



SEVENTH FRAMEWORK PROGRAMME  
THEME 9, SPACE CALL 2, FP7-SPACE-2009-1  
SPA.2009.3.2.01 INTERNATIONAL COOPERATION

Grant agreement for: **Coordination Action**

Proposal acronym: **SAGA-EO**

Proposal full title: **Support Action to GMES Africa on Earth Observation**

Grant agreement n° : **242190**

Start date of the project: **01/08/2010**

Project duration: **27 months**

Date of latest version of Annex I against which the assessment will be made: **08/12/2009**

Final project report: 1st ■ 2nd ■

Period covered from: **01/08/2010** to: **31/10/2012**

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**Deliverable n° D1.1.3 Final project report**

Project Coordinator	TAS-F
Lead beneficiary	TAS-F
Contributors	SAGA-EO Consortium
Due date	T0+29
Actual submission date	T0+29
Actual release	V1.0
Dissemination level <sup>1</sup>	CO
Reviewed by	SAGA-EO Consortium
Approved by	TAS-F

PU = Public

PP = Restricted to other programme participants (including the Commission Services).

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## CHANGE RECORDS

ISSUE	DATE	§ CHANGE RECORDS	AUTHOR
1.0	31/12/2012	First issue	TAS-F

## ABSTRACT

This document is the final project report

## KEYWORDS

report, final, project, SAGA-EO



## CONSORTIUM

Beneficiary Number	Beneficiary name	Beneficiary short name	Country	Date enter project	Date exit project
1(coordinator)	Thales Alenia Space France	TAS-F	FR	M1	M27
2	GEOSAT TECHNOLOGY SARL	GEOSAT	FR	M1	M27
3	GAF AG	GAF	GE	M1	M27
4	AGENCE NATIONALE DE LA METEOROLOGIE DU SENEGAL	ANAMS	SN	M1	M27
5	Bureau National d'Etudes Techniques et de Développement / Centre de Cartographie et de Télédétection	BNEDT	CI	M1	M27
6	INAM (National Institute of Meteorology - Mozambique)	INAM	MZ	M1	M27
7	Ghana Meteorological Agency	GMet	GH	M1	M27
8	Agence National de l'Aviation Civile	ANAC	CG	M1	M27

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## APPLICABLE AND REFERENCE DOCUMENTS

Document title	Ref	Date
Annex I - Description of Work - issue 4.7.3	Annex I-Description of Work	29/06/2012
Grant Agreement N° 242190		29/06/2010

Table 1: Applicable Documents

Document title	Ref	ID
User requirement document v1.0	D4.1.1	[R1]
Earth Observation Data And Products Document Issue 1.0	IO3.1.1	[R2]
User needs document v1.0	D2.1.1	[R3]
African Nation EO User Network Organizational Model v1.0	D2.3.1	[R4]
Horizontal Model Assessment Scenarios	IO2.4.1	[R5]
Horizontal Model Assessment document	D5.1.2	[R6]

Table 2: Reference Documents

## ABBREVIATIONS TABLE

Acronym	Definition
AD	Applicable Document
AFNC	AFrican National Coordinator: consortium African members
AFP	AFrican Focal Point: Burkina Faso person employed by GEOSAT
EC	European Commission
EO	Earth Observation
KO	Kick Off
NA	Not Applicable
RD	Reference Document
TBD	To Be Defined
TOC	Table of Contents
WBS	Work Breakdown Structure
WPD	Work Package Description
HMA	Horizontal Model Assessment

Table 3: Abbreviations table



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## 1. Publishable summary

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### Study profile

The SAGA-EO project consists in a feasibility study to design, set-up and assess dedicated multi-thematic networks of actors in individual African countries. Each network is organized according to a model named horizontal model for pooling and exploiting the common means (EO based information, infrastructure or knowledge) of its constituting thematic.

SAGA-EO supports the GMES and Africa initiative on the cross cutting issue “Infrastructure framework” by enhancing the capacity of national actors on the use of EO based information for environment and resources management.

Consortium of 8 partners in 7 countries is leaded by Thales Alenia Space France: TAS/FR, GEOSAT/FR, GAF/GE, ANACIM/SN, BNETD-CCT/CI, GMET/GH, ANAC/CG and INAM/MZ.

### Work achieved

In each of the five countries, a network has been set up with ten to twelve institutions from various sectors and coordinated by the SAGA-EO consortium national partner. Their needs have been collected that led to the design of both an organizational model and a technological platform. To highlight the benefits of this organization, two generic scenarios were adopted by the five national networks: Food Security (monitoring of agricultural season) and Flood (monitoring of water level).

A physical platform has been defined with a special focus on GMES, PUMA and AMESD interfacing and a SAGA-EO toolbox that encompass existing tools was assembled to help to prove the proposed organization and technology. This was achieved during a ten days session in each country called Horizontal Model Assessment sessions where the national network members played the two scenarios and assessed concepts.

By playing the HMA sessions in 5 African countries, during 50 days, with 65 actors representing 55 national institutions which are in 15 sectors, and according to the user feedback analysis (more than 4500 answers) and the formal recommendations elaborated, we can consider that the horizontal model proposed by SAGA-EO is relevant to support the implementation of a national EO user network.

Following this major milestone, and to conclude the study, documents on the methodology for the implementation of an operational network where drawn up on the network organization technology definition (Platform and Services).

### Outcomes

The outcomes of the project are outlined on one hand through the key issues to be taken into account when implementing an operational network and the benefits of this paradigm; and on the other hand through the recommendations for implementing the national networking dimension towards the National authorities and the GMES and Africa Coordination Team.

As a conclusion, it can be said that the multi-thematic network approach is the most direct way for increasing the National EO capacities with the weakest effort and as such it prepares the ground for GMES and Africa, including MESA.

## 2. Summary description of the project context and objectives

### Context

An Africa-EU Joint Strategic Partnership was signed on Science, Information Society & Space. Then African and European policymakers and stakeholders got together in Lisbon in December 2007, calling for an Action Plan on GMES and Africa. Space applications such as Earth observation or satellite communications have been recognized as a central tool to support Africa in its sustainable economic and social development. To support the preparation of the action plan, the European Commission funded few projects among which SAGA-EO.

### Concept and Objectives

SAGA-EO is based on a sound experience of both European and African projects (GMES, PUMA, AMESD,...), dealing with environment monitoring based on information derived from Earth Observation data. The main finding driving the concept is that no project tackles the EO field as a global approach (technological, organisational and institutional).

The SAGA-EO project consists in a feasibility study to design, set-up and assess dedicated multi-thematic networks of actors in individual African countries. Each network is organised according to a model named horizontal model for pooling and exploiting the common means (EO based information, infrastructure or knowledge) of its constituting thematic.

SAGA-EO supports the GMES and Africa initiative on the cross cutting issue "Infrastructure framework" by enhancing the capacity of national actors on the use of EO based information for environment and resources management.

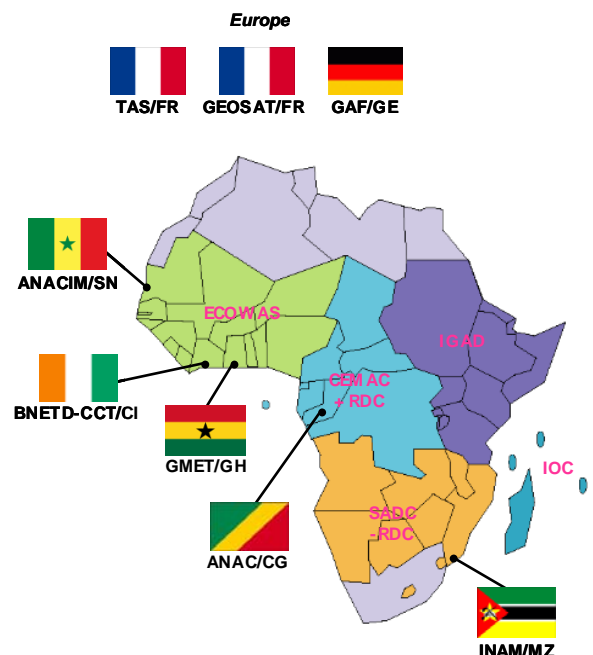
### 8 partners in 7 countries

Consortium led by Thales Alenia Space France

All along the project duration, information was shared with potential European data, services and expertise providers, African stakeholders, users or partners, but above all with the GMES and Africa Coordination Team and the SAGA-EO Advisory Board. The visibility material encompassed meetings, conferences, booth, TV shows, papers, poster, leaflet, newsletters, but also:

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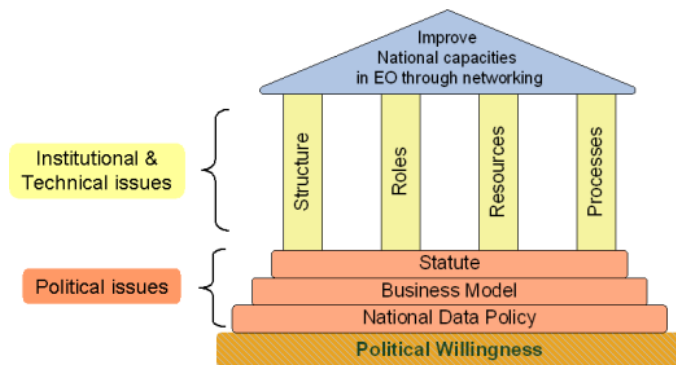
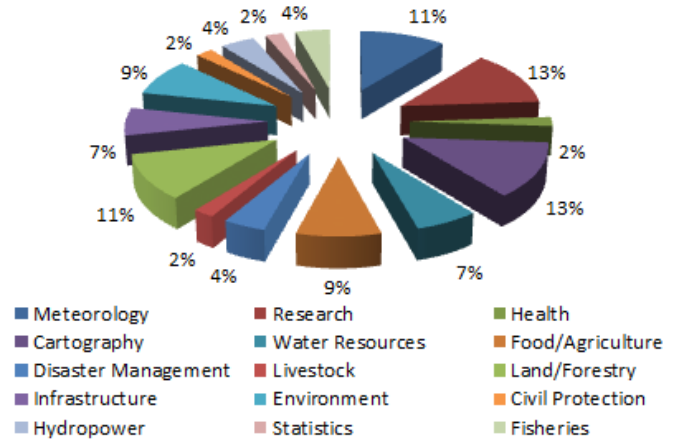




### Work achieved during the first period

In each of the five countries, a network has been set up with ten to twelve institutions from various sectors and coordinated by the SAGA-EO consortium national partner. Their needs concerning the network organization and the pooling and exploitation of common means have been collected through workshops. The analysis of those requirements, together with the analysis of the existing initiatives in terms of EO data and service providing mainly in Africa and Europe, led to the design of both an organizational model and a technological platform that have been discussed and adopted during a one week workshop with the project members.

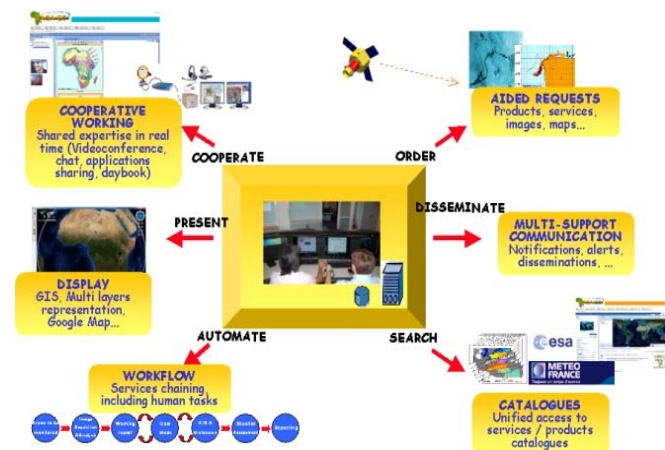
**SAGA-EO Users sectors**



The horizontal model based on the political willingness is built on political layers (National Data Policy, Business Model and Statute) with four pillars (Structure, Roles, Resources including the Technological Platform and the Processes) in order to improve the National capacities in Earth Observation through networking.

To highlight the benefits of this organization, various thematic scenarii were proposed by the five African partners according to their major national stakes. Finally, two generic scenarii to be played during future assessment sessions were adopted by the five national networks:

- Food Security: monitoring of agricultural season;
- Flood: monitoring of water level in risky areas.

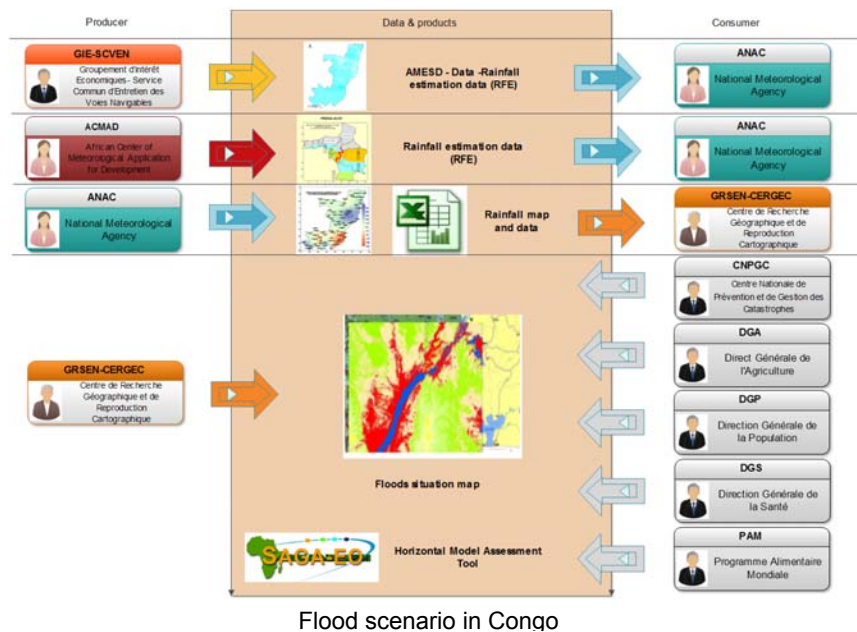


### Work achieved during the second period

After a survey of the technological constraints existing in Africa regarding Information and Communication Technology, a physical platform to support the EO network processes has been defined with a special focus on GMES, PUMA and AMESD infrastructures and data interfacing. The system definition includes the future operational technological system, but also a subset of functions, which will help to prove the proposed concepts in terms of organization and technology. So, a SAGA-EO toolbox that encompasses existing tools was assembled.

The major event of the project consisted in the ten days session of the Horizontal Model Assessment (HMA) in each of the five countries. All the national network members attended to the following activities:

- Presentation of the technological toolbox;
- Creation of metadata and of a data Catalogue;
- Sharing the data and products within the network;
- Playing Food security and Flood Scenarii;
- Dissemination of the study results to high level governmental and institutional representatives;
- Filling of questionnaires;
- Writing of resolutions and recommendations;



By playing the HMA sessions in 5 African countries, during 50 days, with 65 actors representing 55 national institutions which are in 15 sectors, and according to the user feedback analysis (more than 4500 answers), we can consider that the horizontal model proposed by SAGA-EO is relevant to support the implementation of a national EO user network.

Following this major milestone, and to conclude the study, documents on the methodology for the implementation of an operational network were drawn up: one on the network organization and the other one on the technology definition (Platform and Services).

Finally, the outcomes of the project are outlined on one hand through the key issues and the benefits of the SAGA-EO paradigm and on the other hand through the recommendations for implementing the national dimension towards the National authorities and the GMES and Africa initiative, and MESA.

### Key issues to implement the network

- It is crucial to institutionalize the network;
- Decision rules have to be clearly defined;
- Data and information quality needs to be improved (because of sharing);
- Standardized data model (e.g. ISO 10115/19139 for catalogue) needs to be implemented, because of data sharing;
- Collaborative tools (videoconference, wiki, forum, blog) are of utmost importance;
- Network shall include the academic actors (students, teachers, researchers);
- National networks shall benefit from existing institutional organizations



- National networks shall be connected to EO information providers: PUMA, AMESD, GMES, satellite receiving stations (Algeria, Egypt, Nigeria, South Africa, Gabon...).

#### **Expected benefits at National level**

- Improvement of the efficiency and quality of the mission of each network member and of the network as a whole;
- Actors emulation: improvement of motivation and stimulation through customer/ supplier relationship;
- Increased synergy and cross-fertilization between thematic areas and improvement of the national EO capacities;
- Economy of scale: through pooling of means, data (ex: PUMA, AMESD,...) and knowledge;
- Sustainability rely on network institutionalization, actors critical mass and participation of academic actors.

#### **Expected benefits for GMES & Africa**

- Blowing-up of the Earth Observation user community;
- The approach is complementary to the thematic model implemented in GMES, AMESD...
- It provides structured networks of motivated actors; with an organization and suitable means;
- The horizontal network actors are key actors for vertical networks though smoothing the AMESD thematic extension (regional, trans-regional, continental) foreseen in MESA;
- The horizontal networks are ready to host cross-cutting thematic like climate change or risk management.

#### **Main recommendations towards nations**

- The national network members ask to continue, after the end of the feasibility study, their activities through a phase of national ownership;
- Recommend to the Directorate of their National Coordinator:
  - To continue to coordinate their national network;
  - To ensure proper operation acting as operational liaison between their national network and their Governmental Authority;
  - To request their Government to endorse or support any action (institutional, financial, technical, etc..) in order to implement a sustainable network.
- Recommend to the Directorate of the National Institutions:
  - To confirm their commitment to join the network;
  - To help their National Coordinator in its actions for the network operational implementation.

#### **Main recommendations towards GMES and Africa, including MESA**

- To give a practical answer to the request for implementation of the SAGA-EO concept from the five countries involved in the SAGA-EO support action project;
- To organize, at regional level, workshops in order to extend or to strengthen the awareness of the concept to all countries;
- To develop at Continental or Regional level an operational technological platform, including African partners;
- In order not to lose the SAGA-EO study momentum, it is recommended to setup as soon as possible
  - A first set of national network, at least three, into the MESA program;
- And to extend the networking to other African countries with a specific Regional or Continental program, with the active participation of the RECs, funded by new GMES & Africa funds;



**The multi-thematic network approach is the most direct way for increasing the National EO capacities with the weakest effort and as such it prepares the ground for GMES and Africa, including MESA.**

### 3. Description of the main S&T results/foregrounds

#### 3.1 Horizontal model concept in African countries

##### 3.1.1 The concept itself

The first activities consisted in setting-up the SAGA-EO national networks, identification of the existing networks involved in environment management based on EO products, inventory data & products relevant to the project and define an network organization model and scenarios to assess the model.

Regarding the SAGA-EO networks setting-up, it was essentially oriented into the selection of national actors, involved in the handling of EO data and technologies, to be part of the (horizontal) proposed African National EO user network. The GMES Africa action plan and in particular the 8 thematic areas and 3 cross-cutting areas were taken into account to select the network actors. After the selection of the SAGA-EO members by the AFNC, we have had several workshops in Congo, Ghana, Mozambique, Senegal and Côte d'Ivoire in order to collect the user needs.

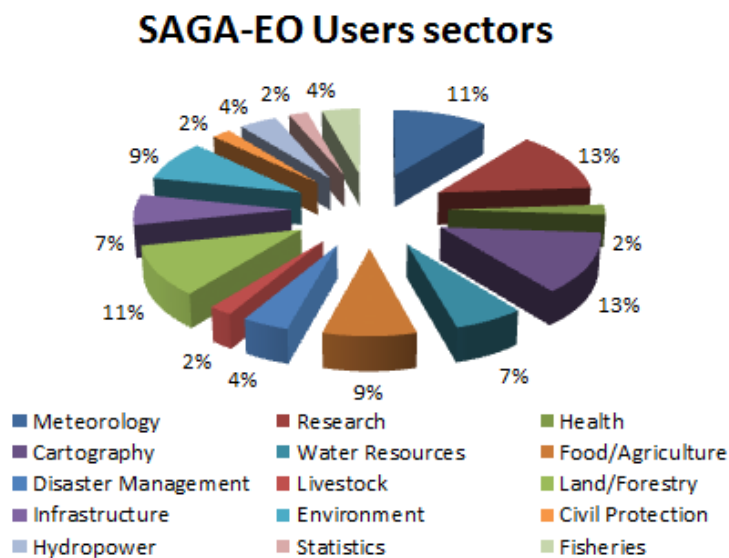


Figure 1: SAGA-EO Users sectors diagram

The diagram above presents the different sectors covered by all SAGA-EO network members, and allows assessing the organizational model defined in SAGA-EO at multi thematic levels.

Concerning existing networks, the activity was oriented on the compilation of information on the existing European and African networks producing, diffusing and exploiting EO data and products; this, in order to understand the feasibility of synergies between them and the proposed African National EO user network and to establish a direct contact with some of them to participate to the proposed horizontal model assessment.





Concerning data and products derived from Earth Observation a survey has been achieved on sensors and service providers already existing either in Europe, Africa or elsewhere. However only some of them are fully relevant to the African National EO user network the SAGA-EO project intends to study.

In parallel to the user needs survey, we launched the study regarding the best and suited network organizational model (eventually with variants due to country specificities) at national level, based on common needs and integrating the institutional, contractual and technological aspects of the potential operational African National EO user networks. The proposed organization is a combination of the African National EO user networks needs and the lessons learnt from previous experiences in Africa (PUMA, AMESD,...) and the significant European background from the GMES projects concerning geo-information operational services development and implementation.

The global structure (or organization chart) of the network organization shows the way the functions of the organization are broken-down, allocated, organized and gathered into structures. Each element of the structure represents an elementary function that has to be fulfilled by the organization in order to be efficient. A function corresponds to a job or profession and belongs to a structure gathering several functions. This will be described in more details in the hereunder paragraphs. The global structure below is a functional view that should not be confused with the following structures, which could be different on some points:

- People structure connecting functional entities to people
- Institutional structure connecting functional entities to institutions
- Physical structure connecting functional entities geographical premises

The global structure is divided into three main structures that are the Pilotage (or Coordination) structure, the Support structure and the Operational structure that implements the "actual and visible" activities of network.

The Pilotage and Support structures have to be created from scratch, even if in the implementation phase, these functions could be supported by existing organizations.

Concerning the Operational structure, one part has to be created:

- On one hand, the Operation & Development Coordination and the network common services
- On the other hand, in each member body, a small entity that implements the interface with the common services

The other part of the Operational structure dealing with specific services (which may be termed "business services": e.g. mapping, weather forecast ...) already exists because those services are the day to day job of the network members. However, this is one of the major goals of the networking to provide those services, as much as possible, to any of the network member. And so, this is why a small dedicated entity has to be set-up in each network member body.

The following diagram presents the structures forming the National EO user network:

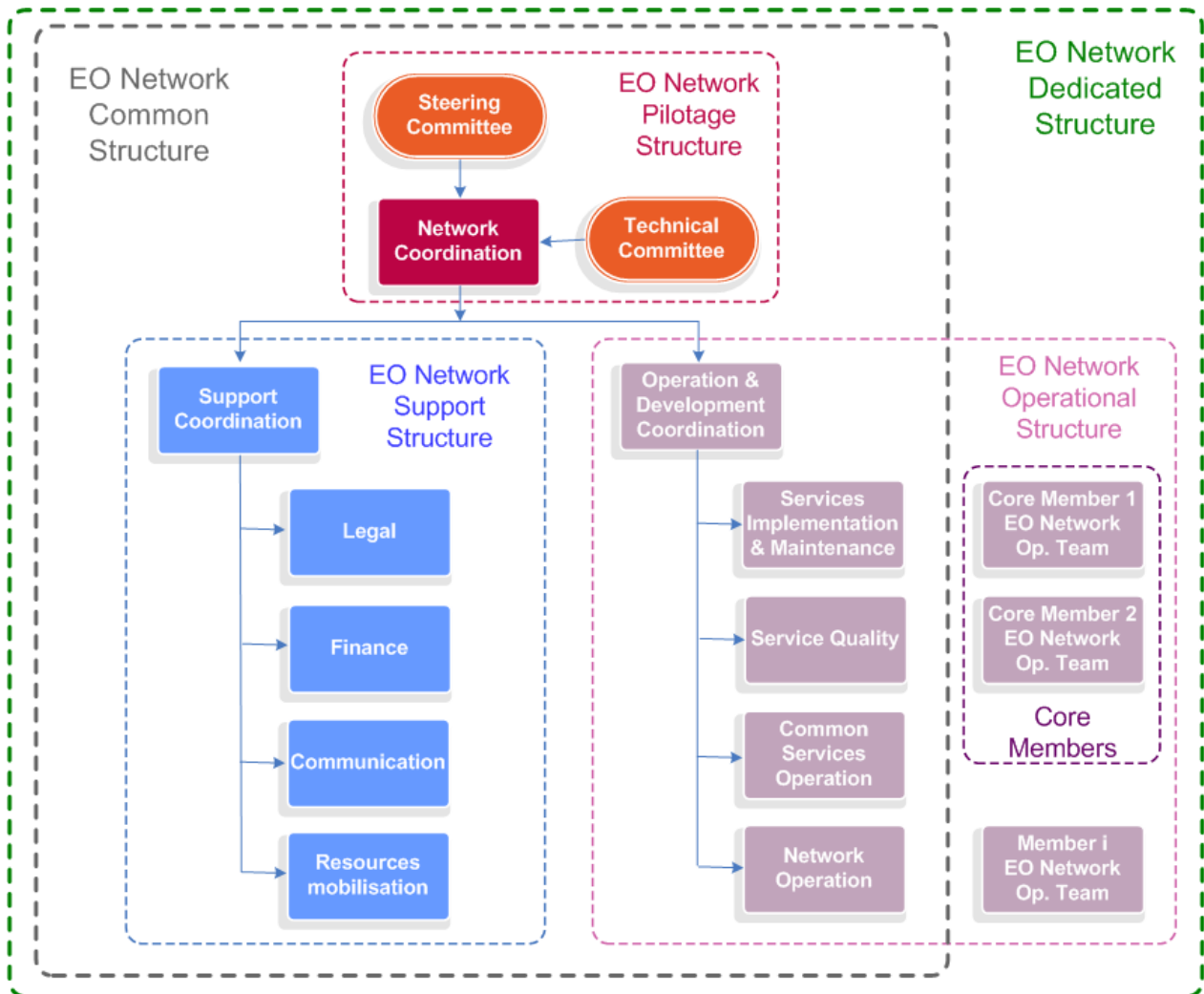


Figure 2: National EO users network overview

### 3.1.2 Pilotage structure

The **Pilotage Structure** is the highest level organizational instance guiding strategically the network and controlling its operations, ensuring that at any time it is on the good track, as a policy implementation instrument. In this regard, it is accountable for the achievement of the policy objective consisting of a widespread use of EO data and EO-based Added-Value Information Products and Services (AVIPS) in all development sectors of the national economy. It is composed of the following entities:

- A **Steering Committee** equivalent to a legislative organ taking policy decisions and controlling and overseeing the action of the executive body;
- A **Technical Committee** in charge of technical and scientific orientations for the development of sustainable solutions to the various issues submitted to the network;
- The **Network Coordination** in charge of the overall coordination of executive actions of the network



### 3.1.3 Support structure

This component of the Network Structure is responsible for the support necessary for the management of the network. It corresponds to the usual Administrative and Financial department of a common institution.

The Support structure comprises bodies in charge of the following sectors:

- Legal
- Finance
- Communication
- Resources Mobilization

The **Legal** organ is in charge of ensuring that the network is operating in line with the law and regulations of the country, while meeting the legal requirements of international scope.

The **Finance** organ ensures an efficient use of the financial resources mobilized for the operation of the network. It is also responsible for the implementation of the business model on which the network is based on.

The **Communication** organ is in charge of giving visibility of the network action in the country and outside. It ensures inter alia that the outputs of the network are known to the users and that the needs and aspirations of the latter are made known to the management of the network.

The **Resources Mobilization** organ is in charge of identifying the potential sources of human, financial and technologic support to the network, of negotiating the conditions for the mobilization of these resources, and organizing the effective acquisition of these resources.

### 3.1.4 Operational structure

The **operational structure** is responsible for taking all necessary actions allowing the network to meet all the information needs of its members and its community of users at large. It is the scientific and technological arm transforming the EO raw data into AVIPS for the various information needs identified. The composition of this structure is as follows:

- Services Implementation and Maintenance
- Service Quality
- Common Service Operation
- Network Operation

This structure operates on the basis of Operational Teams composed of member institutions grouped for the purpose of delivering specific AVIPS. Their number depends on the operational scope of the network. The wider the variety of AVIPS targeted by the network, the higher the number of Operational Teams.

The **Services Implementation & Maintenance** is meant to ensure the sustainable operation of all the network components concurring to the delivery of the various AVIPS and their maintenance over time.

The **Service Quality** organ looks at the quality of the services and products delivered and controls that the production standards are met;





The **Common Services Operation** is in charge of pooling the AVIPS production chain common to all the members of the network. It ensures efficiency in the application of the resources sharing principle

The **Network Operation** organ supports the members of the network in whatever is necessary for their qualitative contribution to the network's operation. Its role is to analyse constantly the functioning of the network and provide the necessary adjustments where appropriate in order to ensure a sustainable and quality operation of the Network.

### 3.2 Horizontal model assessment

In order to validate the concept defined by SAGA-EO, we have designed the more relevant scenarios to assess the concepts issued from this phase. In first time, the scenarios were chosen in accordance to each country major thematic and to national policy priorities concerning development and environment. The concerned thematic are the following:

- Food security driven by ANAMS in Senegal;
- Monitoring coastal erosion driven by GMET in Ghana;
- Flood forecasting & early warning driven by INAM in Mozambique;
- Agriculture impact on forest cover driven by BNETD in Côte d'Ivoire;
- Water shortage impact on river navigation driven by ANAC in Congo.

Each African National Coordinator led their national network and local workshops were organized for building their scenario in a collaborative way. Then, after validation, these scenarios were consolidated, tuned by the other work package contributors.

In a second time, the Consortium decided to select two scenarios which will be played in each country. In that way, we were be able to compare with the same reference scenario the results from each country.

Finally, the selected scenarios were:

- Food security;
- Flood forecasting & early warning.

They have been tuned according to data and technological components available for the project.

The following diagram presents these scenarii:



We also integrate interfaces for AMESD and PUMA stations which allow building metadata using ISO metadata profile (ISO19115). Thanks to these interfaces, all products built by these stations were automatically published to a catalogue. Then, the SAGA-EO catalogue was able to harvest each of one in order to propose these products to SAGA-EO community.

The following diagram presents the implementation of these two interfaces:



Figure 6: AMESD & PUMA catalogues interfaces

In that case, we allow each institution to organize their data which can be raster, vectors as well as documents like word, excel, pdf data formats...in intranet system, and to share them with a SAGA-EO internet system. The following diagram presents a view of the institutional catalogues interfaces with a SAGA-EO platform:



Figure 7: Institutional catalogues interfaces

The following screen copies show the HMA platform used for the HMA activities:

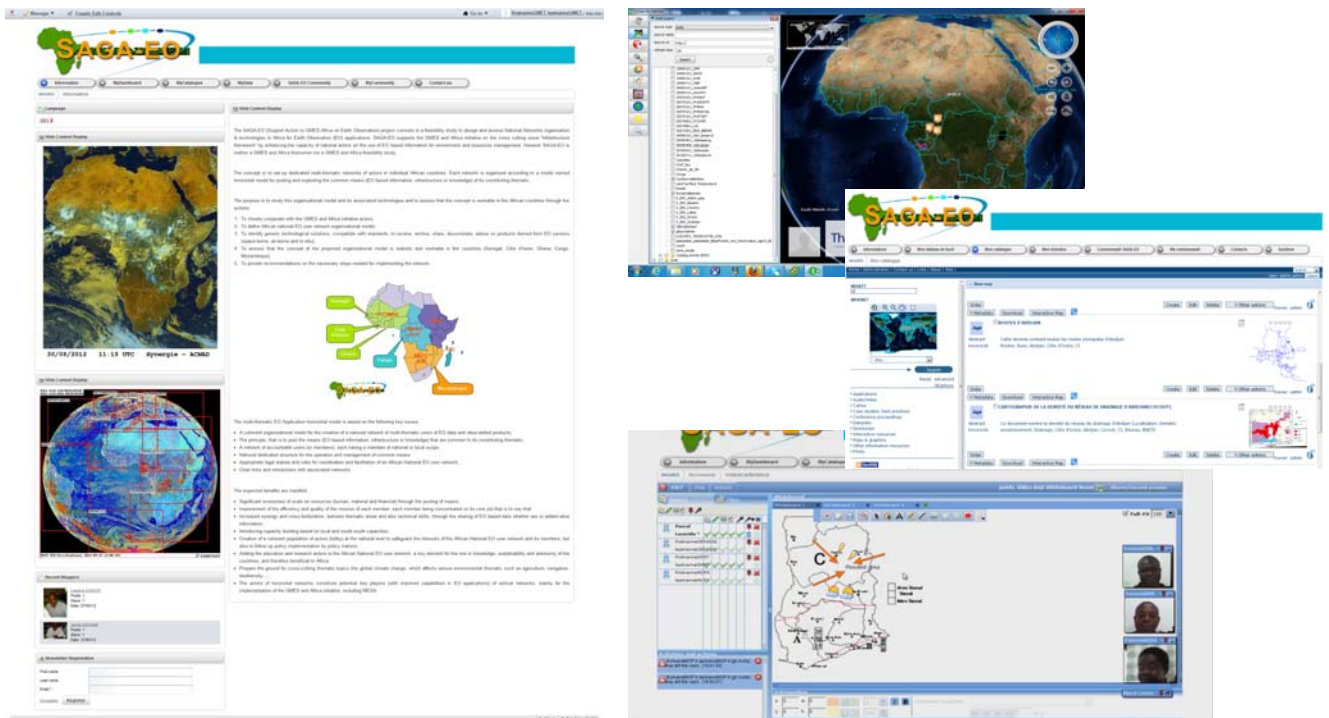


Figure 8: Screen copies of the HMA platform

### 3.3 Horizontal model assessment results





We analyzed all questionnaires filled by the users who played the scenario that represents more than **4500 answers**, for **5** African countries, with **65** actors representing **55** national institutions in **15** sectors.

### 3.3.1 Synthesis on Organizational Considerations

From a purely organizational point of view, the model has been positively valued (over 7 test areas covered by 10 questions) by a minimum of 81 % and a maximum of 96% of the users (see summary below)

Test area	Result	Comment
Model dimensions	Adequate and applicable (84% of the users)	Strong coordination effort required at the policy level
Governing structure ("Pilotage")	Adequate (94% of the users)	Stay open to slight adaptation measures, like in Côte d'Ivoire where a few comments are oriented towards the merging of some functions in this structure
Managerial Structure ("Support")	Adequate (92% of the users)	Stay open to slight adaptation measures (eg: regarding the Finance and Resources Mobilization functions suggested to be merged, legal function, Marketing )
Operational Structure	Allows complete access to existing data (94% of the users)	More explanation necessary as irrelevant comments were recorded on this question
	Allows complete coverage of AVIPS <sup>2</sup> production / delivery (91% of the users)	More explanation needed for a clear understanding of the functions content, in relation with the comments formulated
	Allows complete dissemination of AVIPS (96% of users)	Same as above
	Ensures the function of capacity strengthening for network members (81% of the users)	It might be necessary to make clarify visible the training function, or to describe in detail the progress monitoring and constant capacity strengthening process
Collaborative Work	Relevance: Necessary (87% of the users)	An additional 13% of users found the principle advisable, making the relevance accepted by 100%.
	Related Institutional Issues: Solvable issues (79% of the users)	Another 13% found these issues minor details. However, 8% of the users qualified them as difficult to

<sup>2</sup> Added-Value Information Products and Services

		address
Resources Pooling Principle	Found critical and useful (100% of the users <sup>3</sup> )	

Table 1: Organizational considerations table

### 3.3.2 Synthesis on Technical Considerations

On the technical side, in relation with the use of the platform to strengthen the functionality of the model, the following results have been achieved, as shown on the table below: The model can be translated into a functional reality thanks to the incorporation of functions for the three levels of the structures (Strategic management or “Pilotage” – admin/managerial or “Support”– operational) on the platform for a majority of users ranging from 70% to 85% of the population surveyed.

Test area	Result	Comment
Fulfilment of strategic management functions (“Pilotage” level) by the platform	Clearly perceived (81% of the users)	To be added to this group of users is another 19% of the users finding the way of showing the ability to fulfil these functions rather subtle.
Fulfilment of administrative/managerial functions (“Support” Structure level) by the platform	Almost every function and one or two more ‘85% of the users perceived the platform as an opportunity to fulfil this type of function directly online)	A marginal 13% of the users don’t think the platform can be an opportunity to perform any other function of this category directly online;
Fulfilment of operational functions (Operational Structure level) by the platform	All operational functions (70% of the users) could be fulfilled by the platform	An additional 22% of users think that more than half of the Operational functions can be fulfilled online through the platform. However a marginal 8% of users have the feeling that only a few of these functions can be performed online through the platform

Table 2: Technical considerations table

### 3.3.3 Conclusion on Organizational and Technical considerations

From the facts exposed above, and summarized on the two tables above, the results of the Horizontal Model Assessment on the Organisational component side lead to the conclusion that the model is valued by the users who had the opportunity to test it to a level above 70% of their population. The impact of the technological platform or HMA Tool is an invaluable source of enhancement of the operationality of this organizational model, as some of the bureaucratic burden can be taken in charge directly online. However, for an extended and operational deployment of this model, it seems necessary to devote more time to explain and sensitize the communities of potential users on the content of the various functions composing the three basic structures. It is also necessary to stay open and ready to allow a debate to take place on some specific issues related to the content of the structures, in order to allow for the country-specific-context to influence the final option to be implemented in a

<sup>3</sup> 32% of the users found the principle critical, while 68% of them found it useful

given nation. These are going to be slight and adaptive measures without a significant impact on the architecture of the model.

### 3.3.4 Theme-oriented Analysis

The theme-oriented analysis is aimed at looking for possible correlations between the structures identified in each part of the Organizational model and the countries where the Assessment took place. In other word, this specific analysis is aiming at finding what is common to all countries (the core behaviour) and what is specific to a particular country (the specific behaviour). It is only performed over the structures of the organizational model, as these are at the heart of the innovation in the area or organization developed by the SAGA-EO project

To this end, figures were drawn from the results of the assessment and analysed based on the relative values (percentage of the sample choosing the answer under review). This type of figure, while showing again the core behaviour, illustrates also the residual behaviours regarding the other possible choices selected as answers to the question under review, and therefore gives the relative strength of the alternative answers recorded, characterizing the specific behaviour.

The sample of the population surveyed is chosen to correspond to that of a country, which allows drawing conclusions based on the behaviour of this country's users. The threshold used to trigger a deeper analysis of a given specific behaviour was set to a value of 20%. In other words, whenever a specific behaviour equal to, or beyond this value is detected, an effort is put into looking for the cause(s) of that specific behaviour. All other values below this reference level are deemed negligible, and therefore of no significant influence on the content of the organizational structure analysed.

The following diagrams present a part of the results analysis:

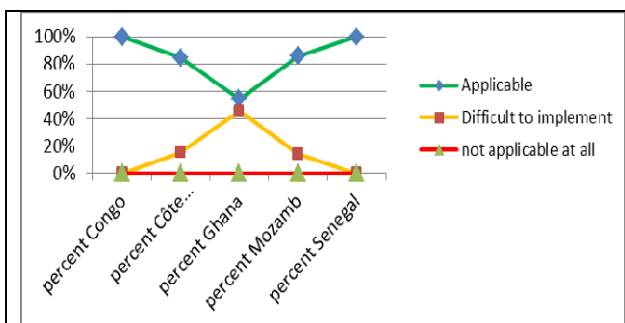


Figure 9: Applicability of the organizational model's dimension (relative)

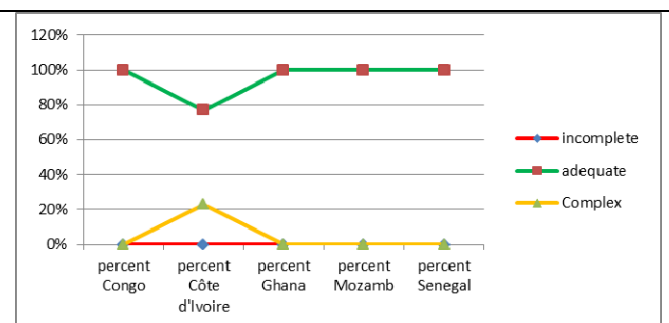


Figure 10: Content of the governing structure (relative)

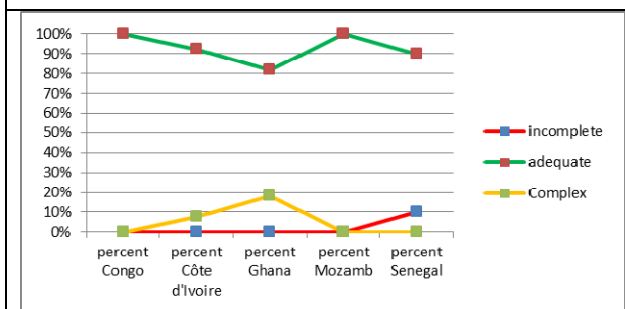


Figure 11: Content of the managerial structure (relative)

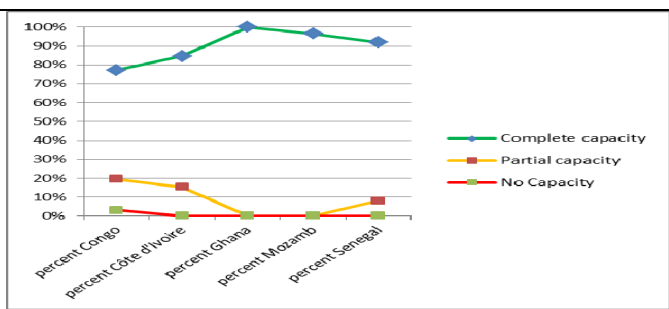


Figure 12: Overall capacity of the operational structure (relative)

## 4. Final results

### 4.1 Technological implementation methodology

Before to propose a way to implement a technological tool like a SAGA-EO platform, we have from the knowledge of the HMA activities and users' feedback, updated the design of the HMA platform for a potential operational implementation.

The following diagram shows the logical architecture of the platform:

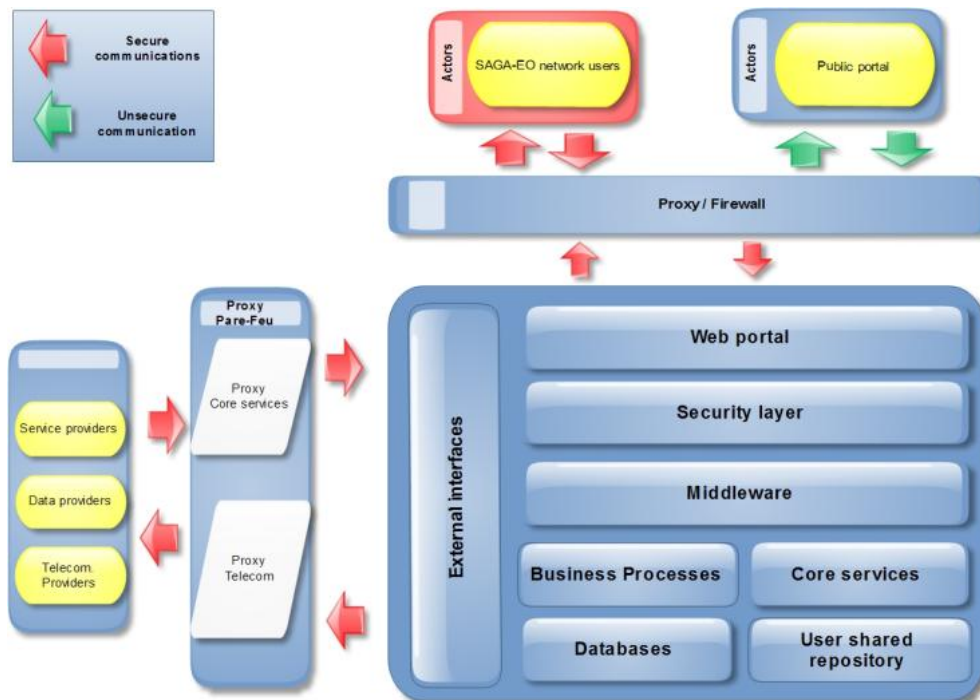


Figure 13: HMA Platform logical architecture

Finally, we design a physical architecture regarding the deployment of such system:



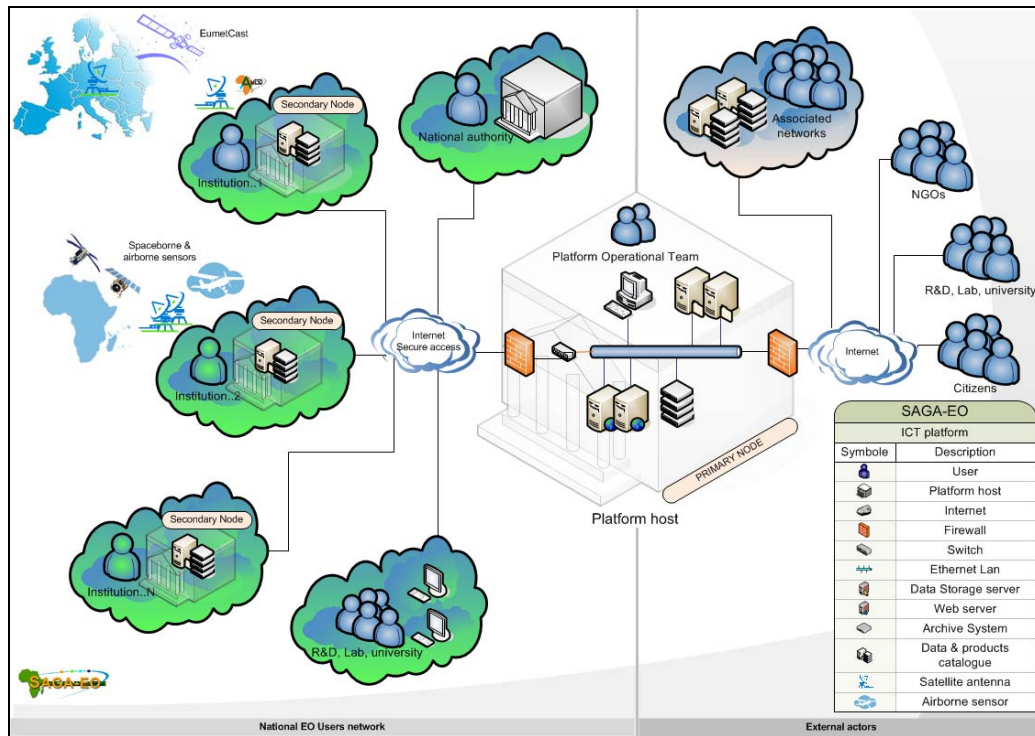


Figure 14: Physical architecture diagram

After having defined the platform to be developed to cope with the national network members requirements, we presented the work program to be done to implement the platform, up to the operational - or exploitation - phase. The figures presented are based on the design analysis. However this gives mean values that can help to build a development plan for setting-up the next steps to an operational phase.

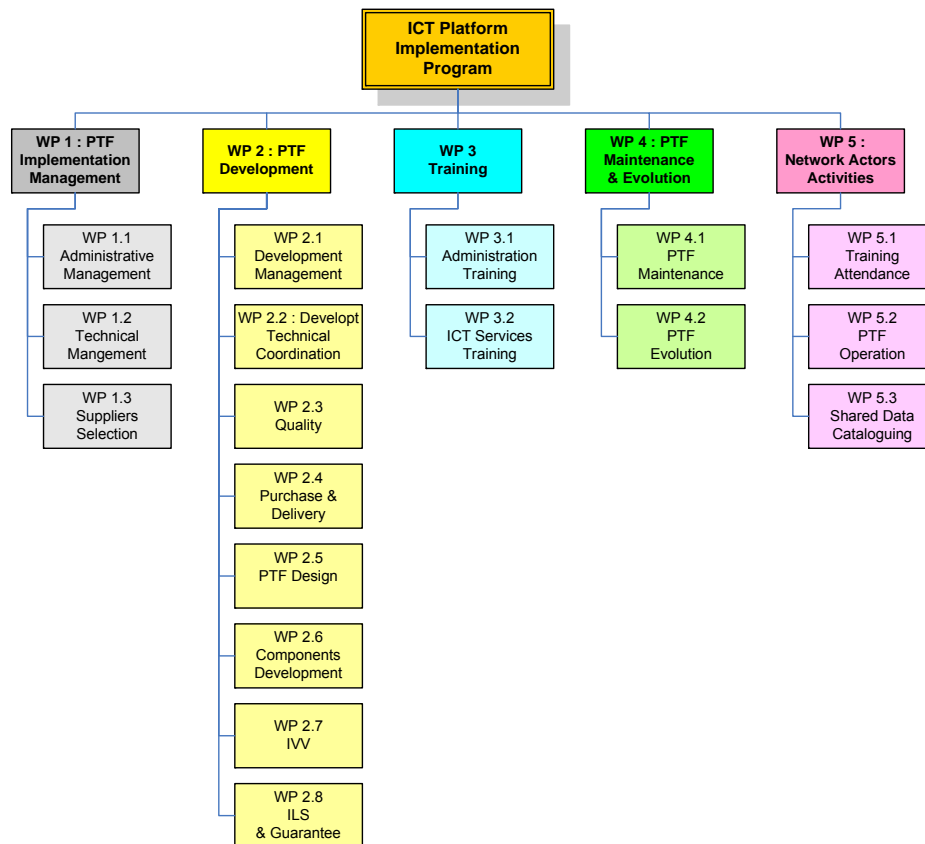


Figure 15: Work Breakdown Structure of the program for the ICT Platform implementation

From this WBS, we proposed a detailed work plan with schedule, an organisation team with the profile of each position, and finally, a detail of each work package with their objectives, and their tasks.

#### 4.1.1 Key issues for the platform implementation

Some key issues have been identified during the proposal of the SAGA-EO study. Those preliminary key issues have been consolidated, added or cancelled following the Horizontal Model Assessment sessions.

The four major key issues dealing with the technological platform are:

- Data and information quality needs to be improved (because of sharing);
- Standardized data model (ex. ISO 10115/19139 for catalogue) needs to be implemented (because of data sharing: PUMA, AMESD,...);
- Collaborative tools (videoconference, wiki, forum, blog) are of utmost importance;
- National networks shall be connected to EO information providers: PUMA, AMESD, GMES, satellite receiving stations (Algeria, Egypt, Nigeria, South Africa, Gabon,...),...

Other important issues have also been evidenced:

- For an operational system, it is really important to propose an application with a friendly GUI, and to pay attention not to have too much information grouped in a same screen. The better way should be to allow the user to personalize its portal pages.



- For an operational system, the point regarding the business processes customisation is very important, because the functioning rules depends on the National Geospatial Data Policy that will probably be different from a country to another. The implementation of a service oriented architecture supported by a workflow management application allows this feature through separating the application from the business processes. So this point is already implemented by the proposed platform architecture.
- Regarding the standardization, it is important to notice that most of actors of the HMA sessions do not have any system to classify their data. Thus, a catalogue could support each network member to apply international standards in its institution by cataloguing its data and products. Then, a master catalogue could aggregate their metadata. This solution is not intrusive and allows a good level of flexibility. Those two requirements are fulfilled through the splitting of the architecture into primary node and secondary nodes having a common set of functions for the catalogue and the repository.

## 4.2 Organizational implementation methodology

From the HMA activities, we were able to propose rules to set up and consolidate national EO User networks in Africa. Such national networks aim at ensuring easy access to, use and sharing of EO data and EO-based Added-Value Information Products and Services (AVIPS) for sustainable development purposes. The set of rules proposed hereunder in this organizational methodology are rooted in the outcome of upstream activities undertaken in the frame of the present SAGA-EO Research and Development project. Data have been collected, user needs have been identified, analysed, and confronted with a conceptual framework developed in the Network Organizational Model, Scenarios have been used to assess the appropriateness and applicability of the organizational model in five pilot countries in Africa, namely Congo Brazzaville, Côte d'Ivoire, Ghana, Mozambique and Senegal.

The methodology, as mentioned above, is based mainly on the outcome of the HMA undertaken in the five pilot countries. But it also draws on the general knowledge of the SAGA-EO member institutions in the areas related to the development and operation of a technology-based system, including the organizational, sociologic and cultural environment considerations involved.

The methodology also makes use of the EU overall approach to project management. Indeed, developing a network and consolidating it is comparable to initiating an important project and running it from formulation to final evaluation. Thus, the idea of developing a national EO user network has been broken down into the following Work Packages as shown on the diagram below:

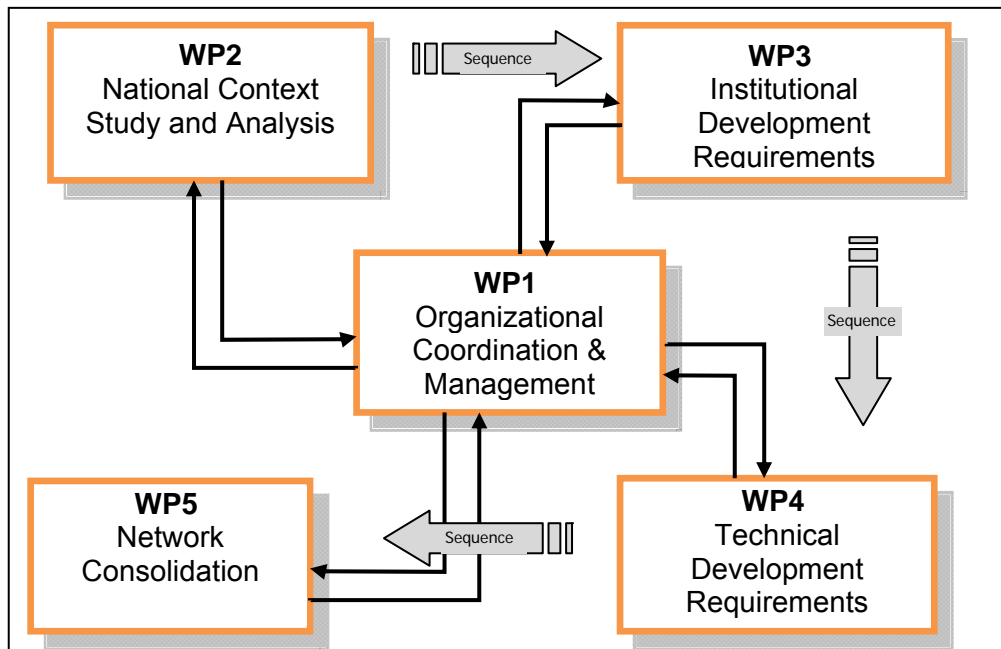


Figure 16: Work Packages and their relation

The methodology to develop a national EO User Network follows three main phases:

1. an Initial Strategic Decision Phase,
2. an Institutional and Technological Development Phase,
3. an Operational Phase.

The Initial Strategic Decision phase has to do with the political decision to undertake the development of the national network, and to define at the same time the Coordination institution.

The Institutional and Technological Development phase is the period during which the network is developing into a legal entity, with a clear organization and a solid technological backstopping infrastructure.

The Operational phase covers the actions related to the full optimization of the network's operation and its maintenance, whereby the initial strategic objectives and operational targets are reached. These phases are incorporated into the methodology structure below

Below this line, the National EO User Network organizational methodology is presented as a project using the EU format of project management. Only the key features of the Description of Work are developed to enhance the understanding of the methodology.

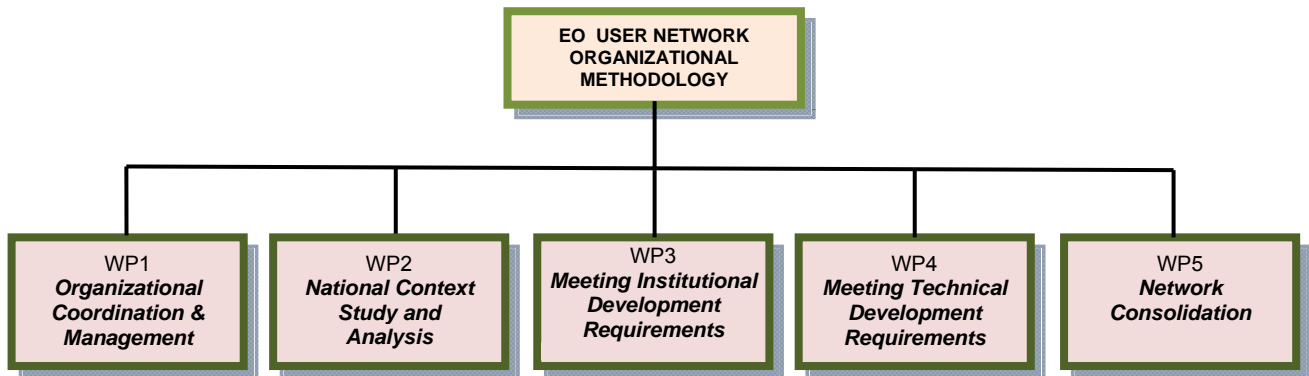


Figure 17: Work breakdown Structure

Like the technological methodology, we detailed each work packages with their objectives and tasks for an implementation of EO user network in African countries.

#### 4.2.1 Important Recommendation areas

Following are some important areas from which recommendations emerge as a result of the field work done during the first period and during the HMA sessions in the concerned countries

##### In the field of National Context

As mentioned above, the national context varies from country to country, and it is very important to constantly adapt the organizational model. This fact is a the origin of the National Context study and Analysis set as a work package in this project formulation for the application of the EO User Network organizational methodology

##### In the field of Organizational Model

As mentioned earlier, the horizontal model has two components; the organizational component and the technological component. The two go together and are equally important, but most importantly they are inseparable.

##### In the field of Technological platform

The technologic Platform as mentioned above was a tool that shod how the collaborative work can be done with benefit for the community of users, by sharing the scarce resources (human, data, equipment, finance). It is for this reason that a strong recommendation from the African countries is to have the opportunity to use it on a day by day basis, and to deploy the capacity of the whole model with their implication in the MESA program.

##### In the field of Generic Methodology

This generic methodology is meant to facilitate the implementation of the SAGA-EO Network in a country to share efficiently EO data and their related added-value information products and services (AVIPS). Despite the proven feasibility of all the concepts built in the SAGA-EO project, this methodology has to be used critically and be adapted to each country's national context.



#### 4.2.2 Conclusion

The Horizontal Model Assessment undertaken in the five countries showed that the horizontal model test was largely applicable, with a few exceptional difficulties of application in two countries due to the national context. However the methodology proposed summarizes the way to use best the key results of the SAGA-EO project to develop an EO User network in a country. Its extended application should contribute to the objective of the GMES Africa initiative.

#### 4.3 Conclusions

By playing the HMA sessions in 5 African countries, during 50 days, with 65 actors representing 55 national institutions which are in 15 sectors, and according to the user feedback analysis (more than 4500 answers) and the formal recommendations elaborated, we can consider that the horizontal model proposed by SAGA-EO is relevant to support the implementation of a national EO user network.



## 5. Potential impact and the main dissemination activities and exploitation of results

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The expected benefits are manifold:

- Significant economies of scale on resources (human, material and financial) through the pooling of means;
- Improvement of the efficiency and quality of the mission of each member; each member being concentrated on its core job that is to say that:
  - It does not implement annex tasks, better implemented by another member or the common dedicated structure;
  - And it makes other members benefit from its skills and experience.
- Increased synergy and cross-fertilization, between thematic areas and also technical skills, through the sharing of EO based data whether raw or added-value information;
- Introducing capacity building based on local and south-south capacities;
- Creation of a coherent population of actors (lobby) at the national level to safeguard the interests of the African National EO user network and its members, but also to follow up policy implementation by policy makers;
- Adding the education and research actors to the African National EO user network, a key element for the rise in knowledge, sustainability and autonomy of the countries, and therefore beneficial to Africa;
- Prepare the ground for cross-cutting thematic topics like global climate change, which affects various environmental thematic such as agriculture, navigation, biodiversity...;
- The actors of horizontal networks constitute potential key players (with improved capabilities in EO applications) of vertical networks, mainly for the implementation of the GMES and Africa initiative, including MESA.

### Regarding the main dissemination activities

The national workshops organised to set-up the national user networks in each of the five countries were a good opportunity to communicate. Each African partner has published a paper in the national newspaper and/or presented the SAGA-EO project in a national TV show.

We presented SAGA-EO at the 9<sup>th</sup> EUMETSAT Users Forum in Ouagadougou (Burkina-Faso). We have had a strong interest from the attendees, and the representative of IGAD Regional Economic Community was very disappointed not to be represented in the SAGA-EO consortium. It was also the occasion to see other potential SAGA-EO associated network like EAMNET.

Together with the 2 other support action to GMES Africa (EAMNET and GARNET), SAGA-EO was presented to EC/DG ENTER Space conference in Budapest on May 2011.

The SAGA-EO concept and first results were also presented at the 2<sup>nd</sup> AMESD Forum held in Mauritius the 20-24<sup>th</sup> of July 2011 and we participated to a round table on “networking approach”





that highlighted the National approach as the one to be improved shortly. This finding has been included as recommendation for the forum.

The SAGA-EO concept was presented at the Global Geospatial Information Management (GGIM) meeting at the UNECA premises (Addis Ababa the 9 of august 2011). The audience was composed on Directors of Mapping agencies and the main International and Intergovernmental Institutions of Africa involve in the Geo-spatial information domain.

We also presented our project for

- The Toulouse Space Show / 4th International Conference on Space Applications / Session "Africa: mirror of global challenges", 25-28 June 2012, Toulouse/France,
- The training Session for AMESD users, 16-20 July 2012, Abidjan/ Côte d'Ivoire,
- The Second International Conference on Climate Services (ICCS II), 5-7 September, 2012, in Brussels/Belgium,
- The 10th EUMETSAT User Forum in Africa, Addis Ababa, 1-5 October 2012.

We participated to the 10<sup>th</sup> EUMETSAT User Forum in Africa with a booth during 4 days, where we presented our HMA platform with live demonstrations, video, posters and roll-up stand.

We also presented our project during the HMA sessions in a specific timeslot reserved for the dissemination results to stakeholders, national institutions, NGOs where often, the national TV was invited and relayed our results at national level to citizens.

But we also disseminate our results via our public web site ([www.saga-eo.eu](http://www.saga-eo.eu)) and several newsletters (papers and electronic format).





## 6. Use and dissemination of foreground

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We did not publish any scientific publication yet.



## Section A (public)

These tables are cumulative, which means that they should always show all publications and activities from the beginning until after the end of the project. Updates are possible at any time.

TEMPLATE A1: LIST OF SCIENTIFIC (PEER REVIEWED) PUBLICATIONS, STARTING WITH THE MOST IMPORTANT ONES										
NO.	Title	Main author	Title of the periodical or the series	Number, date or frequency	Publisher	Place of publication	Year of publication	Relevant pages	Permanent identifiers <sup>4</sup> (if available)	Is/Will open access <sup>5</sup> provided to this publication?
1	<i>Economic transformation in Hungary and Poland'</i>		<i>European Economy</i>	<i>No 43, March 1990</i>	<i>Office for Official Publications of the European Communities</i>	<i>Luxembourg</i>	<i>1990</i>	<i>pp. 151 - 167</i>		yes/no
2										
3										

<sup>4</sup> A permanent identifier should be a persistent link to the published version full text if open access or abstract if article is pay per view) or to the final manuscript accepted for publication (link to article in repository).

<sup>5</sup> Open Access is defined as free of charge access for anyone via Internet. Please answer "yes" if the open access to the publication is already established and also if the embargo period for open access is not yet over but you intend to establish open access afterwards.



**template A2: list of dissemination activities**

NO.	Type of activities	Main leader	Title	Date/Period	Place	Type of audience	Size of audience	Countries addressed
1	Conference	EUMETSAT	9th EUMETSAT User Froum in Africa	October 2010	<i>Ouagadougou Burkina Faso</i>	<i>Meteorologist community</i>	<i>200</i>	African continent
2	Conference	EC	EC/DG ENTER Space Conference	May 2011	<i>Budapest</i>			Europe
3	Conference	UA	2sd AMESD Forum	July 2011	<i>Addis Ababa Ethiopia</i>	<i>Meteorologist community</i>	<i>200</i>	African continent
4	Conference	UNECA	Global Geospatial Information Management	09/08/2011	<i>Addis Ababa Ethiopia</i>			African continent
5	Conference	TAS-F	Toulouse Space Show - 4th International Conference on Space Applications	25-28/06/2012	<i>Toulouse France</i>			Europe
6	Training Session	UA	Training session for AMESD users	16-20/07/2012	<i>Abidjan Côte d'Ivoire</i>	<i>Meteorologist community</i>		African continent
7	Conference	ICCS	Second International Conference on Climate Services (ICCS II)	05-08/09/2012	<i>Brussels, Belgium</i>	<i>Meteorologist community</i>		Europe /Africa
8	Conference	EUMETSAT	10th EUMETSAT User Forum in Africa	01-05/10/2012	<i>Addis Ababa Ethiopia</i>	<i>Meteorologist community</i>	<i>200</i>	African continent
9	Conference	UA/EC	GMES & Africa workshop on Marine & Cost Management	09-11/10/2012	<i>Mombasa, Kenya</i>			African continent
10								



### 6.1.1 Section B (Confidential<sup>6</sup> or public: confidential information to be marked clearly)

#### Part B1

The applications for patents, trademarks, registered designs, etc. shall be listed according to the template B1 provided hereafter.

The list should, specify at least one unique identifier e.g. European Patent application reference. For patent applications, only if applicable, contributions to standards should be specified. This table is cumulative, which means that it should always show all applications from the beginning until after the end of the project.

<b>TEMPLATE B1: LIST OF APPLICATIONS FOR PATENTS, TRADEMARKS, REGISTERED DESIGNS, ETC.</b>					
Type of IP Rights <sup>7</sup> :	Confidential Click on YES/NO	Foreseen embargo date dd/mm/yyyy	Application reference(s) (e.g. EP123456)	Subject or title of application	Applicant (s) (as on the application)

<sup>6</sup> Note to be confused with the "EU CONFIDENTIAL" classification for some security research projects.

<sup>7</sup> A drop down list allows choosing the type of IP rights: Patents, Trademarks, Registered designs, Utility models, Others.



**Part B2**

Please complete the table hereafter:

Type of Exploitable Foreground <sup>8</sup>	Description of exploitable foreground	Confidential Click on YES/NO	Foreseen embargo date dd/mm/yyyy	Exploitable product(s) or measure(s)	Sector(s) of application <sup>9</sup>	Timetable, commercial or any other use	Patents or other exploitation (licences) or IPR	Owner & Other Beneficiary(s) involved
	<i>Ex: New superconductive Nb-Ti alloy</i>			<i>MRI equipment</i>	<i>1. Medical 2. Industrial inspection</i>	<i>2008 2010</i>	<i>A materials patent is planned for 2006</i>	<i>Beneficiary X (owner) Beneficiary Y, Beneficiary Z, Poss. licensing to equipment manuf. ABC</i>

In addition to the table, please provide a text to explain the exploitable foreground, in particular:

- Its purpose
- How the foreground might be exploited, when and by whom
- IPR exploitable measures taken or intended
- Further research necessary, if any
- Potential/expected impact (quantify where possible)

<sup>19</sup> A drop down list allows choosing the type of foreground: General advancement of knowledge, Commercial exploitation of R&D results, Exploitation of R&D results via standards, exploitation of results through EU policies, exploitation of results through (social) innovation.

<sup>9</sup> A drop down list allows choosing the type sector (NACE nomenclature) : [http://ec.europa.eu/competition/mergers/cases/index/nace\\_all.html](http://ec.europa.eu/competition/mergers/cases/index/nace_all.html)



## 7. Report on societal implications

Replies to the following questions will assist the Commission to obtain statistics and indicators on societal and socio-economic issues addressed by projects. The questions are arranged in a number of key themes. As well as producing certain statistics, the replies will also help identify those projects that have shown a real engagement with wider societal issues, and thereby identify interesting approaches to these issues and best practices. The replies for individual projects will not be made public.

### A General Information *(completed automatically when Grant Agreement number is entered.*

<b>Grant Agreement Number:</b>	242190
<b>Title of Project:</b>	SAGA-EO Support Action to GMES Africa on Earth Observation
<b>Name and Title of Coordinator:</b>	Pascal LAZARIDIS – THALES ALENIA SPACE FRANCE

### B Ethics

<b>1. Did your project undergo an Ethics Review (and/or Screening)?</b>	<b>No</b>
<ul style="list-style-type: none"> <li>If Yes: have you described the progress of compliance with the relevant Ethics Review/Screening Requirements in the frame of the periodic/final project reports?</li> </ul> <p>Special Reminder: the progress of compliance with the Ethics Review/Screening Requirements should be described in the Period/Final Project Reports under the Section 3.2.2 'Work Progress and Achievements'</p>	
<b>2. Please indicate whether your project involved any of the following issues (tick box) :</b>	<b>NO</b>
<b>RESEARCH ON HUMANS</b>	
• Did the project involve children?	No
• Did the project involve patients?	No
• Did the project involve persons not able to give consent?	No
• Did the project involve adult healthy volunteers?	No
• Did the project involve Human genetic material?	No
• Did the project involve Human biological samples?	No
• Did the project involve Human data collection?	No
<b>RESEARCH ON HUMAN EMBRYO/FOETUS</b>	
• Did the project involve Human Embryos?	No
• Did the project involve Human Foetal Tissue / Cells?	No
• Did the project involve Human Embryonic Stem Cells (hESCs)?	No
• Did the project on human Embryonic Stem Cells involve cells in culture?	No
• Did the project on human Embryonic Stem Cells involve the derivation of cells from Embryos?	No
<b>PRIVACY</b>	
• Did the project involve processing of genetic information or personal data (eg. health, sexual lifestyle, ethnicity, political opinion, religious or philosophical conviction)?	No
• Did the project involve tracking the location or observation of people?	No



<b>RESEARCH ON ANIMALS</b>	
• Did the project involve research on animals?	No
• Were those animals transgenic small laboratory animals?	No
• Were those animals transgenic farm animals?	No
• Were those animals cloned farm animals?	No
• Were those animals non-human primates?	No
<b>RESEARCH INVOLVING DEVELOPING COUNTRIES</b>	
• Did the project involve the use of local resources (genetic, animal, plant etc)?	No
• Was the project of benefit to local community (capacity building, access to healthcare, education etc)?	<b>Yes</b>
<b>DUAL USE</b>	
• Research having direct military use	No
• Research having the potential for terrorist abuse	No

**C Workforce Statistics**

**3. Workforce statistics for the project: Please indicate in the table below the number of people who worked on the project (on a headcount basis).**

Type of Position	Number of Women	Number of Men
Scientific Coordinator		1
Work package leaders		2
Experienced researchers (i.e. PhD holders)		5
PhD Students		
Other		

**4. How many additional researchers (in companies and universities) were recruited specifically for this project?**

**0**

Of which, indicate the number of men:



<b>D Gender Aspects</b>		
<b>5. Did you carry out specific Gender Equality Actions under the project?</b>	<input type="radio"/> X	Yes No
<b>6. Which of the following actions did you carry out and how effective were they?</b>		
<input type="checkbox"/> Design and implement an equal opportunity policy	Not at all effective	Very effective
<input type="checkbox"/> Set targets to achieve a gender balance in the workforce	X	○ ○ ○ ○ ○
<input type="checkbox"/> Organise conferences and workshops on gender	X	○ ○ ○ ○ ○
<input type="checkbox"/> Actions to improve work-life balance	X	○ ○ ○ ○ ○
<input type="radio"/> Other: <input style="width: 200px;" type="text"/>		
<b>7. Was there a gender dimension associated with the research content – i.e. wherever people were the focus of the research as, for example, consumers, users, patients or in trials, was the issue of gender considered and addressed?</b>		
<input type="radio"/> Yes- please specify <input style="width: 150px;" type="text"/>		
<input checked="" type="radio"/> No		
<b>E Synergies with Science Education</b>		
<b>8. Did your project involve working with students and/or school pupils (e.g. open days, participation in science festivals and events, prizes/competitions or joint projects)?</b>		
<input type="radio"/> Yes- please specify <input style="width: 150px;" type="text"/>		
<input checked="" type="radio"/> No		
<b>9. Did the project generate any science education material (e.g. kits, websites, explanatory booklets, DVDs)?</b>		
<input type="radio"/> Yes- please specify <input style="width: 150px;" type="text"/>		
<input checked="" type="radio"/> No		
<b>F Interdisciplinarity</b>		
<b>10. Which disciplines (see list below) are involved in your project?</b>		
<input type="radio"/> Main discipline <sup>10</sup> :	<input type="radio"/> Associated discipline <sup>10</sup> :	<input type="radio"/> Associated discipline <sup>10</sup> :
<input type="radio"/> Associated discipline <sup>10</sup> :	<input type="radio"/> Associated discipline <sup>10</sup> :	<input type="radio"/> Associated discipline <sup>10</sup> :
<b>G Engaging with Civil society and policy makers</b>		
<b>11a Did your project engage with societal actors beyond the research community? (if 'No', go to Question 14)</b>	<input type="radio"/> ○	Yes No
<b>11b If yes, did you engage with citizens (citizens' panels / juries) or organised civil society (NGOs, patients' groups etc.)?</b>		
<input type="radio"/> No		

<sup>10</sup> Insert number from list below (Frascati Manual).







<b>13c If Yes, at which level?</b>		
<input type="radio"/> Local / regional levels <input checked="" type="radio"/> National level <input type="radio"/> European level <input type="radio"/> International level		
<b>H Use and dissemination</b>		
<b>14. How many Articles were published/accepted for publication in peer-reviewed journals?</b>	<b>0</b>	
<b>To how many of these is open access<sup>11</sup> provided?</b>	<b>0</b>	
How many of these are published in open access journals?		
How many of these are published in open repositories?		
<b>To how many of these is open access not provided?</b>	<b>0</b>	
<b>Please check all applicable reasons for not providing open access:</b>		
<input type="checkbox"/> publisher's licensing agreement would not permit publishing in a repository <input type="checkbox"/> no suitable repository available <input type="checkbox"/> no suitable open access journal available <input type="checkbox"/> no funds available to publish in an open access journal <input type="checkbox"/> lack of time and resources <input type="checkbox"/> lack of information on open access <input type="checkbox"/> other <sup>12</sup> : .....		
<b>15. How many new patent applications ('priority filings') have been made?</b> <i>("Technologically unique": multiple applications for the same invention in different jurisdictions should be counted as just one application of grant).</i>	<b>0</b>	
<b>16. Indicate how many of the following Intellectual Property Rights were applied for (give number in each box).</b>	Trademark	
	Registered design	
	Other	
<b>17. How many spin-off companies were created / are planned as a direct result of the project?</b>	<b>0</b>	
<i>Indicate the approximate number of additional jobs in these companies:</i>		
<b>18. Please indicate whether your project has a potential impact on employment, in comparison with the situation before your project:</b>		
<input type="checkbox"/> Increase in employment, or <input type="checkbox"/> Safeguard employment, or <input type="checkbox"/> Decrease in employment, <input type="checkbox"/> Difficult to estimate / not possible to quantify	<input type="checkbox"/> In small & medium-sized enterprises <input type="checkbox"/> In large companies <input checked="" type="checkbox"/> None of the above / not relevant to the project	

<sup>11</sup> Open Access is defined as free of charge access for anyone via Internet.

<sup>12</sup> For instance: classification for security project.





2. ENGINEERING AND TECHNOLOGY

- 2.1 Civil engineering (architecture engineering, building science and engineering, construction engineering, municipal and structural engineering and other allied subjects)
- 2.2 Electrical engineering, electronics [electrical engineering, electronics, communication engineering and systems, computer engineering (hardware only) and other allied subjects]
- 2.3. Other engineering sciences (such as chemical, aeronautical and space, mechanical, metallurgical and materials engineering, and their specialised subdivisions; forest products; applied sciences such as geodesy, industrial chemistry, etc.; the science and technology of food production; specialised technologies of interdisciplinary fields, e.g. systems analysis, metallurgy, mining, textile technology and other applied subjects)

3. MEDICAL SCIENCES

- 3.1 Basic medicine (anatomy, cytology, physiology, genetics, pharmacy, pharmacology, toxicology, immunology and immunohaematology, clinical chemistry, clinical microbiology, pathology)
- 3.2 Clinical medicine (anaesthesiology, paediatrics, obstetrics and gynaecology, internal medicine, surgery, dentistry, neurology, psychiatry, radiology, therapeutics, otorhinolaryngology, ophthalmology)
- 3.3 Health sciences (public health services, social medicine, hygiene, nursing, epidemiology)

4. AGRICULTURAL SCIENCES

- 4.1 Agriculture, forestry, fisheries and allied sciences (agronomy, animal husbandry, fisheries, forestry, horticulture, other allied subjects)
- 4.2 Veterinary medicine

5. SOCIAL SCIENCES

- 5.1 Psychology
- 5.2 Economics
- 5.3 Educational sciences (education and training and other allied subjects)
- 5.4 Other social sciences [anthropology (social and cultural) and ethnology, demography, geography (human, economic and social), town and country planning, management, law, linguistics, political sciences, sociology, organisation and methods, miscellaneous social sciences and interdisciplinary, methodological and historical S1T activities relating to subjects in this group. Physical anthropology, physical geography and psychophysiology should normally be classified with the natural sciences].

6. HUMANITIES

- 6.1 History (history, prehistory and history, together with auxiliary historical disciplines such as archaeology, numismatics, palaeography, genealogy, etc.)
- 6.2 Languages and literature (ancient and modern)
- 6.3 Other humanities [philosophy (including the history of science and technology) arts, history of art, art criticism, painting, sculpture, musicology, dramatic art excluding artistic "research" of any kind, religion, theology, other fields and subjects pertaining to the humanities, methodological, historical and other S1T activities relating to the subjects in this group]



## 8. FINAL REPORT ON THE DISTRIBUTION OF THE European Union FINANCIAL CONTRIBUTION

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This report shall be submitted to the Commission within 30 days after receipt of the final payment of the European Union financial contribution.

[Report on the distribution of the European Union financial contribution between beneficiaries](#)

Name of beneficiary	Final amount of EU contribution per beneficiary in Euros
1.	
2.	
n	
Total	



**SAGA-EO**  
Support Action to GMES Africa on Earth  
Observation

Grant agreement n° 242190

Ref: D1.1.3

Date: 31/12/2012

Issue: 1.0

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