workpackage is divided into the following tasks and milestones:

- Specification of added value products
- Report on the specification of added value products (Milestone)
- Content generation (elaboration of required methods and codes for the production of new added value products)

In the frames of this workpackage the digital content as well as the required methods and codes for the production of competitive added value products will be fully specified, taking as input (a) the state of the art report, analysing the operation and the products delivered by systems similar to DIAS operated

worldwide and (b) the user needs assessment report, defining the types of data and added value products of maximum value to users, and the most preferable transmission procedures.

Some indicative categories of added value products that will be released are:

- Real-time observations (ionograms, ionospheric parameters which indicate the structure of the ionosphere and the propagation characteristics) produced as a result of the automatic scaling at five digisondes over Europe.
- Trans-ionospheric propagation data in real-time, based on the calculated total electron content (TEC) of the ionosphere deduced from the electron density profiles measured by the five digisondes over Europe.
- Real-time ionospheric maps over Europe based on existing ionospheric models updated in real-time with ionospheric data from the five digisondes
- Real-time maps of trans-ionospheric characteristics over Europe based on existing ionospheric models, updated in real-time with TEC calculations from the five digisondes
- Alerts and warnings on the effects of upper atmosphere disturbances in earth-space communications, navigation systems and HF radio communications.

The whole workpackage will have a duration of 11 months and its activities will be coordinated by CCLRC (RAL) who will undertaken the leadership.

WP4: Infrastructure and Technology

The main objective of this workpackage is the development of the DIgital upper Atmosphere Server, which will provide the required functionality on the required content. DIAS will be based on a number of distributed servers that will provide the raw data, for the generation and distribution of added value products in real-time and for the management of DIAS User-Layer. The overall system will be based on an open architecture able to integrate in the future any new digital data collection that will be created by the operation of any new digisonde in Europe.

This workpackage is divided into the following tasks and milestones:

- Study of the existing infrastructure in the participating institutes
- Technical specifications of the digital server
- Development of the initial software prototype
- Testing of the prototype performance
- Development of the final digital server
- Start of the digital server operation (Milestone)

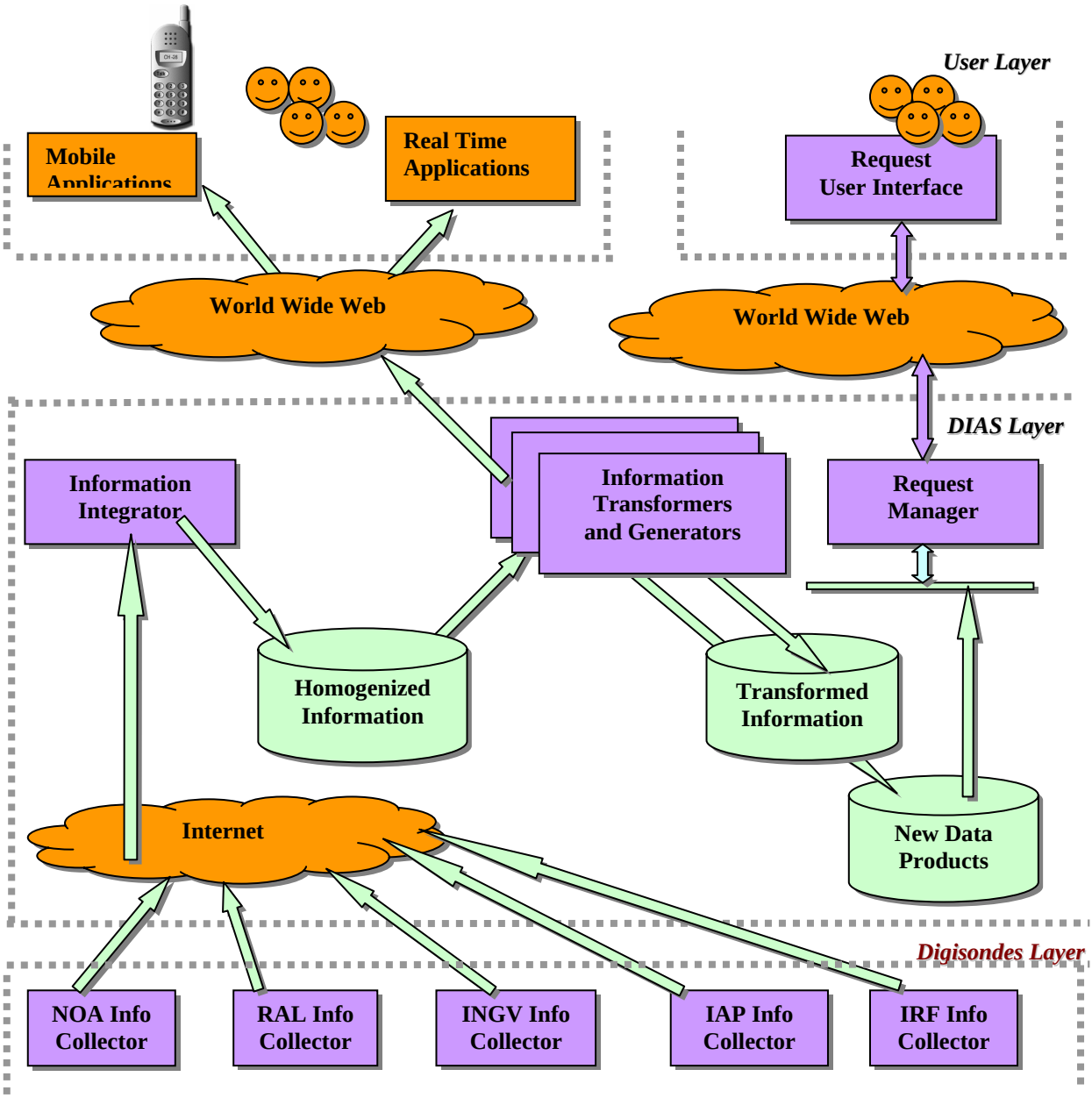
The first task will include a study of the existing infrastructures in the participating institutes and the processes and methodologies established in each of them for monitoring the upper atmosphere, processing and archiving the collected data. Based on this, the final architecture of the DIAS software will be defined. This will be followed by a prototype development of the system according to the architecture established. Upon its release, the prototype will be evaluated by the contributing institutes and a select set of users with respect to its effectiveness and performance. Concerning effectiveness, the main issue will be to ensure that the desired functionality and the products outlined in the user needs assessment report are met by the system. Concerning performance, the main issue will be to ensure that users obtain the information they want in a timely fashion, even when the DIAS server will be under reasonable load. Finally, the last task will be to modify the prototype software based on the findings of the system's evaluation and produce the final, robust version, which will be released to the general public.

The architecture envisioned for the DIAS system is shown in the figure in the next page. In that figure, orange are entities that exist independent of DIAS. Dark blue boxes are software pieces that will be developed as part of DIAS. Light blue disks represent information that will be collected or formed as part of DIAS. Finally, dark blue arrows indicate data flow that involves querying (whether initiated by a user or by a software module) and answering, while light blue arrows indicate data flow that is produced automatically, i.e., it results from data propagation that is triggered without an explicit request at the time.

In the figure in the next page, we identify three main system layers:

- *Digisondes layer*: At the bottom are the five European Digisondes that collect the original information and are partners in the project. They will continue to operate in exactly the same way, independently of each other and of the existence of DIAS, collecting their data and supporting their local users autonomously. We believe that maintaining the full autonomy of the information providers and their full control over the data that they collect is crucial in any business plan of the sort we are constructing, hence we are taking it into account in our architectural plan right from the beginning.
  The only new thing that will be brought to this layer to support the DIAS functionality is an information collector, a software module that will be installed in each Digisonde site to grab all pertinent data collected there and send it up to the next layer of the system, the central DIAS server.
- *DIAS layer*: This is the heart of DIAS, where the data collected from each Digisonde is brought together, homogenized, and then further processed appropriately by software modules that will be created within the DIAS effort. Hence, new electronic data products will be generated whose novelty will be with respect to at least one of the following important characteristic dimensions:
  1. Geographic region they cover, i.e., they will cover the entire region of Europe;
  2. Parameters they contain, e.g., scaled observations;
  3. Data format in which the data is available, e.g., appropriate for e-mail or mobile phone.

  For some of these new data products, in addition to storing them, the software modules generating them will also propagate them upwards directly to sites or individuals that expect continuous propagation of updates to this data. These updates could be full-fledged, involving entire files with relevant data, or could be small messages to a user's mobile phone or electronic mailbox as alerts of interesting observations.
  In addition to the data manipulation software modules and the resulting information products, the DIAS layer will also include a request server, which will process user requests arriving over the web, identifying the data products requested, and sending it back to the requestor at the higher layer.
  The DIAS data products will be stored in files in the appropriate formats, as determined by the needs of the users in WP3. The necessary metadata to support the entire operation will be stored in a relational database management system.


User Layer
Mobile Applications
Real Time Applications
Request User Interface
World Wide Web
World Wide Web
DIAS Layer
Information Integrator
Information Transformers and Generators
Request Manager
Homogenized Information
Transformed Information
New Data Products
Internet
Digisondes Layer
NOA Info Collector
RAL Info Collector
INGV Info Collector
IAP Info Collector
IRF Info Collector

- *User Layer*: At the top layer are the users of DIAS, ranging from individuals to institutions. The User Layer will collect the output from the DIAS Layer and will be in charge for the presentation of such a data. In order to obtain an efficient presentation, a tool with the following features will be used:

  Functional description

  It will be used a framework for three-tiers architecture development to realize:
  - front-end based on HTML, XML and JavaScript code,
  - application objects accessing data through JDBC,
  - native drivers and proprietary API,
  - management of a back-end based on DBMS driver, XML documents, test files or legacy applications

  Application areas of the product

  Web-based application development (design, integrations, vertical implementations), easy HTML interface implementation for data presentation and manipulation.

  Technology and OS compatibility

  It will be developed completely with JAVA (J2EE) technology, then platform independent. In order to automize some handling on front end, JAVA SCRIPT extensions will be provided.

  Typical kind of presentation will be: maps, data matrix, messages, etc.

  The peripherals the users will be able to receive the data with are:
  - Workstations, for offices and stables sites;
  - Portables PC (laptop, tablet PC…), for semi-mobile sites;
  - Wireless Palm Top (PDA, smartphones…), for field applications;
  - Cellular phones, just for receiving warning messages.

  The first three equipments will be able to receive and compute a more complete set and kind of informations, the last one will receive only short messages (SMS, MMS).

  A pricelist for the different kind of services and an user profile data base will be defined, based on :
  - kind of receiving equipment,
  - output format required
  - request to be or not interactive,
  - etc.

The entire software will be developed in Java, for portability. P2 (UOA) will have the scientific responsibility for this workpackage and will work in close collaboration with the working team of WP4. The duration of the whole workpackage will be 20 months.

WP5: Commercial exploitation of DIAS products

The task of this workpackage is to study and define the users needs and the policies of re-using the DIAS products by private players (pricing policy and data accessibility) in order to achieve a stronger impact on the market and to ensure the practical viability of the project beyond the phases of the work sponsored by EU.

This workpackage is divided into the following tasks and milestones:
- Cartography of the market
- Database of potential users (Milestone)
- Creation of a questionnaire and submission to potential users
- Compilation and analysis of the selected information
- User needs assessment report (Milestone)
- Definition of policies for effective exploitation of digital ionospheric data
- Report on the policies for effective exploitation
- Creation of a detailed business plan for the exploitation of services after the end of the project
- Business plan report

Recognising that DIAS will be built upon a great deal of prior research and development work, it is still essential that a clear view of user needs from the private sector, be articulated.
First, all possible private players from industrial organisations, research laboratories, and commercial companies will be identified and recorded, creating a database of potential users.
Secondly, a web-based questionnaire, based on a list of issues to be addressed, will be prepared. Also part of this information will be extracted through contacts with representatives of large organizations and public sector enterprises.
The third task concerns with the compilation and analysis of the selected information. The information extracted includes the type of data and products required from each group of users (raw data, maps, alerts, etc) the optimum time resolution of obtaining the requested information, and the optimum method of receiving the information in static or mobile platforms (Web, WAP, SMS, e-mail, PDA wireless etc.). The output of this work will be a DIAS user requirements report.
As a fourth task the policies needed for the effective exploitation of digital ionospheric data will be defined and a report will be released.
The last task of this WP concerns the development of the final business plan for the exploitation of services after the end of the project, trying to define the most adequate policy in to ensure the financial viability of DIAS after the end of the two-years project.
01P will be the lead contractor of this workpackage, and the total duration will be 20 months.

WP6: Awareness, dissemination and DIAS management structure

The task of this workpackage is (a) to disseminate the possibilities offered by the DIAS server, to inform the users community on the new added value products and other deliverables aiming to the widening of users market in the industrial, commercial and scientific community (b) to define the final commercial management structure of DIAS system.
This workpackage is divided into the following tasks and milestones:

- Preliminary study of an Agora type DIAS management structure
- DIAS brochure editing and circulation to potential users community
- Establishment of potential users network – Electronic Newsletter infrastructure
- List of network members (Milestone)
- Start of electronic newsletters to potential users (Milestone)
- Development of DIAS web demonstrator and multimedia CD
- Distribution of the multimedia CD to all potential users (Milestone)
- Publication of articles about DIAS – Presentations to International Conferences
- Study and definition of final commercial management structure of DIAS
- Final Conference (Milestone)

First, an Agora type DIAS management structure will be studied based on the management structure applied in similar systems operated worldwide. Agora is a Project (http://hosted.u. koln.ac.uk/agora/) developed in United Kingdom and coordinated by the University of East Anglia, UK. The objective of the project was to explore issues of distributed, mixed-media information management, based on an open standards-based platform. This objective included developing the scalability, enabling infrastructure and change-management tools for successful widespread dissemination and implementation throughout the community.
Secondly a DIAS brochure with informative material will be edited and circulated to potential users.
Third, based on the database of potential users that will be developed in the frames of WP5, a network of potential users will be established, based in its initial phase on a representative and weighted sample of typical users from the private sector. The continuous contact with users will provide high quality and up to date services, through continuous interaction. An electronic newsletter infrastructure will be installed, to distribute the electronic newsletters with information on new products release, announcements of forthcoming meetings and workshops and upgrades of the prototype. The fourth task concerns the development of DIAS web site of public access, demonstrating the system functionality and a multimedia CD will be released.
The fifth task concerns the publication of a series of papers in periodicals and articles in journals, presentations to International Conferences, and presentations in public media (radio, TV).
During the sixth task of this WP the final commercial management structure of DIAS will be studied and defined and a relative report will released.

Finally, a conference will be organized to bring together data providers and users from large organizations and companies.
INGV will be the lead contractor of this workpackage. The total duration of this workpackage will be 23 months.

3.3 Workpackage Description

Workpackage Description

Workpackage number:	WP1			**Start date:**	0 month		**End date:**	24 month	
Workpackage title:	Project management, assessment and evaluation								
Participants involved:	NOA	UOA	CCLRC	INGV	IRF	IAP	SRC-WARSAW	01P	BLS
Person-months per participant:	19	2	3	3	2	2	2	4	2
Person-months of the Permanent staff:	-	3	-	-	1	1	1	-	-

Objectives

To provide financial and technical management of the project; to ensure successful completion of deliverables and to define quality measurements.

Description of work

The package is stratified on four dimensions:

1. Technical development management across and within the workpackages
2. Project-wide reporting
3. Coordination between the different WPs and assuring coherence. Establishment of quality measurements
4. Financial and administrative management

All these topics will be taken over by the coordinator, although the nature of the work will require much collaboration and implicit progress control between the partners. The Project Coordinator is assisted in this task by the Steering Committee (SC), which is composed of one representative of each partner. The SC will monitor strategic issues of the project, including quality, changes in the project, and (when necessary) conflict resolution.
NOA will be the lead contractor of this Workpackage.

(Inter-) Dependencies, milestones and expected result

1.1 Financial management of the project
- 1.1.1 Cost statement for the first year
- 1.1.2 Cost statement for the second year

1.2 Technical management and assessment
- 1.2.1 Steering committee establishment – Kick off meeting (Milestone)
- 1.2.2 Staff in place (Milestone)
- 1.2.3 Elaboration of Detailed project plan
- 1.2.4 Development of DIAS WEB site
- 1.2.5 Assessment and Evaluation
- 1.2.6 First assessment and evaluation report
- 1.2.7 First steering committee meeting (Milestone)
- 1.2.8 First periodic progress report
- 1.2.9 Second assessment and evaluation report
- 1.2.10 Second steering committee meeting (Milestone)
- 1.2.11 Second periodic progress report
- 1.2.12 First annual public report
- 1.2.13 Third assessment and evaluation report
- 1.2.14 Third steering committee meeting (Milestone)
- 1.2.15 Third periodic progress report
- 1.2.16 Forth assessment and evaluation report
- 1.2.17 Forth steering committee meeting (Milestone)
- 1.2.18 Forth periodic progress report
- 1.2.19 Second annual public report
- 1.2.20 Final report

Deliverables
D1.1 DIAS Web Site (T3)
D1.2 Electronic presentation of the project PPT or HTML (T3)
D1.3 First periodic progress report (T6)
D1.4 Second periodic progress report (T12)
D1.5 First annual public report (T12)
D1.6 Cost statement for the first year (T12)
D1.7 Third periodic progress report (T18)
D1.8 Forth periodic progress report (T18)
D1.9 Second annual public report (T24)
D1.10 Cost statement for the second year (T24)
D1.11 Final report (T24)

Workpackage Description

Workpackage number:	WP2			**Start date:**		2	**End date:**		9
Workpackage title:	State of the Art								
Participants involved:	NOA	UOA	CCLRC	INGV	IRF	IAP	SRC-WARSAW	01P	BLS
Person-months per participant:	2	1	2	1	9	2	1	-	1
Person-months of the Permanent staff:	-	2	-	-	4	1	-	-	-

Objectives

The major goal of WP2 is to study and analyse the operation of similar systems developed worldwide, mainly in US and Australia and to record the added value products that are delivered in the commercial, industrial and scientific community of users.

Description of work

The collection of information will include an overview of the organizations involved in the generation of digital information for the Upper Atmosphere, of the techniques they are using to generate the digital content and to transmit the information to the users and of the products delivered in the scientific, commercial and industrial community. All DIAS partners have long-standing relations to academic institutions, science councils, research and development centres and private companies in many countries worldwide, ensuring access to all relevant information. Of special interest will be the analysis of the existing situation in Australia and in United States, where operational systems for nowcasting and forecasting the state of the upper atmosphere already exist.

Currently the main categories of products released by similar servers operated in US, Australia and Japan are:

- archived values in ASCII and graphical representation of the main ionospheric parameters
- ionospheric maps of specific geographic areas in hourly resolution based on long term models
- forecasts of ionospheric disturbances based on solar observations and geomagnetic predictions

To collect the information the consortium will draft a structured list of issues on which information is needed. Based on that list the working team of this package will collect the information, mainly through discussions and contacts with representatives of major organisations and research institutes, as well as through literature and Internet search. The tasks of this workpackage will be accomplished in seven months, under the leadership of IRF, and the main deliverable will be a report on the state of the art in digital information availability and accessibility regarding the Upper Atmosphere, notifying possible ways to improve the existing infrastructures, containing also a list of organizations activated on that field. This report will be mainly used for the specification of the content planned to develop in WP3 and for the DIAS prototype development in WP4.

(Inter-) Dependencies, milestones and expected result

2.1 Collection of the information
2.2 Compilation and analysis of the information
2.3 State of the art report (Milestone) (2.1, 2.2)

Deliverables

D2.1 State of the art report (T9)

Workpackage Description

Workpackage number:	WP3			**Start date:**		4	**End date:**		15
Workpackage title:	Content Generation								
Participants involved:	NOA	UOA	CCLRC	INGV	IRF	IAP	SRC-WARSAW	01P	BLS
Person-months per participant:	17	3	28	8	5	8	5	-	-
Person-months of the Permanent staff:	-	-	-	-	2	5	3	-	-

Objectives

The main objective of this workpackage is the design and development of competitive added value products, best adapted to the needs of the world market than the existing, which will be based on the raw digital ionospheric data provided by all operating European digisondes that belong to institutes participating in the DIAS consortium.

Description of work

In the frames of this workpackage the digital content as well as the required methods and codes for the production of competitive added value products will be fully specified, taking as input (a) the state of the art report, analysing the operation and the products delivered by systems similar to DIAS operated worldwide and (b) the user needs assessment report, defining the types of data and added value products of maximum value to users, and the most preferable transmission procedures.

Some indicative categories of added value products that will be released are:

- Radio wave propagation characteristics in real-time
- Trans-ionospheric propagation data in real-time
- Real-time ionospheric maps over Europe
- Real-time maps over Europe for various trans-ionospheric parameters
- Alerts and warnings on forthcoming upper atmosphere disturbances

The whole workpackage will have a 11-months duration and its activities will be coordinated by CCLRC who will undertake the leadership.

(Inter-) Dependencies, milestones and expected result

3.1 Content Specification
3.2 Content specification report (Milestone) (2.3)
3.3 Content Generation

Deliverables

D3.1 Report on the specification of added value products (T12)
D3.2 Codes and algorithms for the production of competitive added value products (T15)

Workpackage Description

Workpackage number:	WP4			**Start date:**	1		**End date:**	21	
Workpackage title:	Infrastructure and Technology								
Participants involved:	NOA	UOA	CCLRC	INGV	IRF	IAP	SRC-WARSAW	01P	BLS
Person-months per participant:	11	37	5	4	3	7	3	-	10
Person-months of the Permanent staff:	-	6	-	-	1	-	-	-	-

Objectives

This workpackage has as a main objective the development of DIAS system, based on a number of distributed servers that will provide the raw data for the state of the upper atmosphere over Europe, and will generate and distribute added value products in real-time.

Description of work

The first task will concern the study of the existing infrastructures in the participating institutes and the processes and methodologies established in each of them for monitoring the upper atmosphere, processing and archiving the collected data.
Based on this, and on the state of the art report, the final architecture of the DIAS software will be defined. This will be followed by the development of the system prototype, according to the architecture established. Upon its release, the prototype will be evaluated by the contributing institutes and a select set of users with respect to its effectiveness and performance. Concerning effectiveness, the main issue will be to ensure that the desired functionality and the added-value products outlined in the results of User Needs Assessment are met by the system. Concerning performance, the main issue will be to ensure that users obtain the information they want in a timely fashion, even when the DIAS server will be under reasonable load.
Finally, the last task will be to modify the prototype software based on the findings of the system's evaluation and produce the final, robust version, which will be released to the subscribed users.
UOA will have the scientific responsibility for this workpackage and the work will be accomplished in close collaboration with the working team of WP4.

(Inter-) Dependencies, milestones and expected result

4.1 Study of the existing infrastructure in the participating institutes
4.2 Specifications of the digital server
4.3 Prototype development (4.1)
4.4 Testing of the prototype performance (4.3)
4.5 Development of the digital server
4.6 Start of the digital server operation (Milestone) (4.5)

Deliverables

D4.1. Server prototype (T12)
D4.2. Final digital upper atmosphere server (T21)

Workpackage Description

Workpackage number:	WP5			**Start date:**		2	**End date:**		22
Workpackage title:	Commercial exploitation of DIAS products								
Participants involved:	NOA	UOA	CCLRC	INGV	IRF	IAP	SRC-WARSAW	01P	BLS
Person-months per participant:	3	1	2	2	2	2	5	29	2
Person-months of the Permanent staff:	-	-	-	-	-	-	3	-	-

Objectives

The task of this workpackage is to study the specific needs of the market that are not covered by the existing ionospheric products, to define the policies for the successful promotion of DIAS products, and to propose the action that ensure the practical viability of the project beyond the phases of the work sponsored by EU.

Description of work

Recognising that DIAS will be built upon a great deal of prior research and development work, it is still essential that a clear view of user needs from the private sector, be articulated. First, all possible private players from industrial organisations, research laboratories, and commercial companies will be identified and recorded, creating a database of potential users. Secondly, a web-based questionnaire, based on a list of issues to be addressed, will be prepared. Also part of this information will be extracted through contacts with representatives of large organizations and public sector enterprises. The third task concerns with the compilation and analysis of the selected information. The information extracted includes the type of data and products required from each group of users (raw data, maps, alerts, etc) the optimum time resolution of obtaining the requested information, and the optimum method of receiving the information in static or mobile platforms (Web, WAP, SMS, e-mail, PDA wireless etc.). The output of this work will be a DIAS user requirements report.
As a fourth task the policies needed for the effective exploitation of digital ionospheric data will be defined and a report will be released. The last task of this WP concerns the development of the final business plan for the exploitation of services after the end of the project, trying to define the most adequate policy in to ensure the financial viability of DIAS after the end of the two-years project.
01P will be the lead contractor of this workpackage, and the total duration will be 20 months.

(Inter-) Dependencies, milestones and expected result

5.1 Cartography of the market
5.2 Database of potential users (Milestone)
5.3 Creation of a questionnaire and submission to potential users
5.4 Compilation and analysis of the selected information (5.2)
5.5 User needs assessment report (5.4)
5.6 Definition of policies for effective exploitation of DIAS (5.5)
5.7 Report on policies for effective exploitation (5.5)
5.8 Business plan for the exploitation of services after the end of the project (5.5)
5.9 Business plan report

Deliverables

D5.1 Database of potential users (T7)
D5.2 Questionnaire to potential users (T10)
D5.3 User needs assessment report (T13)
D5.4 Report on the policies for effective exploitation of digital ionospheric data (T20)
D5.5 Report on the business plan for the exploitation of services after the end of the project (T22)

Workpackage Description

Workpackage number:	WP6			**Start date:**	1		**End date:**	24	
Workpackage title:	Awareness, dissemination and DIAS management structure								
Participants involved:	NOA	UOA	CCLRC	INGV	IRF	IAP	SRC-WARSAW	01P	BLS
Person-months per participant:	8	1	1	19	1	1	1	13	4
Person-months of the Permanent staff:	-	3	-	-	2	3	3	-	-

Objectives

The task of this workpackage is (a) to disseminate the possibilities offered by the DIAS server, to inform the users community on the new added value products and other deliverables aiming to the widening of users market in the industrial, commercial and scientific community (b) to define the management structure of DIAS system.

Description of work

First, an Agora type DIAS management structure will be studied based on the management structure applied in similar systems operated worldwide. Secondly a DIAS brochure with informative material will be edited and circulated to potential users. As a third task, a network of potential users will be established, based in its initial phase on a representative and weighted sample of typical users from the private sector. The continuous contact with users will provide high quality and up to date services, through continuous interaction. An electronic newsletter infrastructure will be installed, to distribute the electronic newsletters with information on new products release, announcements of forthcoming meetings and workshops and upgrades of the prototype. The fourth task concerns the development of DIAS web site of public access, demonstrating the system functionality and a multimedia CD will be released. The fifth task concerns the publication of a series of papers in periodicals and articles in journals and presentations to International Conferences.
During the sixth task of this WP the final commercial management structure of DIAS will be studied and defined and a relative report will released. Finally, a conference will be organized to bring together data providers and users from large organizations and companies. INGV will be the lead contractor of this workpackage. The total duration of this workpackage will be 23 months.

(Inter-) Dependencies, milestones and expected result

6.1 Preliminary study of an Agora type DIAS management structure
6.2 DIAS brochure editing and circulation to potential users community
6.3 Establishment of potential users network (5.2)
6.4 List of network members (Milestone) (6.3)
6.5 Electronic Newsletter infrastructure
6.6 Start of electronic newsletters to potential users (Milestone) (6.4, 6.5)
6.7 Development of DIAS web demonstrator and multimedia CD (4.3)
6.8 Distribution of the multimedia CD to all potential users (Milestone) (6.7)
6.9 Study and definition of final commercial management structure of DIAS (5.2, 6.1)
6.10 Final Conference (Milestone) (6.4, 6.9)
6.11 Publication of articles about DIAS – Presentations to International Conferences

Deliverables

D6.1 DIAS brochure (T6)
D6.2 List of network members (T12)
D6.3 Electronic newsletters (T12)
D6.4 DIAS Web demonstrator (T18)
D6.5 Multimedia CD (T18)
D6.6 Papers in periodicals and in newspapers (T23)
D6.7 Report on the final commercial management structure of DIAS (T24)
D6.8 Report on the final conference (T24)

3.4 Deliverables List

Deliverables List

Deliverable No	Deliverable title	Delivery date	Nature	Dissemination level
D1.1	DIAS Web Site	3	D	PU
D1.2	HTML (or PPT) DIAS presentation	3	D	PU
D1.3	First periodic progress report	6	R	PP
D6.1	DIAS brochure	6	D	PU
D5.1	Database of potential users	7	O	CO
D2.1	State of the art report	9	R	PP
D5.2	Questionnaire to potential users	10	O	PP
D3.1	Report on the specification of added value products	12	R	CO
D4.1	Server prototype	12	D	PU
D6.2	List of network members	12	O	PP
D6.3	Electronic newsletters	12	O	PU
D1.4	Second periodic progress report	12	R	PP
D1.5	First annual public report	12	R	PU
D1.6	First cost statement	12	-	-
D5.3	User needs assessment report	13	R	PP
D3.2	Codes and algorithms for the production of competitive added value products	15	D	CO
D6.4	DIAS Web demonstrator	18	D	PU
D6.5	Multimedia CD	18	D	PU
D1.7	Third periodic progress report	18	R	PP
D5.4	Report on the policies for effective exploitation of digital ionospheric data	20	R	PP
D4.2	Final digital upper atmosphere server	21	D	PP
D5.5	Report on the business plan for the exploitation of services after the end of the project	22	R	PP
D6.6	Papers in periodicals and in newspapers	23	O	PU

D6.7	Report on the final commercial management structure of DIAS	24	R	CO
D6.9	Report on the conference	24	R	PU
D1.8	Fourth periodic progress report	24	R	PP
D1.9	Second annual public report	24	R	PU
D1.11	Final report	24	R	PP
D1.10	Second cost statement	24	-	-

3.5 Project plan

						WP1	WP2	WP3	WP4	WP5	WP6
DIAS PROJECT PLANNING AND TIME TABLE						Project Management and Assessment	State of the Art	Content Generation	Network Infrastructure and Technology	Commercial Exploitation	Awareness and Dissemination - Management Structure
						NOA	**IRF**	**CCLRC**	**UOA**	**01P**	**INGV**
Task Type	**Date**	**WP**	**Description**	**WP Leader**	**Participants Involved**						
Task Type	**T1**	**WP**	**Description**	**WP Leader**	**Participants Involved**	**WP1**	**WP2**	**WP3**	**WP4**	**WP5**	**WP6**
Milestone		WP1	Steering Committee Establishment	NOA	IRF, CCLRC, UOA, 01P, INGV, IAP, BLS, SRC						
Milestone		WP1	Staff in Place	NOA	IRF, CCLRC, UOA, 01P, INGV, IAP, BLS, SRC						
Deliverable		WP1	Detailed Project Plan	NOA	IRF, CCLRC, UOA, 01P, INGV, IAP, BLS, SRC						
Task Type	**T2**	**WP**	**Description**	**WP Leader**	**Participants Involved**	**WP1**	**WP2**	**WP3**	**WP4**	**WP5**	**WP6**
Start of Task		WP2	State of the Art - Collection of the Information - START	IRF	IRF, CCLRC, UOA, INGV, IAP, BLS, SRC, NOA						
Start of Task		WP4	Study and Analysis of Existing Infrastructure - START	UOA	NOA,IRF, CCLRC, INGV, IAP, BLS, SRC						

Start of Task		WP6	Preliminary Study of an Agora Type Management Structure - START	INGV	NOA,UOA, IRF, CCLRC, IAP, SRC, 01P, BLS, SRC						
Task Type	**T3**	**WP**	**Description**	**WP Leader**	**Participants Involved**	**WP1**	**WP2**	**WP3**	**WP4**	**WP5**	**WP6**
Deliverable		WP1	MS-Power Point or HTML Presentation detailing all the key features of the project	NOA	IRF, CCLRC, UOA, 01P, INGV, IAP, BLS, SRC						
Start of Task		WP5	Cartography of the Market - START	01P	IRF, NOA, CCLRC, UOA, INGV, IAP, BLS, SRC						
Deliverable		WP1	WWW Site Of the Project	NOA	UOA						
Start of Task		WP6	Publication of Articles about DIAS-Presentations to International Conferences - START	INGV	NOA,UOA, IRF, CCLRC, IAP, SRC, 01P, BLS, SRC						
Task Type	**T4**	**WP**	**Description**	**WP Leader**	**Participants Involved**	**WP1**	**WP2**	**WP3**	**WP4**	**WP5**	**WP6**
Task Type	**T5**	**WP**	**Description**	**WP Leader**	**Participants Involved**	**WP1**	**WP2**	**WP3**	**WP4**	**WP5**	**WP6**

Start of Task		WP2	State of the Art - Compilation of the Information - START	IRF	IRF, CCLRC, UOA, INGV, IAP, BLS, SRC							
Start of Task		WP3	Content Specification - START	CCRLC	IRF, CCLRC, UOA, INGV, IAP, SRC							
End of Task		WP4	Study and Analysis of Existing Infrastructure - END	UOA	NOA,IRF, CCLRC, INGV, IAP, BLS, SRC							
Start of Task		WP4	Specifications of the Digital Server - START	UOA	NOA,IRF, CCLRC, INGV, IAP, BLS, SRC							
Start of Task		WP6	DIAS Brochure editing and Circulation to Potential Users - START	INGV	NOA,UOA, IRF, CCLRC, IAP, SRC, 01P, BLS, SRC							
Task Type	**T6**	**WP**	**Description**	**WP Leader**	**Participants Involved**	**WP1**	**WP2**	**WP3**	**WP4**	**WP5**	**WP6**	
Start of Task		WP5	Creation of a Questionnaire and Submission to Potential Users - START	01P	IRF, NOA, CCLRC, UOA, INGV, IAP, BLS, SRC							
End of Task		WP2	State of the Art - Collection of the Information - END	IRF	IRF, CCLRC, UOA, INGV, IAP, BLS, SRC							
Meeting		WP1	Consortium Meeting - ROME	NOA	IRF, CCLRC, UOA, 01P, INGV, IAP, BLS, SRC							

Task Type	T7	WP	Description	WP Leader	Participants Involved	WP1	WP2	WP3	WP4	WP5	WP6
Deliverable		WP1	Periodic Progress Report	NOA	IRF, CCLRC, UOA, 01P, INGV, IAP, BLS, SRC						
Start of Task		WP4	Prototype Development - START	UOA	NOA,IRF, CCLRC, INGV, IAP, BLS, SRC						
End of Task		WP5	Cartography of the Market - END	01P	IRF, NOA, CCLRC, UOA, INGV, IAP, BLS, SRC						
Deliverable		WP5	DB of Potential Users	01P	IRF, NOA, CCLRC, UOA, INGV, IAP, BLS, SRC						
Task Type	T8	WP	Description	WP Leader	Participants Involved	WP1	WP2	WP3	WP4	WP5	WP6
End of Task		WP6	Preliminary Study of an Agora Type Management Structure - END	INGV	NOA,UOA, IRF, CCLRC, IAP, SRC, 01P, BLS, SRC						
End of Task		WP6	DIAS Brochure editing and Circulation to Potential Users - END	INGV	NOA,UOA, IRF, CCLRC, IAP, SRC, 01P, BLS, SRC						
Deliverable		WP6	DIAS Brochure	INGV	NOA,UOA, IRF, CCLRC, IAP, SRC, 01P, BLS, SRC						

Task Type	T9	WP	Description	WP Leader	Participants Involved	WP1	WP2	WP3	WP4	WP5	WP6
End of Task		WP2	State of the Art - Compilation of the Information - END	IRF	IRF, CCLRC, UOA, INGV, IAP, BLS, SRC						
Start of Task		WP3	Content Generation - START	CCRLC	IRF, CCLRC, UOA, INGV, IAP, SRC						
End of Task		WP4	Specifications of the Digital Server - END	UOA	NOA,IRF, CCLRC, INGV, IAP, BLS, SRC						
Start of Task		WP5	Compilation and Analysis of selected information for potential users - START	01P	IRF, NOA, CCLRC, UOA, INGV, IAP, BLS, SRC						
Start of Task		WP6	Establishment of Potential Users Network - START	INGV	NOA,UOA, IRF, CCLRC, IAP, SRC, 01P, BLS, SRC						
Start of Task		WP6	E-newsletters infrastructure - START	INGV	NOA,UOA, IRF, CCLRC, IAP, SRC, 01P, BLS, SRC						
Deliverable		WP2	State of the Art REPORT	IRF	IRF, CCLRC, UOA, INGV, IAP, BLS, SRC						
Task Type	T10	WP	Description	WP Leader	Participants Involved	WP1	WP2	WP3	WP4	WP5	WP6

End of Task		WP5	Creation of a Questionnaire and Submission to Potential Users - END	01P	IRF, NOA, CCLRC, UOA, INGV, IAP, BLS, SRC						
Deliverable		WP5	Questionnaire to Potential Users	01P	IRF, NOA, CCLRC, UOA, INGV, IAP, BLS, SRC						
Task Type	**T11**	**WP**	**Description**	**WP Leader**	**Participants Involved**	**WP1**	**WP2**	**WP3**	**WP4**	**WP5**	**WP6**
Task Type	**T12**	**WP**	**Description**	**WP Leader**	**Participants Involved**	**WP1**	**WP2**	**WP3**	**WP4**	**WP5**	**WP6**
End of Task		WP4	Prototype Development - END	UOA	NOA,IRF, CCLRC, INGV, IAP, BLS, SRC						
Deliverable		WP4	SERVER PROTOTYPE	UOA	NOA,IRF, CCLRC, INGV, IAP, BLS, SRC						
Start of Task		WP4	Testing of the Prototype Performance - START	UOA	NOA,IRF, CCLRC, INGV, IAP, BLS, SRC						
End of Task		WP3	Content Specification - END	CCRLC	IRF, CCLRC, UOA, INGV, IAP, SRC						
Deliverable		WP3	Content Specification REPORT	CCRLC	IRF, CCLRC, UOA, INGV, IAP, SRC						

End of Task		WP6	Establishment of Potential Users Network - END	INGV	NOA,UOA, IRF, CCLRC, IAP, SRC, 01P, BLS, SRC						
Deliverable - Milestone		WP6	List of Network Members	INGV	NOA,UOA, IRF, CCLRC, IAP, SRC, 01P, BLS, SRC						
End of Task		WP6	E-newsletter infrastructure - END	INGV	NOA,UOA, IRF, CCLRC, IAP, SRC, 01P, BLS, SRC						
Deliverable - Milestone		WP6	Electronic Newsletter Kick-off	INGV	NOA,UOA, IRF, CCLRC, IAP, SRC, 01P, BLS, SRC						
Meeting		WP1	Consortium Meeting - ATHENS	NOA	External Experts, Users, IRF, CCLRC, UOA, 01P, INGV, IAP, BLS, SRC						
Task Type	**T13**	**WP**	**Description**	**WP Leader**	**Participants Involved**	**WP1**	**WP2**	**WP3**	**WP4**	**WP5**	**WP6**
Deliverable		WP1	Cost Statement For the period April 2004-September 2004	NOA	IRF, CCLRC, UOA, 01P, INGV, IAP, BLS, SRC						
Deliverable		WP1	Periodic Progress Report	NOA	IRF, CCLRC, UOA, 01P, INGV, IAP, BLS, SRC						
Deliverable		WP1	Annual Public Report	NOA	IRF, CCLRC, UOA, 01P, INGV, IAP, BLS, SRC						

End of Task		WP5	Compilation and Analysis of selected information for potential users - END	01P	IRF, NOA, CCLRC, UOA, INGV, IAP, BLS, SRC						
Deliverable		WP5	User needs Assesment Report	01P	IRF, NOA, CCLRC, UOA, INGV, IAP, BLS, SRC						
Start of Task		WP6	Development of DIAS WEB demonstrator and Multimedia CD - START	INGV	NOA,UOA, IRF, CCLRC, IAP, SRC, 01P, BLS, SRC						
Task Type	**T14**	**WP**	**Description**	**WP Leader**	**Participants Involved**	**WP1**	**WP2**	**WP3**	**WP4**	**WP5**	**WP6**
Start of Task		WP5	Definition of Policies for Effective Exploitation of DIAS - START	01P	IRF, NOA, CCLRC, UOA, INGV, IAP, BLS, SRC						
Task Type	**T15**	**WP**	**Description**	**WP Leader**	**Participants Involved**	**WP1**	**WP2**	**WP3**	**WP4**	**WP5**	**WP6**
End of Task		WP4	Testing of the Prototype Performance - END	UOA	NOA,IRF, CCLRC, INGV, IAP, BLS, SRC						
End of Task		WP3	Content Generation - END	CCRLC	IRF, UOA, INGV, IAP, SRC, NOA						

Deliverable		WP3	Codes and Algorithmes for the production of Added Value Products	CCRLC	IRF, UOA, INGV, IAP, SRC, NOA						
Task Type	**T16**	**WP**	**Description**	**WP Leader**	**Participants Involved**	**WP1**	**WP2**	**WP3**	**WP4**	**WP5**	**WP6**
Start of Task		WP4	Development of the Digital Server - START	UOA	NOA,IRF, CCLRC, INGV, IAP, BLS, SRC						
Task Type	**T17**	**WP**	**Description**	**WP Leader**	**Participants Involved**	**WP1**	**WP2**	**WP3**	**WP4**	**WP5**	**WP6**
Start of Task		WP5	Business Plan for the Exploitation of Services after the end of the Project - START	01P	IRF, NOA, CCLRC, UOA, INGV, IAP, BLS, SRC						
Start of Task		WP6	Study and Definition of final commercial structure of DIAS - START	INGV	NOA,UOA, IRF, CCLRC, IAP, SRC, 01P, BLS, SRC						
Task Type	**T18**	**WP**	**Description**	**WP Leader**	**Participants Involved**	**WP1**	**WP2**	**WP3**	**WP4**	**WP5**	**WP6**
End of Task		WP6	Development of DIAS WEB demonstrator and Multimedia CD - END	INGV	NOA,UOA, IRF, CCLRC, IAP, SRC, 01P, BLS, SRC						

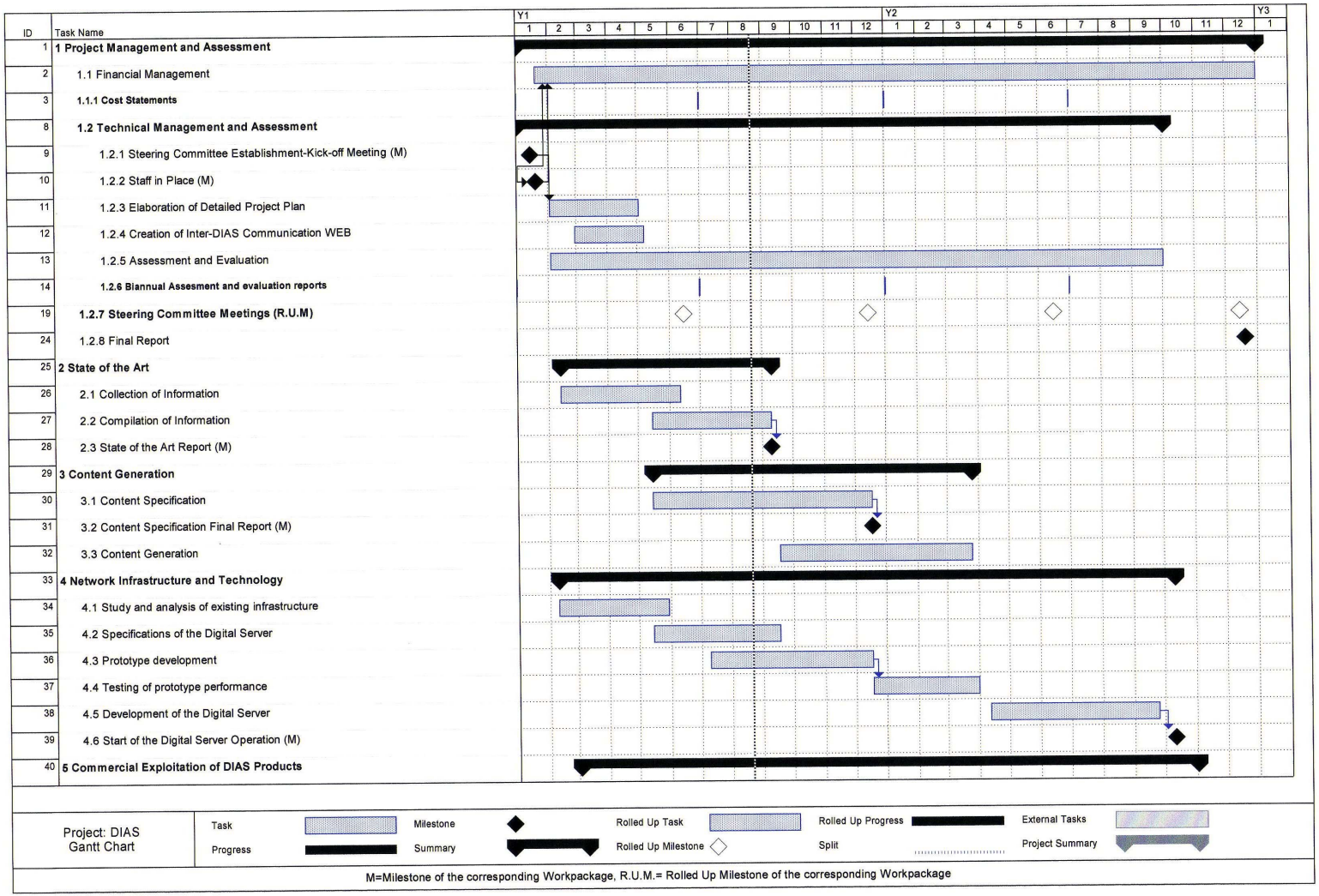
Deliverable		WP6	DIAS Multimedia CD	INGV	NOA,UOA, IRF, CCLRC, IAP, SRC, 01P, BLS, SRC						
Milestone		WP6	Distribution of DIAS Multimedia CD	INGV	NOA,UOA, IRF, CCLRC, IAP, SRC, 01P, BLS, SRC						
Meeting		WP1	Consortium Meeting - OXFORD	NOA	PO, IRF, CCLRC, UOA, 01P, INGV, IAP, BLS, SRC						
Task Type	**T19**	**WP**	**Description**	**WP Leader**	**Participants Involved**	**WP1**	**WP2**	**WP3**	**WP4**	**WP5**	**WP6**
Deliverable		WP1	Periodic Progress Report	NOA	IRF, CCLRC, UOA, 01P, INGV, IAP, BLS, SRC						
Task Type	**T20**	**WP**	**Description**	**WP Leader**	**Participants Involved**	**WP1**	**WP2**	**WP3**	**WP4**	**WP5**	**WP6**
End of Task		WP5	Definition of Policies for Effective Exploitation of DIAS - END	01P	IRF, NOA, CCLRC, UOA, INGV, IAP, BLS, SRC						
Deliverable		WP5	Report on the Policies for Effective Exploitation of DIAS	01P	IRF, NOA, CCLRC, UOA, INGV, IAP, BLS, SRC						
Task Type	**T21**	**WP**	**Description**	**WP Leader**	**Participants Involved**	**WP1**	**WP2**	**WP3**	**WP4**	**WP5**	**WP6**

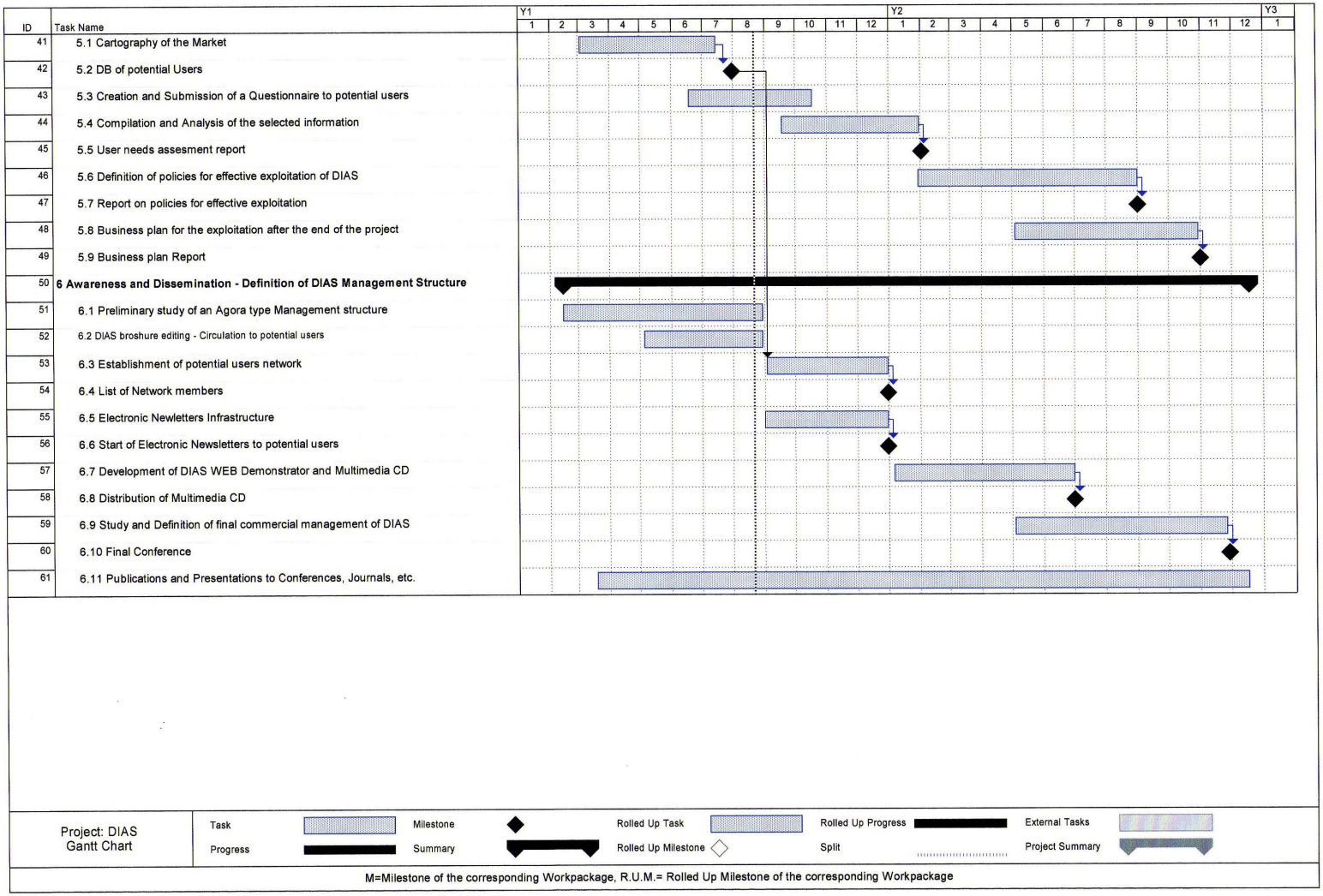
End of Task		WP4	Development of the Digital Server - END	UOA	NOA,IRF, CCLRC, INGV, IAP, BLS, SRC							
Deliverable		WP4	Final Digital Upper Atmosphere Server	UOA	NOA,IRF, CCLRC, INGV, IAP, BLS, SRC							
Task Type	**T22**	**WP**	**Description**	**WP Leader**	**Participants Involved**	**WP1**	**WP2**	**WP3**	**WP4**	**WP5**	**WP6**	
Milestone		WP4	Start of the Digital Upper Atmosphere Server Operation	UOA	NOA,IRF, CCLRC, INGV, IAP, BLS, SRC							
End of Task		WP5	Business Plan for the Exploitation of Services after the end of the Project - END	01P	IRF, NOA, CCLRC, UOA, INGV, IAP, BLS, SRC							
Deliverable		WP5	Business Plan Report	01P	IRF, NOA, CCLRC, UOA, INGV, IAP, BLS, SRC							
Task Type	**T23**	**WP**	**Description**	**WP Leader**	**Participants Involved**	**WP1**	**WP2**	**WP3**	**WP4**	**WP5**	**WP6**	
End of Task		WP6	Study and Definition of final commercial structure of DIAS - END	INGV	NOA,UOA, IRF, CCLRC, IAP, SRC, 01P, BLS, SRC							

Deliverable		WP6	Report on the final commercial structure of DIAS	INGV	NOA,UOA, IRF, CCLRC, IAP, SRC, 01P, BLS, SRC						
Task Type	**T24**	**WP**	**Description**	**WP Leader**	**Participants Involved**	**WP1**	**WP2**	**WP3**	**WP4**	**WP5**	**WP6**
End of Task		WP6	Publication of Articles about DIAS- Presentations to International Conferences - END	INGV	NOA,UOA, IRF, CCLRC, IAP, SRC, 01P, BLS, SRC						
Deliverable		WP6	FINAL CONFERENCE - REPORT ON THE CONFERENCE	INGV	NOA,UOA, IRF, CCLRC, IAP, SRC, 01P, BLS, SRC						
Meeting		WP1	Consortium Meeting - ATHENS	NOA	External Experts, Users, IRF, CCLRC, UOA, 01P, INGV, IAP, BLS, SRC						
Task Type	**T25**	**WP**	**Description**	**WP Leader**	**Participants Involved**	**WP1**	**WP2**	**WP3**	**WP4**	**WP5**	**WP6**
Deliverable		WP1	Cost Statement For the period April 2005- September 2005	NOA	IRF, CCLRC, UOA, 01P, INGV, IAP, BLS, SRC						

Deliverable		WP1	Periodic Progress Report	NOA	IRF, CCLRC, UOA, 01P, INGV, IAP, BLS, SRC						
Deliverable		WP1	Annual Public Report	NOA	IRF, CCLRC, UOA, 01P, INGV, IAP, BLS, SRC						
Task Type	**T26**	**WP**	**Description**	**WP Leader**	**Participants Involved**	**WP1**	**WP2**	**WP3**	**WP4**	**WP5**	**WP6**
Deliverable		WP1	FINAL REPORT	NOA	IRF, CCLRC, UOA, 01P, INGV, IAP, BLS, SRC						

3.6 Graphical presentation

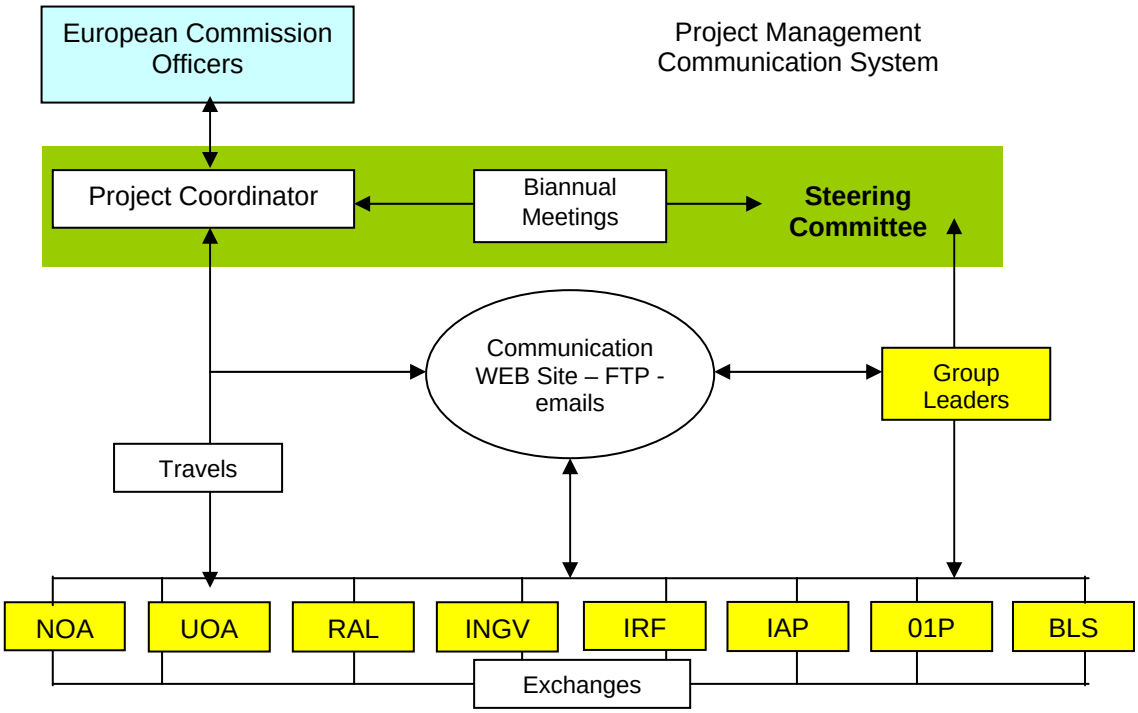



ID
Task Name
Y1
Y2
Y3
1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 1
41 5.1 Cartography of the Market
42 5.2 DB of potential Users
43 5.3 Creation and Submission of a Questionnaire to potential users
44 5.4 Compilation and Analysis of the selected information
45 5.5 User needs assesment report
46 5.6 Definition of policies for effective exploitation of DIAS
47 5.7 Report on policies for effective exploitation
48 5.8 Business plan for the exploitation after the end of the project
49 5.9 Business plan Report
50 6 Awareness and Dissemination - Definition of DIAS Management Structure
51 6.1 Preliminary study of an Agora type Management structure
52 6.2 DIAS broshure editing - Circulation to potential users
53 6.3 Establishment of potential users network
54 6.4 List of Network members
55 6.5 Electronic Newletters Infrastructure
56 6.6 Start of Electronic Newsletters to potential users
57 6.7 Development of DIAS WEB Demonstrator and Multimedia CD
58 6.8 Distribution of Multimedia CD
59 6.9 Study and Definition of final commercial management of DIAS
60 6.10 Final Conference
61 6.11 Publications and Presentations to Conferences, Journals, etc.
Project: DIAS Gantt Chart
Task
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Milestone
Rolled Up Progress
Split
External Tasks
Project Summary
M=Milestone of the corresponding Workpackage, R.U.M.= Rolled Up Milestone of the corresponding Workpackage

4. Project Management

DIAS project will follow a clearly defined project management structure together with a well-developed project plan. This can be accomplished by monitoring the progress, ensuring timely reporting to the Commission, and establishing a procedure for handling unforeseen events.

Management Structure and Communication Flow
At the start of the project we will ensure that all roles and responsibilities in the project management structure are defined and that people with appropriate skills are allocated to each function. The key point is that everyone involved must understand and accept their responsibilities, rather than assume that the co-ordinator or the Commission will handle all problems. Below is a diagram of the DIAS project management structure and the communication flow system:



Partner roles in the project
The DIAS Co-ordinator: The formal role of the Co-ordinator is to be the interface between the Commission and the partners in the consortium, especially concerning administrative matters and the coordination of the work performed by the partners. The Co-ordinator acts as the distribution point for passing cost statements, deliverable reports, progress reports, and requests for contract changes to the Project Officer at the Commission. It also distributes cost statement reports and review reports to the partners and, most importantly, transfers payments to them. Finally, the Co-ordinator reports on progress during the SC meetings, based on the workpackage leaders reports, and prepares the Annual and Final progress reports.
Project Steering Committee (one representative from each Partner): is the main forum through which the project is co-ordinated and controlled. The Committee participates in all meetings, e.g. the kick-off meeting, the mid-term assessment meeting, the final meeting.
Partner: is scientifically and economically responsible for carrying out specific parts/tasks of the project, responsible for preparing the deliverables that correspond to the workpackage for which the partner is responsible and for forwarding them to the Co-ordinator. Each workpackage has a distinct partner as its leader. The assignment of roles was the result of extended discussion between partners and is based on the scientific know-how, the existing infrastructure, the experience and the present activities of each partner in the European scientific community. Note that five of the nine the partners operate digisonde stations and are the only real-time data providers in the European Union.

Technical management

Meetings: The following meetings will be held:

Kick-off meeting: this meeting should be held to formally start the project. The kick-off will take place at the site of the Co-ordinator, no later than one month after the contract starting date. The main objective of the kick-off is to precisely define the tasks of each participant and the work schedule for the first 6 months. All aspects of how the project is to be run, what is expected of each partner, and what milestone goals are to be achieved should be discussed thoroughly.

6-months meeting: This meeting is important for checking the progress of the workpackage leaders' input, and for discussing with the DIAS partners whether or not they are satisfied. Any possible delays in carrying out the work, and ways and means of adjusting to them should be conveyed to the Project Officer at the Commission.

12-months meeting (mid-term report): A progress review will reveal any differences between the scientific results obtained and the requirements of the project work programme, leading to a decision concerning the continuation of the project in accordance with the work programme, or a reorientation of the project if it is necessary, and the procedures to be taken for managing future exploitation of results. The mid-term report should be sent to the Commission for approval within two months after the meeting and shall contain information on technical and scientific progress, compared to the milestones and evaluation of the work programme, samples of the products with measurable characteristics, the consumption of resources in man-months, the expenses compared with the forecast of the work programme, and industrial and exploitation perspectives.

18-months meeting: this meeting aims particularly at making sure that every partner has fulfilled their tasks and compiled their progress reports, including deliverables compared to forecasted milestones. The technology implementation plan is the main task that will be dealt with in this meeting together with several exploitation issues.

Final meeting: to prepare the final meeting, the Co-ordinator shall monitor the tasks of DIAS concerning validation of partners' results and tests in their own facilities. Furthermore it will make sure that the appropriate feedback is sent back to the partners. Finally, the Co-ordinator will obtain the technical and financial reports, compile, and consolidate them into the final report.

Progress reports: Progress reports should cover the progress of the work, resources expended and any deviations from the work plan. In addition to the project data, an update on the state-of the-art, and on exploitation of results to date is expected. Progress reports do not have to be extensive. The Co-ordinator will receive from each partner a quarterly progress report where deviations from the work programme are pointed out and corrective actions are indicated.

Financial management

Distribution of money: All payments by the Commission are made to the DIAS Co-ordinator, who is responsible for the immediate transfer of the money to the partners. At the commencement of the project, i.e. once the contract has been signed, an advance payment will be made.

Cost statement: Cost statements are the basis for interim payments by the Commission to the consortium. The submission of cost statements to the Commission is the Co-ordinator's responsibility. We have planned that the partners send their cost statements to the Co-ordinator every six months, which enables a better follow-up by the partners as well as by the Co-ordinator.

Quality assurance measures

Regarding quality assurance our intention is that all deliverables are tested against quality criteria to ensure the deliverable is what was required and satisfies the quality requirements of the project. The SC will be tracking the progress of the quality assurance activity throughout the project. The SC members, in each meeting, will give information about any issues, which have been identified.

Formative evaluation will track the project from day one and will:

- provide a user view on the initial objective setting and user requirements.
- draw users into the assessment of each stage of the project.
- ensure that DIAS server development is an iterative process, through staged development, which involves constant checking back on user requirements.
- invite user feedback through the dissemination process.

Conflict resolution

The SC will act as a court of arbitration to resolve problems or conflicts beyond the authority of the project teams (technical issues, temporary manpower shortage of a partner, etc). Special attention will be paid to control changes due to market developments. Telecommunication facilities will be used on urgent issues between the SC meetings. All decisions will be taken based on mutual consent. In the exceptional case where consent cannot be reached within a reasonable timeframe, voting procedures will be applied. Each partner will have one vote. In a situation where a split vote occurs, then the co-ordinator vote will be the deciding factor.

5. Participant List

Partic. Role	Partic. No.	Participant name	Participant short name	Country	Date enter project	Date exit project
CO	1	National Observatory of Athens	NOA	Greece		
CR	2	University of Athens	UOA	Greece		
CR	3	Rutherford Appleton Laboratory	CCLRC	United Kingdom		
CR	4	National Institute of Geophysics and Volcanology	INGV	Italy		
CR	5	Swedish Institute of Space Physics	IRF	Sweden		
CR	6	Leibniz-Institute of Atmospheric Physics	IAP	Germany		
CR	7	Space Research Centre, Polish Academy of Sciences	SRC-WARSAW	Poland		
CR	8	01 Pliroforiki	01P	Greece		
CR	9	Blustaff	BLS	Italy		

6. List of events

Time	Type of meeting	Purpose	Participants	Venue
T1	Workshop	To inform the scientific and users community about the project objectives and expected results	NOA, INGV, CCLRC, 01P	ESA Space Weather Workshop, Noordwijk, The Netherlands
T4	Meeting with users	To discuss with groups of potential users	01P, UOA	Boulder, USA
T4	Visit of similar systems operating outside Europe	On-site discussions with operators of similar systems operated in USA	NOA, IRF, 01P	Boston, USA
T6	Conference	To present work in progress and demonstrate intermediate results to the scientific and users community. To disseminate DIAS results to potential users.	NOA, CCLRC, INGV, IAP, SRC-WARSAW, 01P	EGS General Assembly, Nice, France
T7	Workshop	To present work in progress and demonstrate intermediate results to the scientific and users community. To disseminate DIAS results to potential users.	NOA, SRC-WARCAW	Space Weather Week, Boulder, USA
T9	Conference	To present work in progress and demonstrate intermediate results to the scientific and users community. To disseminate DIAS results to potential users.	CCLRC, INGV	First Asia-Oceania Geophysical Society Annual Meeting, Singapore
T9	Conference	To present work in progress and demonstrate intermediate results to the scientific and users community. To disseminate DIAS results to potential users.	NOA, CCLRC, INGV, 01P, IAP, SRC-WARSAW	COSPAR General Assembly, Paris, France
T12	Meeting	To present work in progress and demonstrate intermediate results to the scientific and users community. To disseminate DIAS results to potential users.	CCLRC, INGV	Council on Radio Wave Propagation of the Russian Academy of Science, St. Petersburg, Russia
T14	Workshop	To present work in progress and demonstrate intermediate results to the scientific and users community. To disseminate DIAS results to potential users.	NOA, UOA, INGV, CCLRC, IRF, SRC-WARSAW, 01P	ESA Space Weather Workshop, Noordwijk, The Netherlands
T18	Conference	To present work in progress and demonstrate intermediate results to the scientific and users community. To disseminate DIAS results to potential users.	NOA, UOA, CCLRC, INGV, IAP, SRC-WARSAW, 01P	EGS General Assembly, Nice, France
T19	Workshop	To present work in progress and demonstrate intermediate results to the scientific and users community. To disseminate DIAS results to potential users.	SRC-WARCAW, NOA	Space Weather Week, Boulder, USA
T24	Conference	To present final results	NOA, IAP	URSI General Assembly, New Delhi, India
T24	Final Conference	Dissemination activity, to bring together data providers and users from large organizations and companies.	Co-ordinator, consortium members, users, Project Officer, experts	Athens

7. Contribution to Programme Objectives

The purpose of DIAS is the development of a pan-European digital data collection on the state of the upper atmosphere based on public sector information and the efficient promotion of this pan-European collection to the digital content market. This purpose will be accomplished with the development of a distributed information server that will improve access to the digital information on the state of the upper atmosphere over all of Europe, facilitating its use through the development of new added value products and services, and with intense commercial exploitation and dissemination activities. Through DIAS, new added value data products and services concerning the European and the world market will be promoted. These objectives are the focus of action subline 1.2 of the eContent Third Call. Furthermore, the type of content dealt with in DIAS and some of its potential uses in the industry sectors of identified earlier appears squarely among the interests expressed in the Call.

In more detail, recall that, according to the present situation, information does exist in a raw format but faces several barriers that prevent its effective use:

- Fragmentation of information across different institutes
- Differences in the procedures established by each web site for accessing real-time data and the different internal and external schemes used by each web site for the databases of historical data.
- Differences in the policies applied by each organization for the distribution of digital information.
- Complexity of the present form of the data and, therefore, of the corresponding analysis procedures, which is tolerable for the needs of researchers but not for the needs of industrial applications found in the private sector.
- Lack of added value products on top of the raw information, oriented towards the needs of the private sector.

These barriers lead to uncertainties, which in turn lead to lack of investment, degrading the level of service available to end users. Given the increasing interest from various groups of end-users due to the development of new applications requiring this type of information, the development of a system like DIAS seems mandatory. A major advantage of the DIAS project, essentially ensuring its success, is that **all European institutes** that operate digisondes capable of transmitting the sounding results in real time **participate in the consortium of the project**. The geographical distribution of the five digisondes provides almost full coverage of the upper atmosphere over Europe.

The expected results from the implementation of the DIAS project are:

- Homogenization of information and harmonization of different procedures and policies for data access existing in different institutes, with the operation of a unique server in the European region.
- Production of value-added products that will cover the needs of operational applications of the private sector.
- Definition of a common marketing policy that will substitute the different policies applied by each organization.
- Expansion of the particular European market through the supply of new products and services.
- The creation of a European Digital Server comparable to those developed by US and Australia

The results of DIAS will contribute in the following directions that underlie some of the Programme Objectives:

- Support the production, use and distribution of European digital content in this field (e-content) on the global networks
- Grow a healthy and competitive EU digital content industry, fit to exploit the opportunities created by new technologies
- Enhance content production
- Stimulate the use of Internet
- Improve access to high quality public sector information (e-content products and services) and expand its use, since the project is market oriented

- Improve the use of public sector information in Europe through the penetration of the DIAS products into the specific market
- Increase dynamism in the digital content market
- Encourage co-operation between research institutes to bring regional content to a European level
- Improve competitiveness of the private and public sector by supporting the design, production and distribution of high quality e-content

8. Community added value and contribution to EC policies

As a Europe-wide effort, DIAS aims at developing a facility for the extensive use of upper atmosphere observations. Although there are some efforts at the national level to provide services to users interested in upper atmosphere data, **this unprecedented close collaboration of all five content generators** guarantees that the necessary **critical mass** will be there to organizate the relevant information at the European level, and offer a counterpart to similar US, Australian and Japanese ventures. DIAS can be realized only through such collaboration, as all five European institutes operating the real-time digisondes are needed to have the appropriate geographical distribution to fully cover the entire European region. Hence, what DIAS can create at the European level cannot be carried out within any single national effort.

DIAS will act at two levels. The first level concerns the added value products and the improved exploitation of public sector digital information, while the second level targets the organization of a common network between the public research institutes and the private sector. The added value products contribute to the competitiveness of the European presence in these high-end technological areas and the widening of European market for these products. The establishment of the network will encourage the cooperation of private and public sector organizations and increase the mobility of individuals and ideas between them, in order to reinforce European competitiveness. Also, DIAS will contribute to the increase in the use of the Internet for specific scientific information and stimulate e-working in these areas. All these constitute direct or indirect contributions to the implementation of different EC policies.

With respect to Research and Innovation, DIAS will contribute (a) to the cooperation of several entities at different levels, (b) to an increase in the mobility of individuals and ideas between public and private sectors, and (c) to the reinforcement of European competitiveness with the US, Australia and Japan.

From the Information Society aspect, DIAS aims (a) to provide access to all interested commercial, industrial, military, and research users, to high quality data and added value products for the state of the upper atmosphere, (b) to encourage and enable benefits from the participation in the information society, (c) to stimulate access to the Internet for specific scientific information and observations, and (d) to stimulate e-working in specific sectors of scientific research and industrial operations.

9. Contribution to economic development and social objectives

The specialized new services and added value products proposed by DIAS are expected to serve an increasing number of users from various industrial sectors that play a principal role in the economic development of Europe. The most important among them are the following:

- Aviation Industry (Civil and Military): It is interested in two types of risk from space events. First, interruption to GPS navigation for positioning on approach to landing, and second, loss of HF communications for positioning report. Civil aviation is interested in predictions of the ionospheric current systems and their rate of change and in predictions of ionospheric scintillations, radar clutter and TEC errors, location and severity.
- Defense Industry: It has many applications that are affected by ionospheric disturbances due to space weather. First, in HF communications, loss of signal path between transmitter and receiver, loss of direction finding, radiowave absorption and blackout. Second, in the over-the-horizon-radar, enhanced clutter at high latitudes. Third, in navigation by GPS and other positioning systems, scintillations. Fourth, in submarine communications, disruption to ELF and VLF communications.
- Satellite Industry: It needs to identify the cause of satellite anomalies, determine whether they are related to space weather effects and then to develop procedures to modify the design of future satellites. A problem related to ionospheric scintillations, mainly at equatorial and polar latitudes, is the loss of phase and amplitude lock for remote sensing applications, GPS navigation and altimetry. Furthermore, commercial satellite designers are concerned with the accuracy of existing mathematical models since they are based on questionable old data from the 1960s. The development of the DIAS server will satisfy the main requirement of this group of users, which is to measure the important parameters in the upper atmosphere and build better models for the environment.
- Research Community: It is interested in developing mathematical models for more accurate prediction of ionospheric disturbances; in predicting physical quantities that affect various human activities based on technological systems; in continuously monitoring the ionosphere; and in post-event analysis. Specifically, seismic hazards researchers need to analyze high resolution historical and real-time ionospheric data since convincing evidence has been accumulated on the presence of seismo-electromagnetic phenomena that could be useful for future earthquake prediction. It is very important to note that two of the five digisondes of the DIAS project are located in Rome and in Athens, areas with very high seismic activity. Therefore the data from these two digisondes are ideal for correlation studies with seismic data.
- Ground based energy and transport systems (Power generation and supply, Oil and gas pipeline distribution, Railways): They are interested in having predictions of magnetic field fluctuations and geomagnetically induced currents caused by time varying ionospheric currents.

Involvement of all potential users in DIAS will become possible through an extended market research comprising:
(a) Collection of all required information.
(b) Assessment of users' needs.
(c) Involvement of users in testing of the prototype for performance and effectiveness.
(d) Establishment of an extenstive network of experts and expert organizations.

This expert network will become effective through the set-up of high-level information channels of interaction, which will be installed and tested during the first 12 months of the project life cycle. Among them, we mention:

(a) The distribution of electronic newsletters with information on new products release, announcements of forthcoming meetings and workshops and upgrades of the prototype.
(b) The development of a web-enabled demonstrator of DIAS results that will be available to as many Internet search engines as possible.
(c) The continuous interaction between data providers and users via e-newsletters and questionnaires.
(d) The organization of a final conference where representatives from the greatest possible number of industrial and commercial sectors and data providers not directly involved in DIAS from EU, Accession states and abroad will be invited. A report on presentations and results of the conference will be compiled.
(e) The publication of DIAS experiences and results in relevant journals.

The implementation of DIAS proposal will also contribute to meeting some of the social objectives of the EC, since the nowcast and forecast information provided through the DIAS digital server for upper atmosphere disturbances related to space weather can prevent from serious hazards on technological systems (terrestrial and Earth-space communications) whose proper operation is essential to modern society. Adverse conditions in the space environment can cause disruption of satellite operations, communications and navigation, leading to a variety of socio economic losses.

In summary, DIAS will contribute to improving the following:

- The scientific collaboration and research in Europe.
- The evolution of laboratory results to added value products well fitted to the European industry needs.
- The competitiveness of the European public sector information in Upper Atmosphere data.
- The close collaboration of the public and private sectors for better exploitation of observational data and value added products in operational applications in the telecommunication field.
- The use of digital information through new information technologies.
- The access of a wide range of users to observational data collected by public sector research institutes.
- The quality of life of EC citizens.

10. Other contractual conditions

Preliminary breakdown by participant of the estimates made for the costs categories of the project:

NOA
Administrative and Financial Coordination costs are included in the overhead costs.
Personnel costs the costs of 60 person-months labor of scientific personnel, distributed among all work packages of the project.
Travels and subsistence costs: Travels for collaboration with the other partners of DIAS; Costs for attending the meetings required by the eContent Contract Terms; Presentation of DIAS results in meetings, conferences and workshops, as it is listed in Chapter 6 "List of events"
Consumables: Software licences, Storage and Backup media (CDRs), consumable spare parts of computer systems
Other specific costs: Costs of external auditor to certify the costs statements; Installation of battery system in Athens Digisonde – fabricated especially for the digisonde - to secure continuous operation during power failures and network interruptions; Electronic equipment fabricated especially for the digisonde to upgrade Athens Digisonde computer system and to homogenize it with the other Digisondes of DIAS; Installation of new equipment and software
Overhead costs: 153% on the salaries of the scientific personnel; Overhead costs will cover mainly the administrative and financial coordination costs of DIAS, the salaries of the technical and secretarial support, and the maintenance and use of NOA infrastructure.
UOA
Personnel costs the costs of 45 person-months labor of technical personnel employed specifically for the project.
Durable equipment: costs of equipment purchased for the purpose of the project (one UNIX server for development, one data server, one disk pack for historical data, 8 workstations, one portable PC, one back up device, one laser printer).
Travels and subsistence costs: Travels for collaboration with the other partners of DIAS; Costs for attending the meetings required by the eContent Contract Terms; Presentation of DIAS results in meetings, conferences and workshops, as it is listed in Chapter 6 "List of events"
Consumables: Software licences, Storage and Backup media (CDRs), consumable spare parts of computers
Other specific costs: Costs of external auditor to certify the costs statements; Installation of new equipment and software
Overhead costs: 20% of all direct costs categories except subcontracting.
CCLRC
Personnel costs the costs of 41 person-months labor of scientific personnel.
Travels and subsistence costs: Travels for collaboration with the other partners of DIAS; Costs for attending the meetings required by the eContent Contract Terms; Presentation of DIAS results in meetings, conferences and workshops, as it is listed in Chapter 6 "List of events"
Other specific costs: Costs of external auditor to certify the costs statements; Installation of battery system in Chilton Digisonde, fabricated especially for the digisonde, to secure continuous operation during power failures and network interruptions; Electronic equipment fabricated especially for the digisonde, to upgrade Chilton Digisonde computer system and to homogenize it with the other Digisondes of DIAS; Installation of new equipment and software
Overhead costs : 140% of the salaries of the scientific personnel; Overhead costs will cover mainly the salaries of the technical and secretarial support, and the maintenance and use of CCLRC infrastructure.
INGV
Personnel costs the costs of 37 person-months labor of scientific personnel.
Subcontracting for the definition of management structure of DIAS system
Travels and subsistence costs: Travels for collaboration with the other partners of DIAS; Costs for attending the meetings required by the eContent Contract Terms; Presentation of DIAS results in meetings, conferences and workshops, as it is listed in Chapter 6 "List of events"
Other specific costs: Costs of external auditor to certify the costs statements
Overhead costs: 80% on the salaries of the scientific personnel; Overhead costs will cover mainly the salaries of the technical and secretarial support, and the maintenance and use of INGV infrastructure.

IRF
Personnel costs the costs of 22 person-months labor of technical personnel employed specifically for the project.
Durable equipment: costs of equipment purchased for the purpose of the project (small but efficient laptop connected to a suitable programmable modern digital HF-radioreceiver and GPS).
Travels and subsistence costs: Travels for collaboration with the other partners of DIAS; Costs for attending the meetings required by the eContent Contract Terms; Presentation of DIAS results in meetings, conferences and workshops, as it is listed in Chapter 6 "List of events"
Other specific costs: Costs of external auditor to certify the costs statements; Electronic equipment fabricated especially for the digisonde, to upgrade Kiruna Ionosonde computer system and to homogenize it with the other Digisondes of DIAS
Overhead costs: 20% of all direct costs categories except subcontracting.
IAP
Personnel costs: the costs of 22 person-months labor of technical personnel employed specifically for the project.
Travels and subsistence costs: Travels for collaboration with the other partners of DIAS; Costs for attending the meetings required by the eContent Contract Terms; Presentation of DIAS results in meetings, conferences and workshops, as it is listed in Chapter 6 "List of events"
Other specific costs: Electronic equipment fabricated especially for the digisonde, to upgrade Juliusruh Digisonde computer system and to homogenize it with the other Digisondes of DIAS
Overhead costs: 20% of all direct costs categories except subcontracting.
SRC-WARSAW
Personnel costs: the costs of 17 person-months labor of technical personnel employed specifically for the project.
Durable equipment: costs of equipment purchased for the purpose of the project (one server, one workstation, one PC, one printer).
Travels and subsistence costs: Travels for collaboration with the other partners of DIAS and contacts with users; Costs for attending the meetings required by the eContent Contract Terms; Presentation of DIAS results in meetings, conferences and workshops, as it is listed in Chapter 6 "List of events"
Consumables: Software licences, Storage and Backup media (CDRs).
Other specific costs: Installation of Internet connection tool in the Polish ionosonde for real-time transmission of data; Electronic equipment fabricated especially for the digisonde, to upgrade the Polish ionosonde computer system and to homogenize it with the other Digisondes of DIAS
Overhead costs: 20% of all direct costs categories except subcontracting.
01P
Personnel costs the costs of 46 person-months labor of scientific personnel.
Travels and subsistence costs: Travels for collaboration with the other partners of DIAS and contacts with users in EC and third countries; Costs for attending the meetings required by the eContent Contract Terms; Presentation of DIAS results in meetings, conferences and workshops, as it is listed in Chapter 6 "List of events"
Consumables: Software licences, Storage and Backup media (CDRs), Spare parts for upgrade the computer systems.
Other specific costs: Costs of external auditor to certify the costs statements; Installation of new software and equipment
Overhead costs: 80% on personnel costs
BLS
Personnel costs the costs of 19 person-months labor of scientific personnel.
Travels and subsistence costs: Costs for attending the meetings required by the eContent Contract Terms; Presentation of DIAS results in meetings, conferences and workshops, as it is listed in Chapter 6 "List of events"
Overhead costs : 80% on personnel costs

11. Clustering

Three main scientific and technical coordinated actions in the field of space weather research are in progress in Europe and are managed and sponsored by EC and ESA:

1. COST271 Action: “Effects of the upper atmosphere on terrestrial and Earth-space communications”
2. COST724 Action: “ Developing the scientific basis for monitoring, modelling and predicting space weather”
3. ESA Space Weather Pilot Project

DIAS participants are close related to these projects. Dedicated connections will be set up to liaise with the above projects. The budget necessary for participation in these projects will be partly covered by participants’ own funds and partly allocated to DIAS activity.

Annex 1

Appendix A

1. Foreword
This Appendix is an *integral part* of the Contract Annex I– Description of work, as agreed between the Consortium and the European Commission (EC). It sets out a number of practical provisions and operational timescales regarding management and progress reports, including yearly public reports; periodic peer reviews; deliverables and activities relating to project- and programme-level awareness and dissemination; and concertation and information exchange activities. Some or all of these activities, reports and events may be addressed elsewhere in Annex I.
The amount of the EU financial contribution set out in the Contract is inclusive of funds destined to cover any costs incurred by the Contractors in the performance of the tasks detailed in this Appendix.

2. Project Documentation
The Contractors undertake
(a) To set up a project Website within three months from the start of the project, and to maintain and update it until the Contract expiry date. Said site will provide project overviews and highlights; up-to-date information on intermediate and final project results, including public reports and synthesis reports drawn from selected confidential material; project events, including e.g. user group meetings, conferences and workshops; contact details, etc. The Website will be cross-linked from/to other relevant EC and EC sponsored sites.
(b) To provide within three months from the start of the project a MS-PowerPoint or HTML Presentation detailing all the key features of the project. A final, augmented version of this Presentation will be transmitted to the Commission together with the project's final report, and will where appropriate contain additional audiovisual assets (e.g. video clips). Said Presentation will be used by the Commission for its own dissemination and awareness activities, during and after the completion of the project, and will where appropriate be published on EC and EC sponsored websites, and other electronic publications.
(c) To supply at the latest by the date of submission of the final report a web enabled (or CD/DVD based) Showcase, and to grant the Commission the right to use said Showcase for its own dissemination and awareness activities, including web based and electronic publications, after the completion of the project. The Showcase will feature a meaningful subset (software, data, etc.) of the functionality characterising the project demonstrator(s) arrived at, along with relevant copyright notices and contact information, and suitable installation aids and run-time interfaces.

Item (c) above applies to actions which are intended to produce digital content, runnable software or electronic data sets, and do not use technical platforms which would make the Showcase unsuitable for use in a normal web or office/exhibition environment.

3. Peer Reviews
All the projects will in principle undergo one peer Review in each calendar year, and a final review to be held within to months from the end of the project.

4. Progress Reports
The Co-ordinator undertakes to produce periodic progress reports on behalf of the Consortium, and to forward them to the EC Project Officer. The progress report shall be in English and shall include a detailed overview of the work completed/launched in the reporting period, resources employed, departures from the work schedule, and plans for the next phase. The report should also be combined with deliverables due in the reporting period when applicable.
These reports shall be submitted in connection with the costs statements as set out in Article 4 of the contract and at the midterm of the period mentioned therein.

Note: All timings are relative to T1 (project start date); Tn denotes the project end date; both dates as defined in the first indent of Article 2 of the Contract.

Due Date	Title	Coverage	Distribution
T6, T12, T18, T24	Periodic progress reports as defined in Article 4 of the General Conditions	Detailed overview of the work completed/launched in the reporting period, resources employed, departures from the work schedule, and plans for the next phase. Combined with deliverables due in the reporting period and corresponding cost statements.	Project Officer and Peer Reviewers
T12, T24	Annual public reports	For a broad public outside the consortium. To document the main results obtained and promote the objectives of the project. Designed for web publishing according to guide/ template provided by the EC.	Public
T26	Final report	To describe in detail all the work carried out and the results obtained under the Contract. Together with the end-of-project deliverables, it will be a means to assess the output of the project. A non-public part will include e.g. technical documentation, confidential results arising from trials and assessments, prospects for further development and deployment, intended follow-on actions and associated exploitation plans, etc.	Public synthesis report. Main report reserved to Project Officer and Peer Reviewers

The reports and deliverables will be submitted electronically and in paper form. The final report will be accompanied by a CD-ROM, or an equivalent digital storage medium, containing all the contractual reports and other 'paper-based' deliverables (e.g. market analyses, system specifications, outcomes of trials, etc.), for long-term secure storage in the Commission archive.

5. Meetings

The Contractors will ensure adequate representation at the following Meetings:

Frequency	Type of meeting	Purpose	Participants	Venue
1	**Project Kick-off meeting**	To launch the project and refine plans and arrangements for the first 3-6 months of work.	Consortium members, Project Officer.	Luxembourg, unless otherwise agreed with the Project Officer.
Up to 4 per calendar year	**Progress meeting**	To review progress and discuss problems and deviations.	Co-ordinator and Project Officer.	2/year in Luxembourg; up to 2/year elsewhere, in conjunction with Consortium meetings.
1 per calendar year	**Peer Review meeting**	To evaluate intermediate and final results. To assess quality, impact and effectiveness of project work.	Co-ordinator and relevant workpackage leaders, Proj-ect Officer, Peer Reviewers.	Luxembourg; where possible coupled with Concertation meeting.
1 per calendar year	**Concertation meeting**	To present work in progress and demonstrate intermediate results. To identify and discuss areas of common interest. To plan joint investigations and dis-semination activities.	Coordinators and/or workpackage leaders, plus external experts, suppliers and users where appropriate.	Luxembourg; elsewhere where dictated by practical and technical constraints.
1 per calendar year	**Programme Conference and Exhibition**	To actively participate in discussions and demonstrations organised by the eContent programme.	Co-ordinator and/or workpackage leaders.	Tbd.

Appendix B – Consortium description

The DIAS project is based upon multi-country partnership from five member states, Greece, Italy, UK, Sweden and Germany, and one Candidate country, Poland. DIAS is formed around a consortium of seven public organisations, the National Observatory of Athens (NOA), the Department of Informatics and Telecommunications, University of Athens (DI/UOA), the Rutherford Appleton Laboratory (RAL), the Instituto Nationale di Geofisica e Volcanology (INGV), the Swedish Institute of Space Physics (IRF), the Leibniz Institute of Atmospheric Physics (IAP) and the Space Research Center of the Polish Academy of Science (SRC), and two private commercial companies 01 Pliroforiki (01P) and Blustaff (BLS).
The five participating institutes, NOA, RAL, INGV, IRF and IAP, operate Digisondes Sounders, forming the real time digisonde network over Europe which controls the state of the upper atmosphere, performing continuous soundings with high time resolution, and fully covers the European region with an almost uniform distribution. These five public sector institutes are the data-holders and in the same time the re-users of data and products among many other groups of users from the industrial and commercial sector. The SRC operates the Regional Warning Centre of Poland and provides ionospheric characteristics, forecasts and predictions of some propagation parameters, therefore they can mainly contribute in DIAS consortium with the production of new products and services and with the commercial exploitation of DIAS products, making possible the extension of the DIAS digital data collection to candidate countries. UOA/DI will develop routine production services in close collaboration with the group of information providers for the expanding use of public data and new added value products from the community of users. 01P will be in charge of the WP5 for the commercial exploitation of DIAS products. BLS will work together with UOA for the development of DIAS User Layer and will contribute to the definition of DIAS management structure.
The assignment of their roles in DIAS was the result of extended discussion between partners and is based on the scientific know-how, the existing infrastructure, the experience and the present activities of each partner in the European scientific community. Below, is following a short description of each participating organization showing the expertise of the organization.

National Observatory of Athens (NOA)

The National Observatory of Athens (NOA) is the oldest research institution in Greece, founded in 1842. In its present organization scheme it is divided in four institutes, the Institute of Astronomy and Astrophysics, the Institute for Environmental Research and Sustainable Development, the Institute of Geodynamics and the Institute for Space Applications and Remote Sensing. The National Observatory of Athens will participate in DIAS project with the Ionospheric Group of the Institute for Space Applications and Remote Sensing (ISARS) as the prime coordinator.
The activities of the Institute encompass a wide area in Space Research and Applications. Its main objective is to carry out R&D projects in the fields of Ionospheric and Space Physics, Remote Sensing and Telecommunications. The Institute is equipped with satellite and ionospheric ground stations, various RF and electronic test and measurement equipment, as well as an advanced computing centre connected to international networks. Additional activities include: (a) The systematic collection and processing of data derived from observations made either from the earth or space (b) The performance of autonomous studies in other specific subjects of space research and applications (c) Education (d) Rendering of specialized services. The ionospheric station of NOA operates since 1960 and after subsequent upgrades of the infrastructure, today NOA posses one of the five state of the art European digisonde stations suitable for operational and research use. The main research and monitoring activities are systematic vertical radio-soundings, ionospheric predictions related to space weather effects at middle latitudes and modeling techniques for the upper atmosphere structure.
The National Observatory of Athens has long experience in the Financial and Administrative Management of EC projects, as it is the prime coordinator in a large number of research and development projects funded mainly by the European Union. Some of the projects of the last five years include the following:

- WASSER (ENV4-CT97-0469)
- IZOLE (ENV4-CT97-0464)

- PRIMAVERA (ENV4-CT98-0758)
- PROMED (LIFE99/ENV/GR/000592)
- GEOWARN (IST-12310)
- FORMIDABLE (IST-1999-11679)
- INVESTIMMO (G1RD-CT2000-0371)
- SPIN (ENG1-CT-2000-00019)

National Observatory of Athens - Key personnel

Anna Belehaki is a senior scientist and Leader of the Ionospheric Group in the Institute for Space Applications and Remote Sensing of the National Observatory of Athens. She received her Diploma in Physics from the University of Athens in 1988 and her PhD in Space Physics from the same university in 1992. From 1992 to 1994 she was research associate in the University of Alberta, Canada. Her research interests include the study of ionospheric space weather related effects, ionospheric ground based experiments and the physics of the magnetosphere. She published over 40 scientific papers in international scientific journals and conference proceedings. She is principal investigator in the Athens Digisonde project and lead co-investigator in the CHAMP space missions. She participates in COST271 Action on "Effects of the upper atmosphere on terrestrial and Earth-space communications" and she is national representative in the new COST724 Action on "Monitoring, modelling and predicting space weather". She is referee in many scientific journals and she has worked as evaluator in the Natural Environment Research Council (NERC) of United Kingdom and in the General Secretariat for Research and Technology of Greece.

Dimitris Lalas is Director of the National Observatory of Athens and was Professor at the Physics Department of the University of Athens. He has served as the first Director of the Greek Center of Renewable Energy Sources as well as President of the Board of the Greek Petroleum Corporation. Prof. Lalas has been involved in research and studies involving topics in atmospheric sciences for most of his professional carrier. He has taught courses in engineering and environmental areas including plasma physics, MHD, rarefied gas dynamics, wave propagation, in universities in Greece, Europe and the US. He has published over 100 scientific papers and 4 books and been the principal investigator in research projects totaling over 15 million Euro. He has also served in a number of committees of DG-Research and DG-Energy in the past and in similar bodies in Greece. He has consulted in areas of development as regards energy and environment, as well as aerospace engineering.

University of Athens (P2)

The University of Athens is the oldest and largest university in Greece. The University of Athens will participate in DIAS with the Laboratory of Advanced Information Systems of the Department of Informatics and Telecommunications.
The laboratory of Advanced Information Systems has long experience in several topics of Computer Science, including the areas of Databases and Knowledge Bases, Digital Libraries, Web Databases and Internet Applications, User Interfaces, Multimedia Systems, Distributed Systems, Software Engineering, Expert Systems and Artificial Intelligence.
The Laboratory of Advanced Information Systems has participated in a large number of research and development projects funded mainly by the European Union. Some of the projects of the last five years include the following:

- DELOS (IST network of excellence in Digital libraries)
- COSMOS: Cluster of Systems of Metadata for Official Statistics (IST-2000-26050)
- MISSION (IST Project): Multi-agent Integration of Shared Statistical Information over the (inter)Net.
- Memoir (Esprit IV): Development of a distributed system containing intelligent agents aiming to increase productivity in various companies. A library of agents for Intranet search was developed by the UOA team.

- ADDSIA (Esprit IV): Accessing of national statistical data through the Internet using distributed database systems technology. The UOA developed middleware for secure access of statistical data from statistical offices.
- PARACHUTE & PARROT (Esprit IV): Development of a system for crew scheduling in a parallel platform.
- ILDIC (Delta Program): Development of Educational Multimedia Applications using object oriented technology. Again here the UOA contributed by developing an authoring tool.
- ORES & TOOBIS (Esprit): Development of a temporal database management system.
- HILDE (funded project by the Greek Government (G.G.) and the E.C.): Development of an integrated environment and associated tools for building hypermedia training applications.

The Laboratory of Advanced Information Systems is responsible for the reorganisation of the existing information systems of the libraries of the University of Athens as well as the development of digital libraries across the campus.

University of Athens - Key personnel

Yannis Ioannidis is currently a Professor at the Department of Informatics and Telecommunications of the University of Athens. He received his Ph.D. degree in Computer Science from the University of California at Berkeley in 1986. He joined the faculty of the Computer Sciences Department of the University of Wisconsin at Madison in 1986, where he became a Professor before leaving in 1999. His research interests include database and information systems, scientific systems, digital libraries and human-computer interaction, topics on which he has published over 50 articles in leading journals and conferences and holds two patents. Dr. Ioannidis was the recipient of the Presidential Young Investigator (PYI) award in 1991, awarded by the President of the United States to the top young scientists in each field. He spoke on "Next-Generation Experiment Management" as the keynote speaker in the Conference on Statistical and Scientific Databases (July 2000), and on "Databases and the Web" as the keynote speaker in the Worksop on Parallel and Distributed Processing (January 2000) and the Conference on Web Age Information Management (July 2001). He has been a principal investigator in approximately twenty research projects funded by various government agencies (USA, Europe, Greece) or private industry. He is currently an Associate Editor of five journals (Information Systems, VLDB Journal, Journal of Digital Libraries, Journal of Intelligent Information Systems, and the electronic ACM Digital Symposium Collection) and has been a member of the program committees of over forty conferences, three times as (co-) chair (VLDB, SSDBM, and VDB). He has served on the review board for the Lawrence Berkeley Laboratories in Berkeley and on the Science Council of the NASA CESDIS Center for Excellence in Space Data and Information Sciences.

Michael Hatzopoulos is Professor at the Department of Informatics. He has a Diploma in Mathematics from the University of Athens (1971) and an MSc and a PhD in Computer Science from Loughborough University of Technology (in 1972 and 1974 respectively). He has participated in many R&D projects, both National and European Union. His research interests are Agent Technology, Multimedia Databases, Multimedia Indexing, Statistical Databases, Performance Issues in the WEB, and Physical database design. He is referee in many scientific Journals and Conferences and for NSF proposals and has worked as referee and evaluator many times for the European Union (DGIII and DGXIII).

Rutherford Appleton Laboratory (P3)

The Rutherford Appleton Laboratory (RAL) is based in Oxfordshire in the UK and, together with the Daresbury Laboratory in Cheshire and the Chilbolton Observatory in Hampshire, is operated by the UK Council for the Central Laboratory of the Research Councils (CCLRC). The facilities at RAL include the world's leading pulsed neutron and muon source for materials and structure research, and high power lasers for research from astrophysics to fusion energy. Alongside these activities, RAL also has active programmes of work in radio propagation, space science, particle physics, IT and engineering. The history of the RCRU and Space Science Department's involvement with radio propagation and the ionosphere date back to the 1920's with Sir Edward Appleton, one of the founders of modern radio communications and the discoverer of the first ionospheric layer.

Radio Communications Research Unit (RCRU) and Space Science and Technology Department (SSTD) are part of CLRC at Rutherford Appleton. The Unit specialises in developing methods for predicting radiowave propagation, essential for current and future radio systems. This involves the development of improved propagation models and novel communications concepts, which are essential for the efficient use of the radio spectrum and the planning of future systems. The Unit is already running a Europe wide near real time ionospheric forecasting and mapping service fore communication users available via the World Wide Web.
The Space Science Department carries out a range of space research and technology development including satellite construction and data analysis and relay. The Department has many links with NASA and ESA. The SSTD Department is also the home of the World Data Centre for solar-terrestrial physics (WDC). The World Data Centre (WDC) system stores and distributes data relating to various geophysical disciplines. The WDC at RAL collects and holds a wide range of data from the discipline of Solar-Terrestrial Physics, including a very extensive collection of ionospheric data ranging from the early 1930s to the present day. The Centre provides a variety of services with the emphasis on the provision of on-line computer-based services that can be accessed via public data networks.

Rutherford Appleton Laboratory (RAL) – Key personnel

Ljiljana R.Cander is a Senior Scientific Officer and Leader of the Ionospheric Group at Radio Communications Research Unit (RCRU). She is member of Ionospheric Expert Team in the ESA EGNOS project and Vice Chairperson of the COST 271 Action on "Effects of the upper atmosphere on terrestrial and Earth-space communications". Dr Cander received a Doctorate in electrical engineering from the University of Belgrade in 1984. She has extensive research activity in ionospheric physics and radio propagation with particular references to ionospheric disturbance studies, real time ionospheric mapping and modelling, neural networks applications in ionospheric studies and space weather effects on telecommunication. She published about 160 papers in international scientific journals and participated at more than 80 scientific conferences with contributions.

Ruth Bamford is a Senior Scientific Officer, member of the Ionospheric Group at Radio Communications Research Unit and member of the COST 271 Action. Dr Bamford received a Doctorate in experimental plasma physics from the University of Essex in 1996. Her relevant experience comprise research activities in the oblique ionospheric sounding for HF channel evaluation, ionospheric absorption and ray tracing as well as the 1999 total solar eclipse ionospheric observations. She is currently responsible for the Ionospheric Short-term forecasting database and real-time Web facility at RAL. Dr Bamford published about 10 papers in international scientific journals and participated at more that 15 scientific conferences with contributions.

Richard Stamper is a Senior Scientific Officer. He is database and software specialist in the RAL_WDC for Solar-Terrestrial Physics, principal developer on the ESA SEDAT project and member of the COST 271 Action. Mr Stamper received a 1st class honours degree in Mathematics and Philosophy at the University of Oxford and MSc in Computation from the University of Oxford in 1990. His relevant experience comprises research activities in designing and implementing databases and software to make relevant data sets available to the academic and commercial research communities over the World Wide Web and in developing a database and tool-set for the analysis of the effects of near-Earth energetic particle populations on spacecraft. Mr Stamper published about 20 papers in international scientific journals and participated at more that 30 scientific conferences with contributions.

Istituto Nazionale di Geofisica e Vulcanologia (P4)

" Promoting, executing and coordinating studies research on Geophysical Phenomena and their applications" was considered the aim when in 1936 Guglielmo Marconi founded the former Istituto Nazionale di Geofisica. In more than 60 years of activity ING has been pursuing that aim both providing important contributions to basic geophysics and accomplishing duties to the community.
Recently, in 2000, ING was joined to other Italian scientific institutions belonging to the National Research Council involved in volcanic, seismic and geochemistry research and monitoring. The new Institute named National Institute of Geophysics and Volcanology is a government institution, under the supervision of the Ministry of Education, University and Research, that with more than 500 people

employed is one of the most important scientific institution in Italy devoted to studies in geophysics and in seismic and volcanic hazards.
Its principal activities concern:

- The National Center for Seismicity with 24-hour earthquake monitoring in real-time warning system.
- Seismology and Tectonophysics studies.
- Geomagnetism and Paleomagnetism
- Aeronomy and Climatology
- Environmental Geophysics and Submarine investigations.
- Physics of the Volcanism: with 24-hour monitoring of Vesuvius and Etna Volcanoes.
- Geochemistry

In detail the research and monitoring activities concerning the upper atmosphere sciences regard the Physics of the Ionosphere, Systematic vertical radio-soundings, Ionospheric predictions and modeling, Atmospheric ozone and aerosols concentration and Dynamic Climatology and Oceanography.

National Institute of Geophysics and Volcanology – Key personnel

Bruno Zolesi was born in Monte Argentario, Italy, on 8 th July 1949; he took the Doctor Degree in Physics at the Rome University in 1973. Since 1979 he was a scientist at Istituto Nazionale di Geofisica where in 1990 took the position of Director of Research. Since 1985 till 2001 he was the Head of the former Department of Aeronomy. The principal themes of interest concern the upper atmosphere observations and investigations, particularly connected with the terrestrial ionosphere, its temporal and spatial variability its medium term prediction and forecasting models. He was involved in several national and international research projects as the European COST actions as working group leader, Vice Chairman and recently as Chairman of the new COST271 action. He is member of the International Reference Ionosphere. He is associated editor of Annali di Geofisica and of the Bulgarian Journal of Geophysics for the theme of Ionospheric Physics. He is co-author of two books and more than 90 papers on the scientific international literature. Recently has been nominated Director of the Section Roma 2 of the new Istituto Nazionale di Geofisica e Vulcanologia concerning Geomagnetism, Aeronomy and Environmental Geophysics.

The Swedish Institute of Space Physics (P5)
The Swedish Institute of Space Physics (IRF) was founded in 1957 as an institution within the Royal Swedish Academy of Science and was then called Kiruna Geophysical Observatory. Later it changed name twice and at currently the name is abreviated to IRF. IRF has been a public research institute since 1973. IRF conducts experimental and theoretical research in space and atmospheric physics including magnetospheric and ionospheric physics. Measurements are made by satellites, sounding rockets, meteorological ballons and ground-based equipment including radars and ionosondes.The ionosondes now at IRF were taken over in 1970 from the Swedish military. They were already known all over the world as ”The Scandinavia chain”. Sounding with ionosondes in southern Sweden started in the middle of the 1950th and even earlier in Kiruna.
IRF has premises in Kiruna, Umeå, Lycksele and Uppsala. The main activities have been measurements from satellites and rockets. The most important Swedish satellites with equipment build at IRF were Viking and Freja. The Viking satellite was launched in the middle of the 1980s and Freja was launched in the beginning of the 1990s. Kiruna is the main home of IRF because of the special possibilities for ground based measurements - among them the sounding of the ionosphere in connection with aurora. EISCAT, with its HQ in Kiruna, is one of the organisations with which IRF cooperates and which is important in the field of ionospheric research. IRF has also cooperation with Utah State University regarding Inosondes (Dynasones). IRF runs one Dynasonde in Lycksele in cooperation with Utah State University in Logan.

The Swedish Institute of Space Physics – Key personnel

Christer Jurén was born in 1940. He received a Master of Technique at ”Tekniska Gymnasiet i Karlskrona”, teletechnique och radiotechnique Militäry service as signal Engineer, and a Master of Science vid Matematisk-naturvetenskapliga fakulteten, Lunds universitet. From 1964 to 1966 he was assistant at the institution of Solid State Physics, Lunds University, and since 1969 he is a research scientist in IRF. Since 1995 he is Project Leader at IRF for the Swedish Ionosondes. During the period

1984-1994 he was responsible for the Computer activity at IRF. For more details see www.irf.se/~christer

Sheila Kirkwood is Head of the institute's Atmospheric Research Programme, and Coordinator of the institute's Observatory Programme. Prof Kirkwood has 20 years experience using radar to study the ionosphere and the upper and middle atmosphere and has more than 100 publications. She is Scientific Discipline representative in SCOSTEP, member of Editorial Boards for the Journal of Atmospheric and Solar Terrestrial Physics and the Journal of Geophysical Research (Space Physics).

Leibniz-Institute of Atmospheric Physics (P6)

The Leibniz-Institute of Atmospheric Physics (IAP) is situated at Kühlungsborn at the border of the Baltic Sea (54° 07'N; 11° 46'E). A measuring station at Juliusruh (54° 38'N; 13° 24'E) belongs also to the institute.
The main tasks of the IAP are directed to investigations of the mesosphere at middle and high latitudes and its coupling with other atmospheric regions below and above the mesosphere. Therefore, also investigations of the ionosphere have been carried out since many years using ionosonde observations at Juliusruh and data of other radio propagation methods. The ionosonde observations began in 1957 and have been continued without marked interruptions until now.
The ionosonde data are the basis for different ionospheric investigations carried out during the last years: trend analyses of different ionosonde parameters, ionospheric storms including their post storm effect, influence of solar activity, solar wind and interplanetary magnetic field on the ionospheric plasma, predictions of ionospheric HF radio propagation.

Leibniz-Institute of Atmospheric Physics (IAP) – Key personnel

Jürgen Bremer was born in 1942 in Germany. In 1966 he received a Physics Degree from the University of Rostock, and in 1969 he received his Doctorate (Dr. rer. Nat.) from the German Academy of Sciences at Berlin. From 1961 to 1991 he was scientist at the Observatory of Ionospheric Research, Kühlungsborn (1987: Thesis Dr. sc. nat.). From 1992 to 1995 he was Senior Scientist at the IAP, Kühlungsborn and since 1995 he is Head of the department 'Radar Soundings', Kühlungsborn. Dr Bremer was a member of COST 238 and 251 and he currently participates in COST 271.

Johannes Weiss was born in 1939 in Germany. Since 1965 he is scientist at the field station Juliusruh of the IAP. He studied mechanical engineering at the Hannover College of Technology (1960) and in 1965 he received his degree in Physics from the Hannover College of Technology and the University of Rostock.

Space Research Centre of the Polish Academy of Sciences (P7)

The Space Research Centre (SRC) is an institute of the Polish Academy of Sciences. Since 1977, it has been conducting pure and applied studies based on space experiments in the field of space physics and Solar System research, and physical and geodesic studies of planets and the Earth. SRC is the only institution in Poland whose activity is fully devoted to space research, a strongly interdisciplinary field integrating various aspects of pure science and its applications in physics, geosciences and technology. SRC undertakes research and development to

- promote Polish participation in international space missions
- combine – scientific research with engineering creativity
- link space research with application in Poland
- inspire national market demand on space technology

SRC PAS is the sole organisation in Poland to develop and manufacture space-qualified hardware. For the last 10 years the space instruments made in SRC PAS visited the Earth's orbit and deeper space in the frame of satellite projects and missions (APEX (1991), NASA Rocket (1992), CORONAS I, Interball –2 (1995), MARS-96 (mission failed), CASSINI/HUYGENS (1997), PRIRODA/ MIR (1997), CORONAS-F (2001)).

The generic fields of scientific interest of the SRC are: the Solar System and extraterrestrial environmental physics, geodynamics, satellite geodesy and physical background for remote sensing. The most valuable achievement have been reached in the following areas:

- Active and passive investigation of ionospheric plasma;
- Study of plasma processes in the environment of selected Solar System bodies;
- Study of X-ray emissions in connection with solar activity;
- Modelling of the structure and dynamics of the heliosphere;
- Study of the non- gravitational effects on trajectories of small bodies in the Solar Systems;
- Study of terrestrial gravitation field;
- Study of Earth crustal motion and variations of the Baltic sea mean level;
- Construction of laser and Doppler receivers for high accuracy positioning;
- Study of aerosol and gaseous pollution of the Earth's atmosphere and their influence on radiation in the atmosphere.

SRC conducts heliogeophysical forecasting for the government and commercial communications services. SRC conducts postgraduate studies in the area of Solar-Terrestrial and geophysical physics.
The SRC milestone topics related to DIAS objectives are:

- ✓ Development of an instantaneous model of the terrestrial ionosphere over Europe for applications in telecommunication; the model that is better than any of the models developed so far is a joint effort of scientific groups working with the framework of the COST 251 project.
- ✓ Discovery the anthropogenic origin of broadband RF emission in the topside ionosphere
- ✓ Creation the model of turbulence in the ionosphere plasma relevant for forecasting of radiowave propagation conditions
- ✓ Establishing the basic geodesic warp of Poland (PLREF network) using GPS technology within the unified European reference system ETRF. The POLREF network facilities preparation of maps and performing any geodesic activities in a common reference system with the European Community
- ✓ The Astrogeodynamical Observatory of SRC PAS as the third laser station in the world initiated measurements of signals from GLONASS satellites with the use of a multichannel receiver. The measurements make it possible to verify atomic clocks with accuracy better than 1 ns and to perform geodetic observations similarly as with the GPS system. The Borowiec station is the only station in Poland that carries out geodetic observations using three systems: laser, GPS and GLONASS. The station participated in the first IGEX campaign (International GLONASS Experiment), managed by IGS (International GPS Service for Geodynamics), where all three systems were used.
- ✓ A method of comparing of multi-channel GOS observations was developed at the SRC Astrogeodynamical Observatory in Borowiec. The method was applied to compare eight caesium clocks operated on Poland. Based in this research, a new Polish national Atomic Time Scale TA (PL) was developed as a weighed average of time scale from the eight clocks. An order of magnitude better then the stabilities of the individual clocks uses its stability. TA(PL) involves an algorithm deployed in a numerical program, developed in co-operation with the International Bureau of Measures and Weights (BIPM) in Paris.

Space Research Centre of the Polish Academy of Science – Key personnel

Iwona Stanislawska is head of Heliogeophysical Prediction Service operating within a global International Space Environment Service (ISES) system and responsible for measurements and predictions of solar activity and related Earth phenomena. The Warsaw centre has a special status of the Regional Warning Centre of ISES (RWC). In RWC Warsaw operates the Ionospheric Despatch Centre in Europe (IDCE) that as an initiative of COST 251 established in 1997. She received her diploma at the Faculty of Physics in University of Warsaw in 1976 and PhD in the Institute of Geophysics of the Polish Academy of Sciences in 1989. In 1984 and 1989-1990 she worked as a research scientist at the University of Bonn. Her principal themes of interest concern the solar-geophysical relations, ionospheric physics, modeling and forecasting, and propagation conditions. For these purposes together with the group she elaborated an automatic system of solar-geophysical data processing and Ray-Route – a system of prediction and forecast of HF communication conditions. She published over 70 papers in the international scientific journals and proceedings. She was involved in several national and international research projects as PECO, COST 238 and COST 251, for which she was a leader of the group focused on instantaneous mapping and COST 271 where she is a co-leader of the group "Impact of Space Weather on Telecommunication". She is a member of the International Reference Ionosphere,

International Space Environment Service, URSI (commission G – Ionosphere) and some national societies as Polish Geophysical Society (Leader of the Section Physics of the Earth Interior and Environment) and the National Committee for Radio Sciences (Leader of the Section Propagation and the Ionosphere). She was a scientific organizer of the national and international conferences, as COSPAR and the reviewer of the scientific journals (Radio Sciences, Advances in Space Research, Annali di Geofisica, Physics and Chemistry of the Earth, Artificial Satellites).

Grzegorz Juchnikowski received his diploma at Electronics Dep. at Technical University of Warsaw in 1978. Since 1979 until now he works in Space Research Center of the Polish Academy of Sciences. His work is constructing and maintenance of the software for Helio-Geophysical Prediction Service, as well as for other scientific groups in SRC PAS. Some of the other his tasks were: on board software for radio-spectrometers in two satellite missions: APEX and CORONAS (cooperation with IZMIRAN, Moscow), low level software for several instruments, like: ionosonde, or intelligent network node, on board software for DPE of instrument JEM-X in the mission INTEGRAL (cooperation with DSRI, Copenhagen), PC-side communication software for the multipoint ground temperature measurement system EXTASE (cooperation with Westfalishe Wilhelms-Unversitat, Munster). His experience in programming languages is: C, C++, Pascal, ADA, Fortran, Java, several assemblers, and in PC programming: DOS, Windows, Linux, serial communication, IP communication, GUI, Micro-programming: Intel 8086, Z80, V25, series PIC16xxx, series 51.
He published over 30 papers in the international journals and proceedings.

Hanna Rothkaehl graduated at Astronomy in Warsaw University in 1981 and received hes Ph. D. in physics in the Institute of Geophysics of the Polish Academy of Sciences. From 1982 she is working as a research scientist at Space Research Center Polish Academy of Sciences in the team of space plasma physics. She was also worked at Leiden University and in Max Planck Institute for Aeronomy as a visitor research scientist. Her main topics of investigation are: active and passive investigation of the natural electromagnetic and electrostatic plasma emissions generated in the nearest environment, man-made radio noises (electromagnetic waves), the electromagnetic emissions and modifications of plasma ionosphere over seismoactive region, the interaction between the body of the spacecraft and surrounding plasma. She was involved in design and analysis of the wave-plasma experiments located on the board IK-19(1987), APEX (1991), NASA Rocket (1992), CORONAS I, FREJA and currently on Cluster satellite. She is also working on the application of theoretical considerations to the study of space plasma effects for telecommunication purposes. She is an active member of the RWC Warsaw Center. She published over 50 papers in the international scientific journals and proceedings. She worked as the scientific organiser of the national and international conferences. Since 1993 she is the editor of the proceedings of International Plasma Physics Symposium. She serves as the reviewer of the scientific journals as Advances in Space Research, Annali di Geofisica. She was involved in several national and international research projects, as COST 251, COST 271 for which she was a leader of the group focused on the ionospheric plasma property studies.

01 Pliroforiki S.A. (P8)

01 Pliroforiki S.A. is a Greek SME founded in 1987 with the goal of promoting knowledge on advanced Information Technology within Greece. Its strategy is to acquire state-of-the-art technology in order to enter or create new markets in its region. It has sound experience in software applications development and consulting for business process reengineering and human resource development to both private and public clients. Its vision is the continuous re-engineering and process optimisation of public and private sector corporations towards an organisational, managerial and technological modernisation.
01 Pliroforiki's major activities are:

- Information Technology & Information Systems Strategy,
- Information Systems & Computer Networks Studies,
- Design & Development of Information Systems,
- Integrated Vocational Training Systems,
- Support & Maintenance,
- E-Commerce
- Business Plan Design and/or Implementation,
- Business Process Re-engineering,
- Strategic Planning for Human Resources Development

The company is considerably investing in the application of IT engineering and management methodologies by providing consulting services in Greece and utilising software development methodologies (SSADM), project management methodology (i.e. PRINCE), risk management, training needs analysis methodology (TNA), etc.
The company has participated in large Knowledge Management, Information Systems Engineering and Business Process projects in the Greek public sector such as:

- KM framework for Public Authorities and private organisations: Hellenic Telecommunications Organisation, Hellenic Army General Staff, Greek Bussiness Channel, COSMOTE mobile telecommunications, Operator Assisted Yellow Pages and more
- Development of Business Plans for a number of Ministries and national authorities regarding their integration in the National Information Society initiative. Ministry of Justice, Ministry of Interior, Public Administration and Decentralisation, Prefecture of Central Greece, National Insurance Foundation and more
- Ministry of Labour and Social Welfair: Data Management for the monitoring of the EQUAL initiative
- Ministry of Interior, Public Administration and Decentralisation: Implementation of a study for the definition of standards and methodologies in the area of IT projects implementation in the public sector,
- Institute of Geological and Mineral Exploration (IGME): Study for administrative and operational Re-engineering of IGME etc.

01 Pliroforiki S.A. has participated successfully in EU RTD Programmes, enabling it to gain and develop know-how, which in turn is transferred to the Greek Market by means of a services portfolio including consultancy, training and commercial products. Some of the major RTD projects that the company has participated or is currently participating in are:

- *Information Technology & Telematics for Tourism*: PROMISSE (INMARSAT R&D) ECODATA, EDTTL-BITOUR (TEDIS), MINTour (TELEMATICS),
- *Web Services and eBusiness:* LAURA (IST), HyperBank (ESPRIT IV)
- *Information Technology & Telematics for Education*: DEMOS (TELEMATICS), HILDE (EPET II),
- *Telematic Services for Rural Areas*: LAMBDA (RACE II),
- *Advanced Telecommunication Technologies*, TRUMPET, MISA, VITAL (ACTS),
- *Telemedicine:* TELEREMEDY (TEN-TELECOM 97),
- *IT for Publishing*: TELEPUBLISHING (RACE I), PAVE '90,
- *Databases*: TOOBIS (ESPRIT IV), ORES (ESPRIT III),
- *Software Process Improvement*: MAUSE (ESSI).
- *Business Systems*: CSF (RACE I), EDICOMM-2, EQUITY (VALUE) FOES (ESPRIT), RENDEZVOUS (ESPRIT)

01 Pliroforiki S.A. (P8) – Key Personnel

Kostas Petropoulos has obtained his Diploma in Computer Science from the University of Athens (UOA) in 1993 and carried out research work as a PhD candidate in the National Technical University of Athens in the area of Parallel Algorithms Design. From 1994 to 1999, he has worked in the National Documentation Centre / National Hellenic Research Foundation where he participated in and managed several National and EU funded Projects dealing with collaborative networking of Public administrations and European dissemination and awareness networks (NAP, VALUE, MIDAS-NET, HIRC, MSSTUDY). He has served as National Contact Point for the EU Programmes: INFO2000, MLIS, ESPRIT-4 and IST. From 1999 - 2001 he has coordinated research activities of a leading IT vendor in Greece as Research Projects Co-ordinator, dealing with Knowledge Management, Intelligent agents and Collaborative Environments in European wide projects. From 2002, he has been with 01 PLIROFORIKI S.A. as Research Projects Co-ordinator.

Dimitris Dialetis is Professor at the Department of History and Philosophy of Science, University of Athens. Before joining the University of Athens he was director of the Institute for Space Applications and Remote Sensing of the National Observatory of Athens. He has a Diploma in Mathematics from the University of Athens, a DEA in Mathematical Statistics and Data Analysis from the University of Paris (VI) and a PhD in Astrophysics (Solar Physics) from University of Athens and Paris-Meudon Astrophysical Observatory. His research interests are Applications of Databases and Data Analysis, Solar

- Space Physics and History of Science. He has published 3 books in Greek language and over 100 studies and scientific papers in international scientific journals and conference proceedings. He has participated in many R&D projects both National and European Union. See a list of selected publications in http://www.space.noa.gr/hellinomnimon/dialetis.htm

Panagiota Xini received her M.Sc. in Information Systems Engineering degree at University of Manchester Institute of Institute of Science and Technology UMIST in 1997. She received her B.Sc. degree from the National & Kapodistrian University of Athens, Department of Informatics with specialisation in Computer Systems and Applications in 1995. For the periods of January 1996 – August 1996, October 1997 – December 1999, March 2001 - March 2002 she was employed by 01Pliroforiki (01P) and currently is Project Manager in R&D projects in the area of e-learning. From January 2000 to March 2001 she was working for the National Bank of Greece as consultant. From December 1998 to December 1999 and March 2001 to March 2002 she was working for 01P as Research and Development Manager, from October 1997 to December 1998 she was working for 01P as systems analyst, while from January 1996 to August 1996 she was working for 01P as application developer. From September 1995 to December 1995 she was a member of the Business Process Reengineering (BPR) research team of the University of Athens. She has participated as developer and analyst in a number of National and European projects as well as leading researcher and project manager.

Blustaff (P9)

Blustaff has been founded in December 1999 as a srl company. In December 2002 became spa company with a share capital of € 550,000. Blustaff spa has three operative offices: the head-office is located in Pomezia (Roma) the others are located in the north of Italy in Bologna and Modena. Production revenues for 2002 are about € 2,500,000. Technical employees are about 45.
The offer is organized around a number of different service areas:

- Workflow and Document Management Systems
- Web sites and e-commerce
- Smart Card and Wireless technology
- E-Government
- Customer Relationship Management
- Technical consultancy

The market areas are: Central and Local Public Administration, Italian Ministry of Defence, Telecommunication operators, Banks, System Integrators, Industry.
The company is ISO 9001 Certified.
Blustaff entrusts its own Laboratory with development studies about new technologies, solutions and products, the Laboratory activity is essentially covered by internal investment. The DIAS project activity will entrust such a structure.

Blustaff – Key Personnel

Stefano Gasperini was born in Senigallia, Italy, on 17th February 1948; he took the Doctor Degree in Physics at Rome University in 1972. After Degree worked for ten years at Italian companies (Elettronica spa, Agusta spa) in the area of microelectronic technologies booth for microwave and infrared applications. Since 1982 he was teacher at the Florence University, Engeneering Department, for the course: " Technologies for Microwave Integrated Circuits".
Since 1984 founded with few partners the Company*: I.T.Staff Soluzioni Tecnologiche srl*, where he operates as Marketing Director, Vice President and Member of the Board.
He was, during the first part of its career, co-author of one book and about 10 papers on the scientific literature.

Valentino Sarli was born in Potenza, Italy, on 21th August 1970; he took the Informatics Diploma in 1989. He is today Team Leader in Blustaff for activities related to:

- Design and development of application in Oracle (SQL*Form) environment,
- Advanced techniques for design and tuning on relational database,

- RAD and IDE environment for design and implementation of management and business intelligence solutions,

Appendix C – Background and reference documents

The following organizations not directly involved in DIAS project have expressed their interest on the project by letters of intent:

1. Radio Communications Agency, United Kingdom
2. Hellenic Civil Aviation -Υπηρεσία Πολιτικής Αεροπορίας, Greece (Statement of intent in Greek)
3. Polish Frequency Management Military Office
4. Polish Airlines – LOT
5. BAE Systems, United Kingdom
6. Dr Thomas Damboldt Telecommunications, Germany
7. Space Hellas S.A., Greece
8. GEOSYSTEMS Polska
9. Radio Technology Systems, Poland
10. Starlab Barcelona S.L., Barcelona, Spain
11. NorthWest Research Associates, Inc., Tuscon, Arizona, USA
12. Center for Atmospheric Research, University of Massachusetts Lowell, USA