

**Corporación Andina de Fomento (CAF)**

# **Development of a Geospatial Information Network for South American Integration**

**In Support of Regional  
Infrastructure Planning and Development**

## **GEOSUR PROGRAM PROFILE**



**Caracas, October 3, 2006**

## Abbreviation List

ArcIMS	Software to implement a map server on Internet by ESRI
BID	Anti-American Development Bank
CAN	Comunidad Andina de Naciones (Andean Community of Nations)
CCT	Technical Coordination Committee of IIRSA
IC	International Conservation
IITA	International Institute of Tropical Agriculture
DEM	Digital Elevation Map
EROS	USGS National Center for Earth Resources Observation and Science
ESRI	Environmental Systems Research Institute
FAO	Food and Agriculture Organization
GOS	Geospatial One Stop (geospatial site of the U.S. government)
GPS	Global Positioning System
IABIN	Interamerican Biodiversity Information Network
ICDE	Infraestructura Colombiana de Datos Espaciales (Colombian Data Spatial Infrastructure)
IGM	Instituto Geográfico Militar (Military Geographic Institute)
IGN	Instituto Geográfico Nacional
SDI	Spatial Data Infrastructure
IIRSA	Iniciativa para la Integración de la Infraestructura Regional Suramericana (Initiative for the Integration of Regional Infrastructure in South America)
IGAC	Instituto Geográfico Agustín Codazzi (Agustín Codazzi Geographic Institute)
IGM	Instituto Geográfico Militar (Military Geographic Institute)
IMS	Internet Map Server
NSDI	National Spatial Data Infrastructure
PAIGH	Pan American Institute of Geography and History
MERCOSUR	Common Market of the South (abbreviation in Spanish)
NASA	National Aeronautics and Space Administration
NGA	U.S. National Geospatial-Intelligence Agency
OAS	Organization of American States
PNUMA	United Nations Environment Programme
PREDECAN	Prevención de Desastres en la Comunidad Andina (The Andean Strategy for Disaster Prevention)
SERVIR	The Mesoamerican Regional Visualization and Monitoring System
SIG	Geographic Information System
SRTM	Shuttle Radar Topography Mission
ICT	Information and Communication Technologies
TNC	The Nature Conservancy
USAID	U.S. Agency for International Development
USGS	U.S. Geological Survey
WMS	Web Mapping Service (protocol to integrate spatial data)
WWF	World Wildlife Fund

## **EXECUTIVE SUMMARY**

### **Program Name**

Geospatial Network for South American Integration – GeoSur Program.

### **Main Objective**

To facilitate planning and development a national and regional infrastructure in South America.

### **Description:**

An effective inter-institutional mechanism for spreading and using geospatial data useful for developing and decision-making in South America in regard to the development of a national and regional infrastructure. A decentralized national mapping server network will be implemented with the participation of geographic institutes and of environment ministries from the region, the Pan American Institute of Geography and History (PAIGH), and under the coordination of the “Corporación Andina de Fomento (CAF)”, this will be a mechanism (geointegrator) that will allow regional visualization of national data in those servers, a regional map including highway administration, regional water maps and basins (resolution: 30 meters), as well as the creation of capacities to implement and handle network products.

### **Main Benefits:**

- Support to national and regional physical infrastructure planning.
- Access to spatial information useful for development.
- Generation of added value to national and supra-national spatial information available for activities typically related to sustainable development.
- Development of national and regional infrastructure network of spatial data.

### **Coordinating Institution:**

Corporación Andina de Fomento

### **Participating Institutions:**

PAIGH, U.S. Geological Survey (USGS), Instituto Geográfico Agustín Codazzi (IGAC), Military Geographic Institute of Chile, Secretariat of the Andean Community of Nations (CAN) through PREDECAN, Secretariat of the *Interamerican Biodiversity Information Network* (IABIN), South American Geographic Institutes, South American Environment Ministries, Technical Coordination (CCT) of the Initiative for the Integration of Regional Infrastructure in South America (IIRSA), national road ministries and institutes.

### **Main Products:**

Regional Geointegrator  
Decentralized Internet Map server network  
Water maps and of regional basins  
Integrated South America road map

### **Budget:**

CAF contribution: To be determined  
Local contributions: US\$ 240,000  
USGS contribution: US\$ 100,000

### **Implementation Period:**

January 2007 - June 2009

## INTRODUCTION

In order to properly planning and developing a physical infrastructure to integrate the South American region adequate access to spatial information dully integrated, georeferenced and standardized are required. Information needs to be simply and rapidly available for planners and decision-makers, so that it can be properly used and incorporated to projects.

Today, this need can be properly meet thanks to huge progresses in areas such as:

- Information technology and communications (ITC).
- Spatial Data Infrastructure (SDI).
- Remote sensors.
- Geographic Information Systems (GIS).
- Interactive map servers.
- Geospatial information standards.

Although the progress achieved, broadly used in other parts of the world, there is still in South America a significant deficit of digital spatial information structured and standardized for the purposes of financial and social development as well as regional integration. Supranational projects, the expansion of the regional infrastructure, as well as a greater availability of regional public goods demand access to more and better spatial information. **A special example is offered by the IIRSA initiative, which at time faces great difficulties to find geospatial information, or when joining maps of neighboring countries that do not no correspond at the borders due to the different ways in which they have been produced.**

This situation occurred inasmuch commonly present national spatial information has been produced without considering the use of proper standards, has been created in the context of specific projects, has not been properly catalogued and has been generated without taking into account proper mechanisms for its spreading in. All of this is translated into the existence of useful spatial information but unknown to decision-makers or that cannot be properly used due to the lack of mechanisms facilitating its search, access and manipulation.

In order to help solving some problems mentioned above, the CAF, together with PAIGH, suggests establishing a decentralized mechanism to spread in geographic information useful for decision-making aimed at developing South America and to use state-of-the-art information technologies.

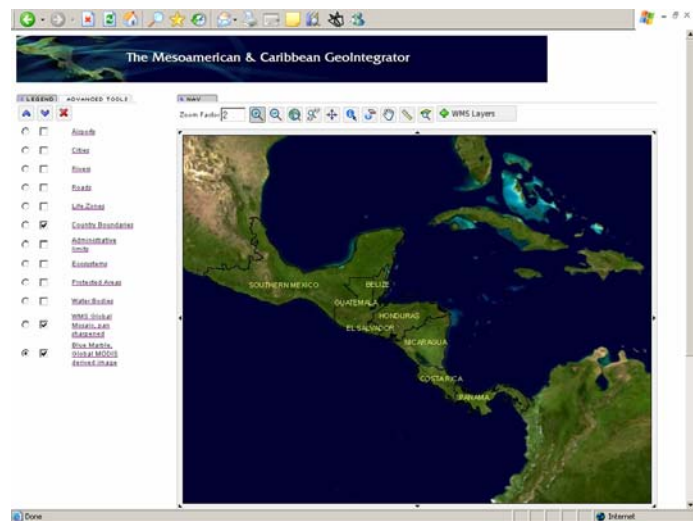
The Program will promote the development of several access mechanisms and consultation of geospatial information as well as generation of new regional maps (dully integrated at the border areas). A first component of the Program will support establishing an Internet map server network (IMS) at national geographical institutes of South America and at other institutions generating or guarding spatial data. Internet map servers offer a “digital door” to the broad world of geographic information generated in each country.

A second component of the Program will facilitate establishing a consultation mechanism of regional information- known as geointegrator, which offers unlimited access to data included in above-mentioned Internet map server.

A third component will be responsible for generating water maps and derivatives elevation maps to South America. It is important to highlight that these data have a high resolution (30 meters), quite superior to any regional data existing at date.

A fourth component directly focuses on the needs arising from IIRSA initiatives by consolidating an updated regional road map of South America, through the “union” of national road maps of each country at scale 1:250.000 and 1:100.000.

The vision of the Program is to help creating an efficient and universal mechanism to access and openly consult spatial information that helps a decision-making based on reliable scientific information that supports regional integration processes.



*It is expected that, in the very near future, and with the support of initiatives such as those indicated, a decision-maker may sit down in front of a computer and have offhand, freely and simply, integrated, reliable digital maps of multiple subjects and continuous about South America.*

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<sup>1</sup> An example of a geointegrator developed by IABIN for Central America.

## **OBJECTIVES**

The Program pursues the following objectives:

- Digitalizing and placing at the availability of the public digital-base maps that facilitate planning the regional physical infrastructure.
- Developing supranational spatial geographic information as a regional public good.
- Providing spatial data useful for territorial zoning, prevention of disasters, environmental monitoring, fighting critical poverty and the integral sustainable development of South American countries.
- Having a free public service, with no access restrictions and decentralized to spread in spatial information in Internet.
- Facilitating localization, access and application of geospatial information existing in the region.

## **ALIGNMENT WITH CAF OBJECTIVES**

The Program supports program objectives of CAF and regional initiatives such as IIRSA, The Andean Strategy for Disaster Prevention (PREDECAN), “Programa de Competitividad (PAC)” and “Programa del Carbono”, which require spatial information to be available, rapidly and simply, for the decision-maker.

To quote a concrete example, road and communication infrastructure development, of great importance to IIRSA, generating a South American digital road map will be favored and also establishing mechanisms to access spatial information useful for:

- Infrastructure planning and construction.
- Electric interconnection.
- Rural electrification.
- Environmental cleansing.
- Water administration.
- Urban development projects.

The benefit for IIRSA is clearly illustrated when planning road construction in a border area between countries. The planner has to consult, among others, soil maps, geology, protected areas, topography, water courses and risk areas. These maps have to be available for a higher number of users through a simple consultation and recovery mechanism of these data in both countries.

The Program will make available spatial information useful to develop projects and it will offer a mechanism to catalog and display spatial data and to integrate them according to the already existent information. The Program will make available a catalog of infrastructure projects and energy as well as statistics related to spatial information. It will also contribute with continental efforts related to mapping of poverty and spatialization of work variables, topics considered a priority in the implementation stage agreed for the IV Summit of the Americas (Mar del Plata, 2005). Likewise, the Program helps implementing the Declaration of Lima (Lima, November 2004) approved by the Ministers and Heads of Delegations of Science and Technology within the scope of the Inter-American

Council for Integral Development (CIDI) <http://www.science.oas.org/Ministerial> and is in line with other similar initiatives to which availability of geographic information is needed.

Having access systems and spreading of geographic data in the South American region has the potential to become a mechanism that supports monitoring and compliance with development goals of the millennium as set forth by the UN.

## STRATEGIC DEVELOPMENT

At the beginning of the Program there will be an Advising Technical Group (GTA) with representation of participating institutions such as CAF, USGS, IPGH, IGAC, IGM Chile and IABIN Secretariat. The GTA will gather on a year basis to monitor carrying out the Program and will support quarter teleconferences with the same purpose.

Several spreading of information mechanisms will be implemented:

- At a national level, each participating institution, under the guidelines established by CAF and IPAGH, sets forth a geoportal and an Internet map server<sup>2</sup>, and selects and adapts spatial information to be spread through the Internet map server. Any information spread through this means is catalogued by metadata<sup>3</sup> that are available at the same Internet map server.
- At a regional level, at CAF (and possible at IPGH) a consultation mechanism of regional information –known as geointegrator- will be implemented that offers unlimited access to data at Internet map servers and geospatial catalogs<sup>4</sup>. The geointegrator is independent from the technology platform, from software used by each Internet Map Server, from data format, or from matters such as forecasting and datum. By using public protocols and free software the geointegrator offers a regional perspective of national data.

The abovementioned mechanism, the geointegrator and Internet map servers, are mechanisms useful for spreading geospatial information. The Program, besides supporting the establishment of these mechanisms, has a lot of interests in generating or consolidating new basic regional maps (*core datasets*) likely to be integrated in border areas. For this purposes, they promote the preparation of two types of data: regional road maps of South America and water maps. These maps would be generated as part of the Program and then they will disseminate through Internet map servers.

At the beginning of the Program, the USGS will coordinate an assessment of the existing systems and protocols that better fits GeoSur Program. Geospatial portals will be identified, Internet Map Server models and geointegrators, metadata editors, and clearinghouse servers that are available or that, with slight changes, can be used or adapted to Program. The USGS keeps close contact with initiatives such as the Geospatial One Stop (GOS) of the U.S.<sup>5</sup>, the Federal Geographic Data Committee<sup>6</sup>, the

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<sup>2</sup> An Internet Map Server is a mechanism that allows consultation of digital maps and geospatial data on Internet; their consultation does not require any specialized software. Another way to describe it is as a GIS service available on Internet.

<sup>3</sup> Metadata are detailed descriptions of data (in the case of the Project, of spatial data).

<sup>4</sup> A geospatial catalog is a metadata database, commonly available on Internet.

<sup>5</sup> A Federal Initiative of the U.S. since 2002.

<sup>6</sup> The Federal Geographic Data Committee (FGDC) is a U.S. committee that promotes a coordinated development, shared use and spread of geospatial data in a national base. [www.fgdc.gov](http://www.fgdc.gov)

Global Spatial Data Infrastructure<sup>7</sup>, the GeoConnect Program (FAO)<sup>8</sup>, the Mercator Project (Spain)<sup>9</sup> and the ICDE from Colombia<sup>10</sup>, with which contact will be reestablished in order to evaluate the functioning of its tools and its possibilities to adapt to Program. Special attention will be given to the Internet map Server model and geointegrator recently developed by the USGS and NASA.

During a first stage of the Program, institutions generating or owning spatial information, among them geographic institutions and environment and transportation ministries will be invited to participate. In South America, geographic institutes are in charge of generating basic national spatial information (like topographic maps), of safekeeping spatial information of countries and of validating the spatial information generated by other state and private institutions. In other words, institutes with a legal and institutional mandate that facilitates development of Internet map servers, geospatial catalogs and other mechanisms at their facilities in order to generate spatial information included in the Program.

In the medium-term, participation of national statistical participation will be searched, NGOs and research institutions that generate and safe keep important spatial databases of interest.

There will also be the possibility to selectively participate in the Program, without direct funding, to institutions that either have spatial information of the region or an expertise useful to the Program. These institutions may cover the participation of their representatives in meetings of the Program and in training workshops. It is expected to have the participation of institutes such as International Institute of Tropical Agriculture (CIAT), International Conservation (CI), The Nature Conservancy (TNC) y The Mesoamerican Regional Visualization and Monitoring System (SERVIR), among others.

CAF contacted several geographic institutes and institutes belonging to spatial data infrastructure (SDI) of some countries of the region and ratified its interest in participating in the Program; it also verified that they own the human and technical resources required to effectively participate. Likewise, it was verified that institutions have spatial data in digital format and interest to display on Internet.

It is important to point out that there are synergies among the Program and the C3ndor initiative being carried out by the Environment Head Office (DMA for its abbreviation in Spanish) of CAF and CI. C3ndor is a specialized SIG on the environment Topic for the Andean area that is in process of renewing its technology platform. As part of this renovation, technology tools will be developed as potential use for GeoSur Program, and it is considered that Internet map servers supported by the Program will support the C3ndor in its online data updating processes. Both initiatives, GeoSur and C3ndor, keep a clear synergy that requires close cooperation to achieve common goals.

It is estimated that there are good opportunities for Program sustainability in the medium and long term due to the following reasons:

- Most of participating institutions currently have the software and the spatial data necessary to implement Internet map servers.

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<sup>7</sup> The scope of the organization is to promote international cooperation and to support local spatial, national and international progresses of data infrastructure that will allow nations to improve social, financial and environmental applications. [www.gsdi.org](http://www.gsdi.org)

<sup>8</sup> [www.fao.org](http://www.fao.org)

<sup>9</sup> Research group of the Topographic and Cartography Engineering Department of [Universidad Polit3cnica de Madrid](http://www.mercator.es). [www.mercator.es](http://www.mercator.es)

<sup>10</sup> Colombian Infrastructure of Spatial Data. [www.icde.org.co](http://www.icde.org.co)



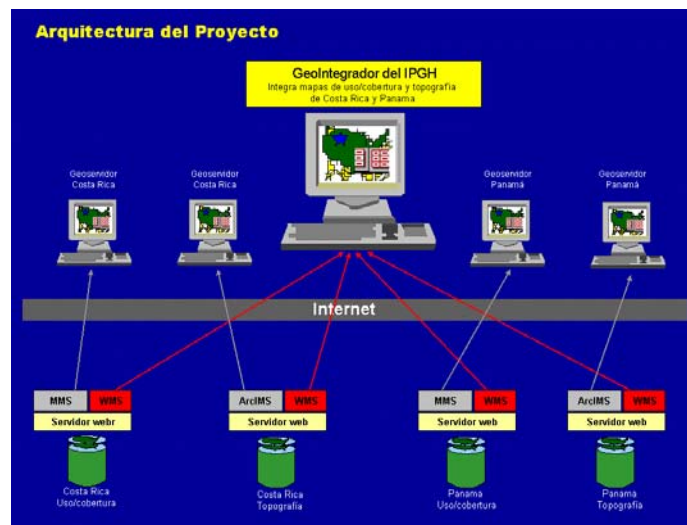
- Technologies to be used are already proved in other regions (e.g. Central America, North America, Europe), its operation and applicability have been demonstrated and have a complexity that can be handled by specialists from participating institutions.
- Operating costs of Internet map servers are fairly slow - in general they are today included as part of regular costs of calculation departments of institutions.
- There is a clear interest, stated by the participating institutions, to open data access to a community of more users.

## ACTIVITIES

The Program envisages the following activities:

### 1. Establishing a regional display mechanism (geointegrator) at CAF

A geointegrator – as its name so indicates – includes geospatial information. In the case of the Program, the geointegrator is part of the information included in Internet map servers established by geographic institutions and other participating institutions. The geointegrator has basically regional data from South America, and works as a regional window to national data included in Internet map servers. The Program will assess the relevance of adapting a geointegrator recently developed by USGS and NASA under a free software scheme to the needs of the region. Each participating Internet map server implements free protocols *Web Map Service* (WMS) and *Web Feature Service* (WFS) in order to make data available to the geointegrator, which will be operated by CAF and/or the PAIGH.



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### 2. Establishing Internet Map Servers at Participating Institutions, CAF and IPAGH.

<sup>11</sup> The diagram shows a Project scheme where Internet map servers at geographic institutes keep national data, and the geointegrator allows for visualizing data at different Internet map servers.

CAF, together with other participating institutions such as IABIN, IGAC and IGM Chile offer technical assistance and training necessary to implement an Internet Map Server at each of the participating institutions. These are committed to place in their Internet Map Servers a predefined amount of spatial data and they become responsible of selecting, adapting and placing at the Internet Map Server these data, leaving them precedence to displaying basic data and data useful for regional integration and to planning and development of physical infrastructure. Those institutions not having the capacity or infrastructure to establish an Internet Map Server will be offered the opportunity to host an Internet Map Server in CAF or IPGH. Institutions generating municipal and local data of specific projects will be tried to be involved to offer access to higher resolution data.

Each participating institution accepts the minimum commitment to place information as the following in its Internet Map Server: topographic sheets scale 1:500.000 and 1:250.000 (and inferior scales), digital maps generated with the support of CAF, national ecosystem map, land use/coverage maps, orthofoto maps selected, main and secondary road maps, infrastructure maps, coverage of air photos, Landsat coverage, etc. This list will be properly defined as part of the development of work plans that each participating institute will prepare.

### 3. **Generation of a High-Resolution Water Map of South America.**

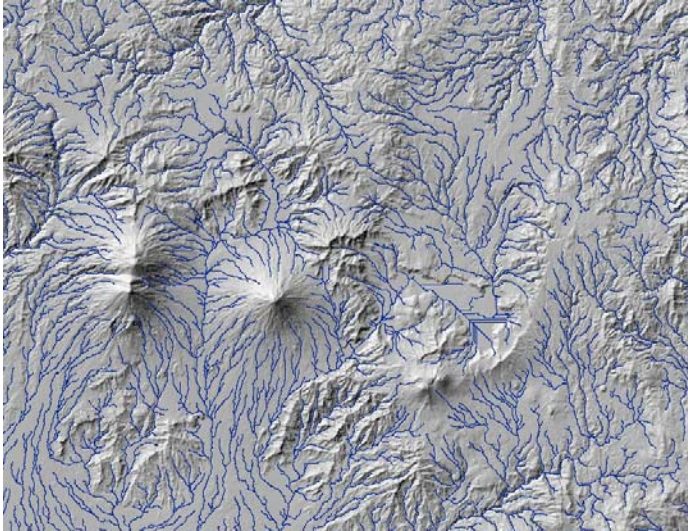
The most complete data, of high-resolution and with a broad coverage existing for South America, and from which water data of the continent can arise, is constituted by the digital elevation model (DEM, 30 meters of resolution, limited distribution) generated by the space shuttle in the year 2000. Data are identified by the abbreviations of the Project generating it: Shuttle Radar Topography Mission (SRTM).

DEM SRTM data of South America is available to the public at resolution of 90 meters. Through an agreement with USGS, custodian of data of 30 meters, CAF will generate the following digital thematic maps, standardized, continuous and of high-resolution for the region:

- DEM of 30 meters filled (product of processing and “cleaning”).
- Digital relief map (hill shade).
- Digital basin map.
- Digital sub-basin maps.
- Water map (drainage or *virtual streams*)
- Aspect map.
- Slope map.
- Water accumulation map.
- Flow direction map.
- Pour points map.

The USGS will obtain and process the DEM SRTM of South America under the supervision and direction of specialists at participating institutions and will adapt digital maps derived from processing an easy-to incorporate format to participating Internet map servers and to geointegrator.

These data offer, in many cases, a better resolution, homogeneity, geographic coverage and a level of detail that the majority of equivalent digital maps existing in countries. Many of these data are final products and will be ready to use. A special case is offered by drainage maps, which have imperfections on flat areas and require further processing.



<sup>12</sup> The regional drainage map shall, therefore, be valid and refined in each country before preparing a final national water map. The necessary corrections will be made by geographic institutes, on an independent basis or in cooperation with institutes coordinating the Program.

It is important to point out the possibility to cooperate with PREDECAN Project of CAN; all data derived from SRBM model have a high resolution that would facilitate preparing national and regional maps of sliding and flooding risks, when allowing combination of these data with existing

maps of soils, natural coverage and orthophotos.

#### **4. Developing a South American road-integrated map.**

In South America, institutions such as national geographic ministries and transportation ministries are in charge to produce and maintain national road map. These maps have been prepared using different methods and formats, and they require a coordinated work among institutions such as IGAC, CAF, IPGH to homogenize and standardize these maps as well as to integrate them into a regional map.

It is important to point out that the Global Map Project has boosted production of national road maps at a scale 1:1.000.000 and that it has generated standards to produce this information. Keeping these standards to organize road information at more detailed scale will be considered.

The Program will encourage two regional meetings of national specialists on road mapping: a first meeting to define standards, to select a work methodology and to establish an action plan to produce national maps; and a second meeting to assess and integrated results. A geographic institute from the region, with expertise on this area, will be chosen to coordinate this component of the Program and to integrate national maps and produce a new regional map. This work will be supervised by the IPAGH to assure that generated products meet these standards, international standards, and the new specifications of the Global Map Project.

#### **5. Developing Metadata and Establishing Geospatial Catalogs.**

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<sup>12</sup> Elevation model of 30 m. of region resolution of Antigua region in Guatemala prepared from SRTM data. Water network density is much higher than that in existing maps of the area. Please note the problem of rivers in flat areas and that shows a straight course.

The Program offers limited technical assistance to develop metadata to participating institutions, which are committed to at least produce the metadata of the data available at its Internet map server under agreed standards. The majority of these institutions have received prior training on how to prepare metadata (on part of other projects) and it is considered that only few participating institutions will need a formal training.

Metadata are uploaded in Internet, and if possible, they are incorporated to geospatial catalogs existing at the same institution or managed by other institutions.

The activities described will allow participating institutions, in the short term, to make available to the public and decision-makers relevant spatial information for effective and sustainable development of South America. Further stages of Program can be necessary to assure that spatial information is generated or distributed using common standards to strengthen spatial data infrastructure (SDI) existing in the region– or to create new infrastructures in countries that have not yet created these mechanisms. There is the possibility that an independent project planning to carry out the IGAC to develop an Andean IDE sets the bases to strengthen these actions in South America.

As a result of the Program considered herein a situation similar to that described below can become true in the short term:

*An IIRSA planner sits in front of his/her computer aimed at assessing the feasibility of a draft to build up a road planned as part of this initiative and which will go through several countries of the Andean region. The planner consults the geointegrator and displays several national road maps available at Internet map servers from geographic institutes in order to visualize the existing roads and to assess how this integrates to the highway administration planned.*

*Next, the planner uses the geointegrator to access a regional map of protected areas available at CIAT Internet map servers and one of areas of high endemism available at IABIN Internet map servers in order to make a first visual analysis of the potential environmental impact of new roads- and which he/she further complements when incorporating a digital topographic map of South America available at CAF Internet map servers and that it will be useful for cost estimation. The planner incorporates to its prospective survey other digital maps available in other Internet map servers and that allows estimating the social-financial impact of the work planned.*

## **PRODUCTS**

The Program develops the following components, products and services:

- Training workshops on Program topics: Internet map servers, geointegrator, geospatial catalogs, metadata, geoportals.
- One geointegrator at CAF.
- Twelve national Internet map servers operating at geographic institutes.
- Ten national Internet map servers operating at the environment ministries and other participating institutions.
- National maps and a regional water map validated and available on Internet.
- National maps and regional basin maps validated and available on Internet.
- New digital South American road map.
- New geospatial catalogs.
- Metadata developed to all maps available at the Network.
- Regional web site for technical support.
- Periodic publication of the Program.

At medium-term the Program is expected to help making better decisions by making available to the public standardized, quality geospatial information. It is also expected, as result from the Program, that participating institutions overcome barriers that have limited exchange in the past and display information openly and unlimited.

## PROGRAM MANAGEMENT

Due to the Program scale – both geographical and related to the number of participating institutions – it is necessary to have the support of several specialized institutions on different aspects of Program to jointly progress on its coordination.

Below, the roles and responsibilities established for the main institutions interested in participating are detailed:

**Program Coordination:** CAF will hold the general Program coordination, with the support of IPAGH and IABIN Secretariat. A Program coordinator (CAF) will be responsible for establishing initial commitments necessary to carry out the Program and to keep contact with participating institutions, to supervise the progress of the Program and technical assistance, and to offer the general guidelines necessary to carry out such Program.

The IPAGH will appoint a Program coordinator that will be responsible for anything related to relationships with national geographic institutions and supervision of its participation as well as to establish and supervise the agreements established in the sector. The same role will be placed by the IABIN Secretariat in regard to participation of environment ministries from the region.

**Supervision:** An Advisory Technical Group (GTA) will be created to offer technical and conceptual support to Program. The general Program coordinator will be kept by the GTA informed about Program progresses and will pass its suggestions and remarks to participating institutions. The GTA will include representatives from some of the following institutions: CAF, USGS, IPGH, IABIN Secretariat, IGAC, and IGM from Chile.

**Technical Assistance:** Several institutions will carry out technical assistance. EROS will offer technical assistance on key Program issues such as: Internet map servers (IMS), development of digital elevation maps (SRTM) and geointegrators. It is estimated that this institution will have a very active participation during the first year of the Program, a period in which it will train and transfer technology to region institutions that will provide technical assistance during the second year, leaving on EROS the most complex technical assistance. Conversations with the IABIN Secretariat, CIAT, IGAC, and IGM Chile will start to assess their interest in offering the above-mentioned technical assistance.

**Applications development:** EROS will be in charge to adapt and develop basic Internet map servers and a geointegrator model for the Program. Further development of these products shall be carried out by other participating institutions, such as CIAT or the IGM from Chile. Regarding implementation of geospatial clearinghouse and metadata edition the active participation of IGAC and the IGM from Peru is expected. An initial EROS development is expected to develop maps derived from elevation (SRTM), and with further developments of IGAC and the IGM from Chile (its technicians could be trained in EROS and they may develop products at this institution). The regional road map may be led and the final product assembled by the IGAC, with the participation of the IGMs from the region.

A coordinating institution will be selected for each abovementioned topic (e.g. geointegrator, derivatives maps, catalogs). Such institution will prepare a work plan jointly with the general Program coordinator.

**Implementation:** Geospatial network nodes of GeoSur Program will include institutions generating and managing geospatial information, mainly (but not exclusively) national geographic institutes, environment ministries and transportation and communication ministries (or similar institutions). Participation in these institutions will be coordinated by the IPGH, IABIN Secretariat and CAF respectively.

Each participating institution selects an internal Program coordinator. This person is responsible for subject matters, such as:

- Definition of the institutional scope of Program.
- Selection of specialists who participate in the Program from his/her institution.
- Selection of spatial data to be placed in Internet map servers.
- Supervision of Internet map servers implementation, SRTM 30derivatives products and supervision of metadata development and geospatial catalogs.

It will also be in charge of keeping the management informed about Program progresses, to promote its existence and operation with institutions and interested public, to study relationships with national and regional initiatives for development, and to define and carry out a small pilot project evidencing the system benefits and potential.

Coordinating institutions support the Program, study their relation to higher initiatives and asses the possibility of funding aimed at spreading and strengthening the program in the long run.

