

Implementation of Geo-Technologies within the Land Use Project, CIAT



**Nick Thomas, Agriculture Solutions Specialist
Environmental Systems Research Institute
Redlands, CA.**

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Table of Contents

Acknowledgements	3
Introduction and Terms of Reference	4
Report Components	
Hardware	
• Overview	5
• PC computing power	5
• Servers	6
• Field survey equipment	7
• Auxiliary equipment	7
• Network capability	7
Software	
• Geographic Information Systems	8
• Remote Sensing Software	8
Data Management	
• Overview	8
• Data Storage	9
• Data Backups	9
• Metadata	10
• Geodatabase versus file based storage	11
Methodologies	11
Human Resources	12
• National Staff Training	12
• ArcGIS Capacity Building	12
• Staff shortfall	13
Summary of Recommendations	14
Appendices	
A. Consultancy TOR	16
B. CampusPak License Agreement	19
C. Hardware Inventory	35
D. Software	41
E. Human Resources	47

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I am grateful for the help received from everyone in CIAT and PROSIS that supported this analysis.

Introduction and Terms of Reference

The Land Use Project (hereafter referred to as PE4) has requested support from ESRI (Appendix A) to assist them in the planning and implementation of the new software agreement recently signed and put in place between CIAT and ESRI, Inc (Appendix B). As part of this process a review of the current status and a list of recommendations for the future development of the use of Geo-technologies (GIS, RS, GPS) within the project has been compiled.

The current and past use of Geo-technologies in PE4 represents the largest implementation of it's kind to date in the entire CGIAR. In operation for over 10 years, a considerable amount of resources have been accumulated leading to an increasing volume of critical geographic science and data that supports the development of sustainable agriculture across the globe. This trend will only increase as technologies such as satellite imagery and GPS become increasingly accessible to decision makers.

The role of PE4 in CIAT appears to be divided into two main parts. These are research related to the Land Use project and services related activities, including training and special projects for other research groups within the center. The resultant demands made upon PE4 staff and equipment are therefore diverse and dependent upon the direction of the project and as a result future requirements will vary according to the weighting of both activities. This report will assume therefore that there will be no major changes in the direction of PE4 in the near future, but instead will focus on the current project situation and plan as though it will continue as such.

The recent agreement provides CIAT with the latest technology available from ESRI as well as guaranteeing continued support for PE4 through software upgrades and training opportunities. In order to maximize the benefits from these offerings, this report will not only provide brief descriptions of the key areas requiring successful management of geo-technologies in PE4 but also identify clear recommendations to assist PE4 in the successful execution of the agreement and resulting improvement of use of GIS within CIAT.

There are five distinct areas that require attention when successfully applying geo-technologies irrespective of the area of application. These are:

- Hardware
- Software
- Data
- Operational Methodologies
- Human Resources

Each of these areas will be covered in the report with comments being made regarding the current situation and potential future requirements.

One important principle for the development of geo-technologies in CIAT is to ensure that these systems are applied directly to the important areas of work for the center. PE4 is the main user of geo-technologies in CIAT, or is usually involved in these activities in cross-project work. Development of the GIS laboratory should serve the

scope of uses of geographic information science and technology of the Land Use project. PE4 organizes their work around six principal areas or themes:

- Data Capture
- Biological Mapping
- Vulnerability Indicators
- Socioeconomic Mapping
- Site Specific Agriculture
- Water Challenge Program

These thematic areas require GIS capacity in the areas of hydrological modeling, digital elevation models, climate modeling, analysis of remotely sensed imagery, field data collection, socioeconomic analysis and modeling, and other areas of application. The analysis presented in this report was made in the context of how the GIS lab can serve these core functions and work areas.

Hardware

Overview

The PE4 Project encompasses several areas of geo-technical expertise that vary in terms of hardware requirements. Those staff members working in the areas of remote sensing for example will require more computing power in terms of storage capacity and processing speed than others involved in data production operations. In light of this, there is a varied selection of hardware available within the group but certain trends are apparent.

The use within the project of more middle to high end PC's seems more an indication of the increase in PC computing power over the past 5 years than a planned decision. This in itself is not a criticism and in fact can be thought of as bringing certain unseen benefits to the group not least in the area of system administration. Previously a large network of Sun Sparc workstations were being supported within a UNIX environment leading to duplication of administrative responsibilities, increases in licensing costs, and difficulties in data access between staff members working with machines on separate networks. Currently the majority of staff are using PC's are connected through a single network.

PC Computing Power

As can be seen in Appendix C, many staff have more than adequate hardware capacity for the type of work that they carry out in the project. Individuals working in intensive data processing areas are suitably equipped with higher capacity machines whereas those involved in less demanding computer activities are provided with adequate machines. Most machines operate Windows 2000 and have good RAM that supports Pentium II processors or higher. Hard disk capacity on some machines could be increased or as will be mentioned later better file management could reduce storage capacity requirements on these PC's.

ArcGIS software received under the terms of the new software agreement will in part be installed on many of these existing PC's. Close attention should be paid to the *recommended system requirements* for these products. These are dependent on the

operating system in use and can be useful when upgrading machines. The following is the recommended configuration for a computer being used to run ArcGIS 8.3.

CPU - 650 Mhz
Processor - Pentium or higher
Memory - 256 MB
Software footprint - 700Mb

Analysis of Appendix C shows some interesting facts about required upgrades of machines in the project. The CIAT chief of Information Systems has said that most machines have a useful life of 4 years. As a result, 18 of the projects 57 computers have already expired their useful life cycle. Another 19 will have become older than 4 years at the end of 2003. Taking a closer look at the age of the machines that are used by GIS analysts (Table 1), 9 computers are older than 4 years, and another 17 are already 4 years old.

Table 1. Age of Personal Computers used by GIS Analysts in Land Use Project

Age Category of PE4 Computers	Number of Computers in each Age Category
Acquired this year	2
1 year old	4
2 years old	6
3 years old	12
4 years old	17
5 years old or older	9

When ArcGIS 8.3 is installed on PC's, 32 of the total of 57 PE4 computers currently have less than the recommended Memory and only 2 of the 6 laptops in the field are capable of running ArcGIS. For machines that are used by GIS analysts, 21 PC's have less than the recommended memory. There are 12 machines, approximately 20% of the project's computers that not only fail the minimum Memory requirements for ArcGIS but also are already older than 4 years. This information will be important when planning hardware upgrades in the coming years. Few things are certain with computer requirements for software, but the requirements never seem to be reduced with time.

Servers

There are 9 servers in PE4, all of which are well used. The acquisition of ArcSDE and ArcIMS will support faster access to the Oracle database especially imagery. The PE4 Project has recently established separate servers for ArcSDE and ArcIMS, from existing hardware within the project. This setup should be tested during 2003 to ensure that it works correctly. Based on this testing, CIAT should consider whether new servers with greater processing capacity are needed in 2004. The specifications of the machine needed will have to be assessed according to the planned applications that it will host and the operating system in use but general guidelines are available from the ESRI Support Center.

Field Survey Equipment

The project is developing work where they take field measurements and other data, as well as carry their GIS into the field. For example, research is being conducted to acquire high resolution imagery from balloons and kites. Also, CIAT has base maps for the entire scientific experiment station at their headquarters. These applications are likely to increase.

The project has several options available to it when considering GPS equipment for the field. However to date, field computing devices apart from standard laptops, have not been introduced. The opportunities presented by ArcPad Mobile GIS for the fieldwork that many scientists at CIAT conduct are numerous and should be actively encouraged. Once again there are a multitude of options available for field computing and many of these are becoming cost effective in combination with GPS units for rapid field appraisal.

ArcPad technology needs the Windows CE operating system and this will not be changing in the future. As a result any field computers obtained should be running this operating system that therefore removes the option of Palm Pilots. There are also after market options available for ruggedization of the handheld computers which should be considered. The project should evaluate the current market offerings in this area and begin accessing live GIS data in the field.

Auxiliary Equipment

There are 17 different printers and plotters available to the project even though the majority of staff are located in a single building. Additionally there are two scanners, one desktop version and a large format scanner that is now being employed to create raster images of maps for later 'heads-up' digitizing on monitors thereby reducing reliance upon the three A0 digitizing tablets.

The project should consider printer and plotter use since there appears to be little control over how these hardware resources are used. For example, an analysis should be made of which printers are used the most and by whom, and how the printer system can be more efficient.

Network Capability

CIAT has an Internet connection similar to a T1 line (1.4Mb/sec) and of this capacity, approximately 70% is used at any one time. There are plans to increase the capacity of the external network connection but at this time it seems more than adequate for the center's needs. PE4 has started development of Internet Map Services that will increase the need for external network bandwidth over time. At this stage it is difficult to say with any certainty how much will be needed, as several factors will play a role. Dependent upon the type of IMS services implemented, users will have the opportunity to physically download datasets across the Internet given the correct permissions. This will obviously increase the load on the external connection. Alternatively, certain IMS pages are less resource intensive, for example, simple HTML browsers that present only a mirrored image of the datasets as opposed to the physical data. The developers of ArcIMS in PE4 will have to carefully assess the impact on the external lines when planning a web page implementation.

Software

Geographic Information Systems

The recent deployment of the ESRI CampusPak has seen a large increase in the general availability of software licenses for PE4 staff. The idea of the contract was to provide a firm software base for a CGIAR center with associated upgrades thus aiding the development of more inter-center collaboration. As a result, there are currently no immediate shortfalls in GIS software within the project, rather a slight over-capacity that will hopefully be reduced with more GIS uptake by CIAT scientific staff.

CIAT is an early adopter of ESRI's geodatabase technology, the new relational database management system architecture. However, the majority of the staff are still using ArcView 3.x and ArcInfo 7 technology. Given that ESRI will no longer develop these older technologies, and because the geodatabase technology is more efficient and interoperable with other software, PE4 should consider how they will migrate to the new software architecture.

Remote Sensing Software

Image processing in PE4 is conducted using three different types of software (Appendix D). This seems to be more the result of personal preference over the years by scientific staff than by a clear management decision. The result is that three different types of software are being used: Erdas Imagine, PCI and e-Cognition. Each of course has its strengths and might well reflect a clear project driven requirement but the costs involved in maintaining the three different softwares might well promote a review of use and rationalization of at least some of the licenses.

The relatively new e-Cognition software represents a new architecture in remote sensing software. The review of remote sensing software should take into account how the different systems will support the "segmentation" paradigm employed in e-Cognition.

Data Management

Overview

The project has now accumulated a substantial data inventory with a size that exceeds 666 Gb. This information is the result of more than 13 years of geo-spatial data creation and analysis and represents a huge investment of time, technology and human resources. How much of the 666 Gb of data is redundant, previous versions that are incomplete, or data that is otherwise of little, if any value? PE4 should evaluate all the data stored on hard drives to reduce redundancy and back up data that is not being used on a regular basis.

Much of the information is resultant from research projects that necessarily come to a final conclusion. However, to date there seems to be no robust management structure to safeguard these datasets for future use by others not initially involved in

the project. This potential loss of institutional memory will only increase as data is continually being added through current field imagery and mapping activities.

Currently there is no risk of physically losing the data as good backup procedures have been implemented thereby guaranteeing its future existence. Although having said this, with a 3-fold increase in the volume of data being generated by a single research project in the last 12 months, the system of backup itself is becoming more burdensome in terms of the cost of exabyte tapes. ***This issue will be partially remedied by the suggested data management recommendations included in the report.***

At least two efforts have been made in the past 7 years to generate an inventory of data available in the project. This metadata has been stored in spreadsheets and not associated at all with the data being described. Advances in GIS software now allow the semi-automatic creation of metadata and its storage in files associated directly with the data layer. The benefits of good metadata can be better understood in the knowledge that 80% of the costs of an average GIS implementation are associated with data. It has been shown that metadata actually provides an improvement in the quality not only of the data but also of the analysis. Finally increasingly important for data managers is the legality of data permissions and definitions of the data all of which can be included in the metadata. This information can then be used to allow better data searches in the new Metadata server technology that the project has begun to implement.

An important part of the efforts of PE4 over the years has been the creation of digital data layers from hard copy maps. This work has been responsible for much of the current data holdings. While methodologies have been in place for several years to provide guidelines on how to successfully create accurate and useful digital datasets, a new development in the technology of distribution of this data means that it would be advantageous to enquire about applying industry standard process methods to the data creation process. The imminent use by PE4 of the Internet Map Server will result in external individuals and organization accessing data previously used mainly by PE4, CIAT and the CGIAR. Having a workflow in place that can be considered certifiable and recognized within the world of not only GIS but also IT will increase the value of this information should the project wish to eventually put in place a mechanism of data cost recovery through ArcIMS.

Data Storage

As has been mentioned, a great deal of data exists across PE4's network of computers. Documentation and management of this information has rightfully been the responsibility of the staff member working with the data. ***However currently there is no project-wide policy on how this data should be managed.*** The following are suggestions meant only to give an idea of what could possibly be imposed upon staff in order to guarantee the future of research data when either the specific project work has been completed or an individual leaves PE4.

When a new staff member or visiting researcher begins work at PE4 they already receive a brief introduction to the current system from the administrator. At this stage, the data management plan should be begun. Each researcher should use a series of directories that are mirrored across machine in the project. These could include directories for holding raw unprocessed data, data in various stages of

processing, finalized data sets upon which no more processing is required, and a metadata or documentation folder. Sub directory structures within these 'root' directories could be included and decided upon by the staff member but the integrity of the initial directory structure should be maintained. Such a structure would assist not only data retrieval but also reduce the amount of backing up of data. Additionally, the monthly progress reports required by PE4 management could be linked to this structure indicating advances and where results could be accessed.

Data Backups

Though important and well managed at present, with increasing data volumes, it may be necessary to re-evaluate the backup process of some of the more data intensive project activities. Available storage devices make individual machine backups more feasible when the data sets involved do not exceed 20Gb. These devices work out to be more cost effective than similar capacity tapes and could be incorporated into the current backup process with little effort.

Metadata

Previous metadata from Metalite should be ported into the available metadata tools of ArcGIS now that the investment has been made. This will allow the metadata to be maintained semi-automatically, e.g., geographic extent, should the data undergo further editing.

Before anything is moved however, there needs to be an agreed system of metadata creation involving what exactly is to be documented about each piece of data and the how the process of documentation is to be executed. Metadata is often seen as the most painful and last thing to be completed when a piece of data is generated. The required metadata methodology should reflect this and stipulate that those who generate data that is to become part of PE4's data inventory bear responsibility for any metadata creation.

In the case of data that already exists in the inventory but for which there is little or no metadata, the staff of PE4 should evaluate the value of this data before launching into a process of mass metadata creation. The evaluation could be based on many things including the geographic extent of the data in question, the age of the data set, it's likely applicability in future research efforts and what exactly is known about the data in question.

Although many of the questions regarding metadata will be answered through group meetings it is important that an individual should be placed in charge of these efforts to act as a point of contact and ensure that metadata guidelines put in place through committee decisions are implemented. The individual should understand what is required by newer GIS products such as Metadata Server and ArcIMS because it will be these applications that will form PE4's data portal to the outside world.

Geodatabase versus File based storage

PE4 has always used a file based storage system for its geographic datasets. The new data storage option now available in ArcGIS is called the Geodatabase and could prove useful to PE4 with its project based data activities.

Unlike coverages or shapefiles, the geodatabase offers a multiple user-editing environment that means that through ArcSDE access to a DBMS like Oracle, parts of an existing database can be 'checked out' and 'checked in'. This can lead to the process of versioning that in turn provides data managers with the ability to account for workers time on a project. In addition, using this multiple user environment, storage capacity can be maintained by not having replicated data sets across the network in individual computers.

The geodatabase also allows rules, relationships and intelligence to be associated with geometric feature and attribute information. Rule based data creation can therefore be achieved improving the integrity of the database. Topological rules can be generated between different data layers that better reflect how many types of data are not independent but associated with another type of information. PE4 must decide to what extent it wishes to implement GeoDatabase technology. Staff will require training in its use, training which is available from the geography network.

Methodologies

The adoption of well-planned and documented methodologies in PE4 will assist workflow and provide certain quality control benefits. It will also help to maximize the benefit from any implementation of the geodatabase by providing clear guidelines as to what should be considered when constructing a data architecture. There are already several examples of methods that have been constructed but mainly they concern data creation processes from the digital data production group.

If new concepts in data management are implemented within the project and safeguards put in place to preserve the institutional memory of PE4, clearly stated methodologies will be required to determine and define how these processes should be implemented. Care should be taken however that PE4 being a research group should not devote an inordinate amount of time to the creation of such process models, rather create clear, simple instructions that can practically be followed by staff members.

The following three areas would be a good starting point bearing in mind that all of them are involved to some extent with new ventures such as the Metadata server, Internet Map Services and even custom built applications such as Floramap. •

- Data Production
- Data Storage
- Application of Geodatabase architecture

Human Resources

Of the different elements needed for successful GIS, human resources are the most important. PE4 has nearly 50 staff members, most of whom are involved in geographic data analysis and management. The group is made up of both national and international staff bringing a combination of skills to the group.

Traditionally, some national staff have been involved in more service type roles than research-focused, and this is especially true of the data production staff. National staff turnover is relatively low. They usually stay in the project for long periods of time. The exception is students and some who have worked in remote sensing. International hires, who on average stay for between 2 and 3 years, are attributed with advanced knowledge of specific areas of geoscience useful for project research.

A matrix of professional skills has been produced (Appendix E) that demonstrates where the group has greater and lesser depths of collective knowledge regarding certain aspects of geo-technologies. This matrix has been very useful in evaluating where the skills of the group lie and where the project needs to invest more in its human resources to both overcome staff turnover and meet challenges that will present themselves as GIS integrates more with Internet technologies.

National Staff Training

PE4 has a loyal and extremely professional national staff as can be seen from the quality of work produced over the years. The data production group is now required to do less data creation and more analytical work in support of several on-going research projects. This requires a level of theoretical understanding that is normally obtained through academic training. Some national staff should be supported with regard to this theoretical knowledge. This is a difficult problem to remedy without fulltime education but there are ways to improve their knowledge level to a degree that would greatly benefit PE4. One method would be to oblige the international staff to provide some form of educational curriculum to the national staff in their area of expertise. Team based knowledge building exercises could also be implemented. In some cases this is already happening to a certain degree informally.

ArcGIS Capacity Building

The staff of PE4 have received training in GIS technologies from ESRI in several ways. On-site training, training at ESRI headquarters in Redlands and courses available across the Internet via the Virtual Campus. The information in Appendix E indicates that there is not a great deal of expertise in ArcGIS as would be expected, as it is a new product for CIAT. However, there are many staff members already comfortable with ArcView3.x indicating that a gradual migration towards ArcGIS would be advantageous.

Shortfalls in Human Resources

There are four significant areas that will need fortification in the coming years within PE4. These are Oracle database management, systems administration, remote sensing and web development. What would happen if key people in each of these areas unexpectedly decided to leave CIAT? The project should insulate itself from potential staff changes in these areas by starting to train individuals that perhaps have shown an interest or are not required in their traditional roles. The area of Oracle database management is especially critical in light of the aim of the project to serve data across the Internet from the Oracle DBMS through ArcSDE. The administration of this application needs a substantial RDBMS background.

Recommendations

Hardware

- Review the degree to which the UNIX operating system is still required within the project. Although more robust than Microsoft environments it does require additional administration and is present on less than 10% of PE4's computers.
- Overcapacity of printers could be addressed by reviewing use and consolidation.
- Plan to upgrade machines that fall below the recommended specifications of ArcGIS for staff members that currently operate programs related to GIS, RS or GPS.
- Test the server setup (one for ArcIMS and one for ArcSDE) during the remainder of 2003. In 2004, determine whether you need servers with greater capacity.

Software

- Create a workflow plan for the migration of project data currently stored in ArcView project file format to the new ArcGIS 8.x architecture. This migration will have to be coordinated with any database 'housekeeping' exercise to decide if effort should be spent on migrating all existing files.
- Evaluate the current and future requirements of remote sensing software in the project. There are three remote sensing licensing options currently available costing \$7000 a year in maintenance.
- Make a plan to migrate to the new geodatabase (ArcGIS) architecture.

Data

- Undertake an exercise to review PE4's existing 666Gb of data. Rank it by relevancy to current and future project aims and then port that information into the Metadata Server data flow. The physical location of any data need not be changed to achieve access through the departmental network.
- Investigate how the project might implement a 'two-tier' system for data storage. Project management should decide which databases are considered 'core' and which should be given for access internally and externally. Data that is not 'core' can be stored locally on machines but with references to the Meta data server mechanism when complete. Project management should ensure knowledge of the existence of data prior to completion. 'Core' data will be stored centrally on a server within a full geodatabase. Data, both vector and raster will be stored in Oracle, accessed through SDE and served by several methods including ArcIMS and ArcReader.

- Create a 'Metadata coordinator' overseeing creation by staff members.
- Review of required metadata fields based on PE4's plans for future GIS implementation
- Investigation of data quality standards that would allow 'certification' of project outputs. Useful when creating metadata, distributing data and fortifying data production process.
- When appropriate, adopt the geodatabase architecture for data management within projects including data creation.
- Continue to develop the Metadata Server as a data inventory application. This application already has query by keyword and spatial context functionality for data searches.
- Create written policies, additions to work plans, and directives from PE4 leadership to implement improvements suggested above.

Methodologies

- The construction of documented linear processes that will guide the simultaneous creation of metadata for new and edited data sets.
- Investigate the development of thematic specific GIS Data models that can be shared among other CGIAR centers.

Human Resources

- In order to reduce the impact of staff turnover knowledge based team building might be adopted assisting in the diffusion of knowledge between individuals for the benefit of PE4. This method would require staff with considered specialized skills to formally devote time to transferring this knowledge to local staff.
- ArcGIS training out of the box though good at increasing skills on a product specific basis will not be sufficient to increase interest in GIS among CIAT's scientific community. Training has to be customized by thematic subject, for example, field based GIS, if additional collaboration is wanted.
- Project staff training has increased. There is a need to assist staff overcome deficiencies in theoretical knowledge base even though technical skills are high.
- Duplication of key staff. Must have adequate cover in certain areas of staff responsibility. Remote sensing, ORACLE, the web, and systems administration are examples. Each should have assistant whose role would be to shadow and document procedures/metadata.

APPENDIX A. CONSULTANCY TOR AND SCHEDULE

REQUEST FOR CONSULTANCY CONTRACT TERMS OF REFERENCE

1. Contracted Output: *(Brief description of the work to be developed and of the deliverables)*

The Consultant will work with CIAT's Land Use Project (PE4) to advance planning and implementation for CIAT'S geographic information systems (GIS) lab. The consultant will make recommendations on the following components of the GIS lab and make suggestions for implementing a more efficient operation:

- a. Recommendations on software requirements and future needs for GIS, remote sensing and specialized GIS software.
- b. Suggestions on internet mapping needs and possibilities for CIAT, plus evaluation of ArcIMS configuration
- c. Trouble-shooting suggestions for implementation of new ESRI-CIAT site license for software.
- d. Demonstration of the use of ArcPAD software with hand-held personal digital assistants (PDA) and global positioning systems (GPS) units.
- e. Recommendations on CIAT use of ArcSDE.
- f. Provide a seminar to CIAT staff that explains the latest software deal agreed upon by ESRI and CIAT indicating the new opportunities that it offers agricultural research in tropical agricultural research.

The Consultant currently works in the Agricultural Solutions division of Environmental Systems Research Institute (ESRI) in Redlands, CA, but is also familiar with our work because he was a CIAT employee in the mid-1990's. The consultant also worked at ICARDA and is thus familiar with the type of GIS work carried out in the CGIAR centers.

In early 2002, CIAT's GIS lab manager left the PE4 project. The PE4 project has decided to postpone the hiring of a replacement in order to consider the promotion of current national staff as an alternative to making an international hire. This consultancy will help the project consolidate and improve plans and activities of CIAT's GIS Lab.

The consultancy will also help CIAT implement its strategy of moving to ESRI's new ArcGIS software architecture. In May 2002, ESRI gave training in ArcGIS, ArcSDE and Spatial Analyst software. The consultant will help CIAT consolidate our efforts to successfully use this software.

The consultant will meet and interview principal staff at CIAT in strategy sessions, and analyze GIS lab systems.

DELIVERABLE. The consultant will write a report on items A through F (above) with recommendations for improved efficiency of the CIAT GIS Lab.

TIMETABLE FOR NICK THOMAS' CONSULTANCY
ESRI, Inc., Redlands, CA, USA

Sunday, 25 May Arrival Cali (PM)

Monday, 26 May

08:00 – 09:00 Meeting with Senior Staff of Land Use (*TO, GH, AJ, JR, AF, DW, PJ*) to discuss their objectives of the consultancy; schedule changes

09:00 – 12:00 Review of existing materials associated to current situation in GIS Lab. Hardware, software (Remote sensing, survey, GPS, etc.). Gap analysis and additional information requests.
Glenn Hyman, Jorge Cardona

13:00 – 16:00 Individual meetings with group staff based within the GIS Lab. Each interview will ideally last 45 minutes to one hour depending upon the number of staff available to meet.
Organized by Marisol Calderón and Ligia M. García

16:00 – 18:00 Review and write up of day's activities

Tuesday, 27 May

08:00 – 09:00 Review of current network hardware
 Review of database architecture and plans for the next 5 years
Jorge Cardona

09:00 – 10:00 Review of present data creation mechanism. *Silvia Elena Castaño*

10:00 – 11:00 Review of current and planned staff capacity building.
Glenn Hyman, Yuviza Barona, Martha Gómez, Lilian Patricia Torres, Gloria Stella Torres (GIS Conference Room)

11:00 – 12:00 Glenn Hyman. Discussion of future development of GIS Lab at CIAT – Internal promotion and cost recovery initiatives and private entity collaborative opportunities.

14:00 – 16:00 Planned implementation at CIAT of Internet Mapping
Glenn Hyman, Jorge Cardona, Carlos Meneses, Dorian Colounge, Danny Mauricio Montero, Claudia Jimena Perea, Elizabeth Barona. (GIS Conference Room)

16:00 – 18:00 Review and write up of day's activities

Wednesday, 28 May

08:00 – 09:00 Presentation "Mobile GIS for Agriculture" for Land Use. Will show basic ArcPad functionality out of the box and then demonstrate customization and interaction with geodatabase. (Calima Room)

09:00 – 12:00 Configuration of GPS with ArcPad and field exercise for staff. The exercise includes preparation for the field, export of data layers from the geodatabase, setup of the GPS unit and navigation/data collection in the field. The field component might need extending depending upon the number of attendees. I will bring 2 mobile GPS units with me.

14:30 – 15:00 Seminar preparation

15:00 – 16:00 SEMINAR: "Trends in use of GIS in Agriculture" – content to include software demonstrations of Geostatistical Analyst, ArcPad, ArcReader, Tracking Analyst, Geodatabase architecture and case studies of implementations of ESRI GIS at the production, agribusiness and government level. (Nariño Room)

16:00 – 18:00 Review and write up of day's activities

Thursday, 29 May

13:00 – 18:00 Report write-up

Friday, 30 May

08:00 – 12:00 Report write-up

13:00 – 15:00 Discussion of Report with Glenn Hyman and Jorge Cardona

15:00 – 17:00 Final write-up

17:00 Delivery of Report to CIAT

APPENDIX B. CAMPUSPAK LICENSE AGREEMENT

ESRI, 380 New York St., Redlands, CA 92373-8100 USA • TEL 909-793-2853 • FAX 909-793-5953

**MEMORANDUM OF UNDERSTANDING
BETWEEN
CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH CENTERS
AND
ENVIRONMENTAL SYSTEMS RESEARCH INSTITUTE, INC.**

INTRODUCTION AND BACKGROUND

CGIAR

Established in 1971, the Consultative Group on International Agricultural Research (CGIAR) is an association of public and private members supporting a network of sixteen (16) international agricultural research institutions referred to as Future Harvest Centers. These CGIAR centers located in more than one hundred (100) countries conduct strategic and applied research on problems of international significance in agriculture, forestry, and fisheries to reduce hunger and poverty, improve human nutrition and health, and protect the environment.

While agriculture is the cornerstone of development in poor countries, where more than seventy percent (70%) of people depend on the land for their livelihood, agricultural growth must be achieved through methods that preserve the productivity of natural resources. Research is one key means by which the world's knowledge of agriculture is increased and improved.

CGIAR's research agenda focuses on both strategic and applied research on higher yielding food crops and more productive livestock, fish, and trees; improved farming systems that are environmentally benign; better policies; and enhanced scientific capacities in developing countries. This research agenda seeks solutions to agricultural productivity affecting poverty reduction, sustainable management of natural resources, protection of biodiversity, and rural development.

The knowledge generated by CGIAR and the public and private organizations working with CGIAR as partners, research associates, and advisors is provided freely to everyone. By conducting strategic and applied research on problems of international significance in agriculture, forestry, and fisheries, CGIAR centers generate research outputs of a public nature capable of global applications.

ESRI

Environmental Systems Research Institute, Inc. (ESRI), is the developer of ArcGIS™, the leading geographic information system (GIS) software in the world, and a variety of related components, technology, and methods that have contributed to making GIS widely accepted throughout the world. From its beginning thirty-three (33) years ago, ESRI has been committed to working toward developing software and using computer technology to find better solutions to some of our most complex environmental problems worldwide. ESRI has a long history of donating software and services to United Nations organizations. ESRI also believes education and training form a strong foundation for the successful implementation of GIS, especially in developing countries. ESRI maintains a strong commitment to providing high-quality software products and training to its clients.

It is with the above statements and the description of the CGIAR Center (hereinafter known as the "Center") in Appendix A in mind that ESRI and the Center wish to formalize their past association and cooperation by entering into a formal Memorandum of Understanding (MOU), for the purpose of encouraging the use of GIS in sustainable agriculture and rural development.

™ ArcGIS is a trademark of ESRI in the United States, the European Community, or certain other jurisdictions.

SPECIFIC POINTS OF UNDERSTANDING

1. PURCHASE AND USE OF GIS SOFTWARE LICENSES

Pursuant to the terms and conditions contained in this MOU and acceptance of the software licensing terms and conditions contained in Appendix C (incorporated herein by reference), ESRI agrees to provide its GIS software to the Center for the Center's own use including use by its Outreach Office(s) described in Appendix D (incorporated herein by reference) for the purpose of supporting the Center in its sustainable development activities around the world subject to the fees described in Appendix B and Appendix E (incorporated herein by reference).

All initial orders for Software, Data, Documentation, and Services shall be placed with the local ESRI International Distributor and shall include the following:

- a. Three (3) signed copies of this MOU, including signatures required in Appendix C;
- b. A purchase order with purchase order number;
- c. The Center's or Outreach Office's name, mission statement, contact name, address (including name of country), phone number, fax number, e-mail address as listed in Appendix A and Appendix D (incorporated herein by reference);
- d. A description of the Option(s) as described in Appendix B, being ordered; and
- e. Shipping instructions, customs broker, and preferred carrier.

All subsequent orders for Software, Data, Documentation, and Services shall be placed with the local ESRI International Distributor and shall reference this MOU and shall be accompanied by:

- a. A purchase order with purchase order number;
- b. A description of the Option(s) as described in Appendix B, and or Appendix E, being ordered; and
- c. Shipping instructions, customs broker, and preferred carrier.

All purchase orders are subject to acceptance by ESRI. If any purchase order is incomplete, the destination or CGIAR Center is denied U.S. export privileges, or other information required by ESRI is incomplete or incorrect, ESRI may reject the purchase order outright or may withhold issuance of any keycode until the problem is resolved.

2. ArcGIS TRAINING CLASSES

An Unlimited Virtual Campus Training Subscription is included on the condition that renewal fees have been paid and the contract is current. An ESRI Virtual Campus Training Subscription gives access to all asynchronous, autoattended Virtual Campus courses authored by ESRI.

ESRI agrees to provide training, both at the Redlands Learning Center, as well as on-site, at a substantial discount from the normal commercial fees. Representatives of the center will be eligible for a forty percent (40%) discount off the current pricing for training classes held at the Redlands Learning Center. The cost of training classes conducted on-site by ESRI Redlands staff also qualify for the forty percent (40%) discount, not including the travel expenses which will be invoiced at actual cost.

All training courses conducted at a Center's Outreach Office under the terms of this MOU will be organized and coordinated through the Center headquarters. Course fees do not include travel expenses.

3. ArcGIS TEACHER AUTHORIZATION

ESRI will assist the Center to develop selected personnel to become qualified teachers authorized to teach ESRI training courses by providing them with the opportunity to attend training courses held at the Redlands Learning Center at forty percent (40%) off the normal commercial rate to prepare them for the ESRI International Teaching Program (ITP).

Those personnel who successfully complete the ESRI ITP will be authorized to teach the ArcGIS training courses only at, and for the benefit of, the Center's staff or its Outreach Office(s) staff, and individuals from other organizations who are cooperating directly on specific CGIAR projects, upon successful completion of the ESRI Authorized Training Program. Once qualified there will be no annual fee to maintain a qualified individual's teaching authorization in the ESRI Authorized

Training Program. All efforts with respect to the ESRI ITP must be coordinated with Mr. James Henderson, Manager of International Technical Marketing.

4. CUSTOMIZED GIS TRAINING MATERIALS

Subject to prior review and written approval from ESRI, the Center may customize portions of the ESRI training materials to meet its specific internal training application requirements. All modifications must be reviewed and approved in writing by ESRI prior to publication. ESRI will provide technical guidelines and review to the Center(s). Customized training materials may only be used by the Center or its Outreach Office(s).

ESRI will also make available to the Center copies of standard ArcGIS application demonstrations, which the Center may utilize in developing its application-specific training materials.

5. INTERNSHIPS FOR SELECTED INDIVIDUALS

ESRI will extend its International Distributor Tutorial Program to include selected individuals from the Center and its Outreach Office(s). Under this program ESRI will allow the selected individuals to attend ESRI training courses in Redlands at a fifty percent (50%) discount from the normal course fees, and provide the selected individuals opportunity to work for an extended period of time of not less than three (3) months but no longer than one (1) year on various projects with ESRI technical staff. Any and all salaries, travel, and living expenses will remain the sole responsibility of the Center or its Outreach Office(s). The Center will review and nominate candidates for selection by ESRI. Final selection of nominated candidates shall be at ESRI's sole discretion and shall be subject to the individual obtaining all necessary and proper visas or providing proof to ESRI of legal right to work in the United States.

6. ESRI INTERNATIONAL USER CONFERENCE

ESRI will provide at no cost a limited number of complimentary registrations to the annual ESRI International User Conference for up to four (4) CGIAR staff members from the Center or its Outreach Office(s). Additional Center staff members may attend at a forty percent (40%) discount off the normal ESRI International User Conference fee. Any and all travel and per diem expenses will remain the responsibility of the Center or its Outreach Office(s).

The Center will endeavor to actively participate to present its latest GIS applications and projects at the annual ESRI International User Conference and, to the extent possible, at other ESRI Regional Conferences held throughout the year at various locations around the world.

7. SHARING OF ArcGIS GEOGRAPHIC DATA SETS

As a condition of the terms of this MOU, the Center and its Outreach Office(s) may voluntarily agree to make available to ESRI and its Business Partners sample geographic data sets the Center may create using ESRI® software, whether the software licenses were purchased or donated, as long as the data is not proprietary. Any use of the sample data sets by ESRI and its Business Partners is subject to the terms and conditions as agreed to by the Center and its Outreach Office(s) in the Sample Data Permission Form described in Appendix F (incorporated herein by reference).

The Center and its Outreach Office(s) agree to give written acknowledgement to ESRI on maps and/or reports it publishes where ESRI software has been used in their production.

8. SOFTWARE TECHNICAL SUPPORT AND MAINTENANCE

The annual fee payable under the terms of this MOU contribute to the maintenance and technical support of the software provided. Software maintenance provides updates of software products when new versions are released. The delivery of these upgrades will be coordinated through the Center's local authorized ESRI international distributor.

Technical support for the proposed ESRI software shall be provided by the local distributor in accordance with distributor's current technical support policies. In a case where the local ESRI representative is not able to provide a sufficient degree of technical support, the request will be forwarded by the distributor to ESRI (Redlands). The solution will then be communicated back to the Center and its Outreach Office(s).

® ESRI is a registered trademark of ESRI in the United States, the European Community, or certain other jurisdictions.

9. FUTURE AMENDMENTS AND CLARIFICATIONS

For the purpose of making any changes, amendments, or clarification of specific points of understanding in the future, the following people are authorized to do so:

ESRI

James Henderson, Manager of International Technical
Marketing
Nicholas Thomas, Agricultural Industry Solutions
Mary Jo Janke, Manager, ESRI International

(Name of CGIAR Center) **CIAT**

(Name of Director General of the CGIAR Center)

Joachim Voss

The above points form the Memorandum of Understanding and are hereby agreed to by both parties from the date last signed below through December 31, 2004. Any modification(s) or amendment(s) to this MOU must be in writing and signed by an authorized representative of each party. This MOU may be canceled by either party at any time upon written notification to the other. It is understood that this MOU is not legally binding upon either party, but rather forms the basis for cooperation between them.

(Name of Director General, CGIAR Center) Joachim Voss
(Name of CGIAR Center)

CIAT

12 November, 2002

Date

Jack Dangermond, President
ESRI

LAURA DANGERMOND
Vice President

FEB 20 2003

Date

- Appendix A: Mission Statement of CGIAR Center
- Appendix B: Initial Deliverable ESRI Software
- Appendix C: CGIAR ArcGIS CampusPak License Agreement
- Appendix D: Guidelines for Definition of Outreach Office
- Appendix E: Fee Schedule for Additional Media Kits Only Available to CGIAR MOU Participants
- Appendix F: ESRI Sample Data Permission Form

APPENDIX A
Mission Statement of CGIAR Center

Attachment: Contact Details**Center Representative**Name: GLENN G. HYMANPosition: Senior StaffCGIAR Center: CIATE-Mail Address: g_hyman@cgiar.org**Telephone Numbers.**Office: 4450137IVDN: 650-833-8625Mobile: N/A

Facsimile: (57/2) 4450073

Postal Address: Apartado Aéreo 5713

Department: _____

Street: Recta Cali-Palmira, Km. 17City/Province: Cali, ValleCountry: Colombia**Contract ESRI Representative**

Name: Nicholas Thomas

Position: Agriculture Solutions Specialist

E-Mail Address: nthomas@esri.com**Telephone Numbers.**

Office: +1-909-793-2853, extension 1305

Mobile: +1-909-754-0360

Facsimile: +1-909-307-3039

Postal Address: _____

Department: Industry Solutions, ESRIStreet: 380 New York StreetCity/Province: Redlands, CA 92373Country: United States of America

Please insert a brief (150 word) Mission Statement and description of your specific CGIAR Center here:

The International Center for Tropical Agriculture (CIAT) is a not-for-profit organization that conducts socially and environmentally progressive research in developing countries. Our mission is to reduce hunger and poverty in the tropics through collaborative research that improves agricultural productivity and natural resource management. CIAT conducts international research on beans, cassava, forages, rice and tropical fruits. CIAT's integrated research on crops and natural resource management centers on three major agroecosystems: hillsides, forest margins, and savannas. CIAT is a tropical American regional center whose work has a global reach. Currently, about two-thirds of our resources are dedicated to research for tropical America, while the remaining third is divided between Africa and Asia.

APPENDIX B Initial Deliverable ESRI Software

Initial deliverables consist of one (1) copy of installation kit, Documentation, and hardware key, if applicable, for each item listed below. Deliverables for each option are one (1) full box of each product with keycodes and one (1) hardware key, if applicable. Total deliverable hardware keys shall not exceed quantities for applicable licensed Software identified below. The pertinent License option identified below is considered a bundle and shall not be modified or combined with any other ESRI® Software license agreement. See Appendix E for additional Media Kit fees. Additional Media Kits do not constitute additional approved licenses.

Number of Approved Licenses (Option 1)	Number of Approved Licenses (Option 2)	Licensed Software
20	10	ArcInfo™ (Concurrent Licenses)
20	10	ArcEditor™ (Concurrent Licenses)
20	10	ArcView® (Concurrent Licenses)
20	10	ArcGIS™ 3D Analyst™ (Concurrent Licenses)
20	10	ArcGIS Network Analyst (Concurrent Licenses) (when available)
20	10	ArcGIS Spatial Analyst (Concurrent Licenses)
20	10	ArcGIS Geostatistical Analyst (Concurrent Licenses)
20	10	ArcGIS Schematics (Concurrent Licenses)
20	10	ArcPress™ for ArcGIS (Concurrent Licenses)
20	10	ArcGIS Publisher (Concurrent Licenses)
20	10	ArcGIS StreetMap™ USA (Concurrent Licenses)
20	10	ArcView StreetMap 1.1 (Concurrent Licenses)
1	Not Available	ArcSDE™ Server License for Two (2) CPUs with Forty (40) Read/Write Connections
Not Available	1	ArcSDE Server License for Two (2) CPUs with Twenty (20) Read/Write Connections
1	1	ArcIMS® and ArcMap™ Server License for One (1) Server/CPU—Windows Edition
1	1	MapObjects® Developer Seat with Fifty (50) Deployments
10	5	ArcPad™ Application Builder (Includes ArcPad)

Notes:

Option 1—Initial Fee is \$15,000, subsequent annual fee is \$6,000

Option 2—Initial Fee is \$10,000, subsequent annual fee is \$4,500

® ESRI, ArcInfo, ArcEditor, ArcView, ArcGIS, 3D Analyst, ArcPress, StreetMap, ArcSDE, MapObjects, ArcIMS, ArcMap, and ArcPad are trademarks, registered trademarks, or service marks of ESRI in the United States, the European Community, or certain other jurisdictions.

APPENDIX C
CGIAR ArcGIS CampusPak License Agreement



ESRI Use Only:

Cust. Name _____

Cust. # _____

P.O. # _____

ESRI, 380 New York St., Redlands, CA 92373-8100 USA • TEL 909-793-2853 • FAX 909-793-5953

CGIAR ArcGIS CampusPak LICENSE AGREEMENT

This CampusPak License Agreement (Agreement) is between the Licensee printed below (Licensee), the authorized international distributor printed below (Distributor), and Environmental Systems Research Institute, Inc. (ESRI). The Agreement includes (i) this CampusPak License Agreement, (ii) the ESRI License Terms and Conditions version listed below, and (iii) the Exhibit 1 version listed below. The parties acknowledge that they have read and understood this Agreement and agree to be bound by the terms and conditions.

Licensee may only use the type of Software, Data, and Documentation for which the appropriate license fees have been paid to ESRI or ESRI's Distributor and in accordance with Exhibit 1 and the licensed configuration on file with ESRI Customer Service or ESRI's Distributors.

I. The following terms and conditions of the attached E201 are modified in pertinent part as described below:

ARTICLE 1—DEFINITIONS is superseded in its entirety to read:

Definitions—As used herein, the following words, phrases, or terms in this Agreement shall have the following meanings:

- (a) "Annual Fee" shall mean the yearly nonrefundable fee paid by Licensee to Distributor for ongoing use of the Software, Data, Documentation, and technical support.
- (b) "Commercial Use" is defined as use of the Software, Documentation, or Data for any use relating to "for profit" producing purposes.
- (c) "Data" means any digital data set(s) of ESRI or third party data vendor(s), including, but not limited to, geographic, vector data coordinates, raster, or associated tabular attributes, in ESRI® geographic information system (GIS) Software compatible format(s) supplied under this Agreement.
- (d) "Documentation" means all of the printed and digital materials, including, but not limited to, user documentation, training documentation, or technical information and briefings, supplied under this Agreement.
- (e) "GIS Specialist" is defined as a technically oriented Licensee faculty/staff member or their designee familiar with GIS technology.
- (f) "Initial Fee" shall mean the nonrefundable fee paid by Licensee to Distributor in consideration of the rights granted herein. This fee includes technical support for both existing supported Software currently in possession of Licensee and all additional Software, Data, and Documentation delivered under this Agreement.
- (g) "License Manager" means the nondestructive license management software program, composed of a confidential software keycode or hardware key, which controls the distribution of the licensed number of Software copies to requesting end user(s) of Licensee.
- (h) "Programs" is defined as any and all copies of the Software, Data, or Documentation licensed hereunder.
- (i) "Software" means the actual copy of all or any portion of ESRI's proprietary GIS software technology, computer software code, components, dynamic link libraries (DLLs), and programs delivered on any media, including, but not limited to, alpha, beta, prerelease, restricted version(s), or final commercial release provided in source, object, or executable code format(s), inclusive of backups, updates, or merged copies permitted hereunder or subsequently supplied under this Agreement.

Article 3.1 is superseded in its entirety to read:

3.1 Grant of License—In consideration of the mutual promises and covenants provided herein and for other good and valuable consideration, and conditioned upon compliance with all of the terms and conditions set forth in the Agreement including, but not limited to, Article 4, ESRI grants to Licensee a personal, nonexclusive, nontransferable license to

- (a) Use the Software, Data, and Documentation as a single package for Licensee's own internal use only.

© ESRI is a registered trademark of ESRI in the United States, the European Community, or certain other jurisdictions.

A2002-A3767/CM

9/19/02

- (b) Use of the licensed Programs for Commercial Use, profit, or private gain is an express violation of the terms expressed herein entitling ESRI to all remedies available in equity or law, as well as payment in full for standard Program license fees; and
- (c) Access and use of any secure ESRI Web site resources made available to Licensee for Licensee's internal use only, provided that Licensee follows ESRI's terms of use policy specified therein, is permitted. All password or controlled access information provided by ESRI or authorized Distributor shall be treated as ESRI confidential information.

ARTICLE 4—SCOPE OF USE is modified to add the following additional terms:

4.1.1 Licensee agrees to use its best efforts to protect all Programs from loss and theft. Licensee agrees to report all losses in writing to ESRI within five (5) working days after discovering that any components are missing. Licensee agrees to replace all lost or stolen items at the then-current rates. Recurring loss or theft of Programs shall constitute a breach of this Agreement, and ESRI may, at its discretion, terminate this Agreement and exclude Licensee from further participation in the ArcGIS CampusPak License program.

ARTICLE 5—MAINTENANCE is superseded in its entirety with the following:

5.1 Support Services—Software support services are included and will be provided in accordance with the local authorized ESRI International Distributor technical support program, provided Licensee remains current on its payment of the Annual Fee. Licensee's GIS Specialists will be the only individuals authorized to contact Distributor for telephone technical support. These representatives will serve as the primary contact with Distributor for Software updates under this Agreement.

5.2 Upgrades and Support—During the general commercial release, ESRI or its local authorized ESRI International Distributor will deliver to the Licensee one (1) upgrade package for each of the Programs included in the site license.

ARTICLE 6—TERM AND TERMINATION is superseded in its entirety to read:

6.1 Term—The term of this Agreement is one (1) year. Thereafter, the Agreement will automatically renew upon payment of the Annual Fee unless this Agreement is terminated earlier pursuant to the terms set forth in Article 6.2 below. Annual reissue of existing keycodes shall not require an additional transaction fee unless this Agreement is terminated for breach of license terms and is subsequently reactivated.

6.2 Termination—This Agreement and any license granted hereunder may be terminated by ESRI if Licensee fails to comply with any of the terms and conditions herein or Licensee fails to make any payment(s) due as described herein. The license granted with regard to each licensed Program shall remain in force until Licensee discontinues the use of that licensed Program.

In the event of termination the parties agree to negotiate the terms and conditions for ongoing use of the Programs licensed under this Agreement.

II. The following additional terms shall apply to the Agreement:

ARTICLE 11—PURCHASE ORDER TRANSACTIONS

11.1 Initial Deliverables

11.1.1 Upon full execution of this Agreement, receipt of the purchase order for Initial Fee, and receipt of the initial deliverables checklist, detailed in Appendix B, the selected initial deliverables defined herein shall be delivered to Licensee as one (1) complete shipment. Licensee may reduce the list of initial deliverables. However, there shall be no credit or refund given.

11.1.2 Initial deliverables shall consist of one (1) copy of media and documentation and one (1) hardware key for ArcInfo™ and related extensions for each of the ESRI Software Programs identified by Licensee on the Initial Deliverables Request Form. Licensee shall contact Distributor for keycodes Licensee requests to be issued for the implementation of the UNIX-based Software and ArcInfo for Windows NT Software licenses for the initial deliverables. ESRI will issue to the Licensee keycodes for up to a twelve (12)-month period to implement use of the annual Software licenses.

TM ArcInfo is a trademark of ESRI in the United States, the European Community, or certain other jurisdictions.

11.1.3 Notwithstanding the existing ESRI Programs in Licensee's inventory, Licensee shall issue a purchase order for the Initial Fee, Annual Fee, any Transaction fees assessed, and for all additional Programs ordered hereunder. ESRI will invoice against each purchase order upon shipment or upon issuance of the keycode(s) as appropriate. Licensee agrees to pay all such invoices promptly.

11.2 Future Purchase Order Transactions/Order via Distributor—Following receipt of Initial Deliverables, when additional keycodes, hardware keys, Software media packages, or other Programs are required, Licensee may add these to this Site by paying any applicable fees. Additional copies of hard-copy Documentation may also be acquired.

11.3 Changes by Supplement—New Programs, services, or reduced prices may be added by supplements to the attachments by formal notice provided by Distributor. Licensee acknowledgment is not required to activate the supplement.

ARTICLE 12—LICENSEE'S RESPONSIBILITY

In consideration of the grant of the discount on standard license and technical support fees, Licensee agrees to do the following:

- (a) Provide a single point of primary contact for Licensee. This individual will coordinate internal orders from Licensee and distribute the Programs within the Licensee's site.
- (b) Appoint one (1) technically responsive GIS Specialist whose qualifications are acceptable to ESRI for support of all on-campus GIS Software.
- (c) Where appropriate, encourage the use of GIS to all departments within Licensee's site.

This Agreement constitutes the sole and entire agreement of the parties as to the subject matter set forth herein and supersedes any previous agreements, understandings, and arrangements between the parties relating to such subject matter. Any modification(s) or amendment(s) to this Agreement must be in writing and signed by an authorized representative of each party.

[INTENTIONAL BLANK]

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed and effective as of the last date written below.

**INTERNATIONAL CENTER FOR TROPICAL
AGRICULTURE (CIAT)**

(Licensee)

By: _____

Authorized Signature

Printed Name: Joachim Voss

Title: Director General

Date: 12 November, 2002

Licensee Contact Information

Contact: GLENN G. HYMAN

Address: Recta Cali-Palmira, Km. 17

City, State, Postal Code: Aptado Aéreo 6713

Cali, Valle

Country: COLOMBIA

Telephone: (57/2) 4450137

Fax: (57/2) 4450073

E-mail: g.hyman@cgiar.org

ESRI Contract Number: MSL

Appendix B—Initial Deliverables Order Form

ESRI License Terms and Conditions Version E201 2/02

ESRI Exhibit 1 Version E300 3/02

**ENVIRONMENTAL SYSTEMS
RESEARCH INSTITUTE, INC.**

(ESRI)

By: _____

Authorized Signature

Printed Name: LAURA DANGERMOND

Vice President

Title: _____

Date: FEB 20 2003

PROSIS S.A.

(Distributor)

By: _____

Authorized Signature

Printed Name: HELENA GUTIERREZ GARCIA

Title: PRESIDENT

Date: November 27, 2002



APPENDIX D
Guidelines for Definition of Outreach Office

For the purposes of this Memorandum of Understanding (MOU) the following shall describe Outreach Office(s):

The definition of Outreach Office(s) shall include the permanent location of the CGIAR center international staff, acknowledging that specific projects may require that more than one (1) ESRI® software license be granted in a given location for a specified time.

For each location the CGIAR center will inform ESRI (Redlands) of how all ESRI software has been distributed within the CGIAR center organization and any and all subsequent locations for licensing purposes. Information required by ESRI includes contact person, e-mail, telephone and fax numbers, physical address, and a quantity of all software available under the terms of this MOU. This information shall be provided to the ESRI Agricultural Industry Solutions representative as identified in the MOU.

It is understood by the parties that CGIAR projects may be of specific duration at the various Outreach Offices. In cases of time-limited projects, the license will be approved only for the duration of the project. In no event shall a CGIAR center or its Outreach Office(s) working with a national institute on a project that included ESRI software transfer to, allow the transfer to, or grant any rights in the ESRI Software, Data, or Related Material to any national institute at the end of any CGIAR project. Such transfer shall be considered a material breach of this MOU and the CGIAR ArcGIS CampusPak License Agreement. Any such requests by any national institute shall be referred to ESRI or the local authorized ESRI International Distributor.

ESRI reserves the right to (i) limit the number of purchases for use in an Outreach Office(s) or (ii) deny a purchase for an Outreach Office(s) where such purchases infringe upon the commercial activity of the local authorized ESRI International Distributor.

(Insert name, address, and description of Outreach Office(s) here)

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APPENDIX E
Fee Schedule for Additional Media Kits Only Available to CGIAR MOU Participants

Product or Item	Fee*
ArcGIS™ Installation Package (Media and Documentation)	\$500
ArcGIS Installation Kit (includes ArcGIS Desktop and ArcInfo™ Workstation Media Kits)	\$300
ArcInfo Workstation Media Kit	\$150
ArcGIS Desktop Media Kit	\$150
ArcView® Concurrent Install Package (complete deliverable)	\$250
Additional ArcGIS for Windows NT Hardware Key (Minimum of 3 keys per order 3 x \$30 = \$90)	\$90
ArcIMS® & ArcIMS ArcMap™ Server Software Media and Documentation	\$150
ArcSDE™ Software Media and Documentation	\$150

NOTE: Please contact ESRI for pricing of any items not listed above.

* The fees described above are in U.S. dollars. The fees listed do not include any taxes, shipping and/or handling charges. Fees are subject to change without notice.

® ArcGIS, ArcInfo, ArcView, ArcIMS, ArcMap, and ArcSDE are trademarks, registered trademarks, or service marks of ESRI in the United States, the European Community, or certain other jurisdictions.

APPENDIX F
ENVIRONMENTAL SYSTEMS RESEARCH INSTITUTE, INC.
SAMPLE DATA PERMISSION FORM

(hereinafter referred to as "Company") grants its express, royalty free permission for Environmental Systems Research Institute, Inc. (ESRI), and its Business Partners to use, copy, reproduce, (re)publish, and/or (re)distribute sample data and related materials contributed by Company for the following purposes and through the following channels (please *initial* all applicable uses for which permission is granted):

ESRI Marketing Activities

_____ Benchmarks, Trade Shows, Seminars
 _____ ESRI World Wide Web
 _____ ESRI Educational/Training Materials
 _____ General Marketing and Promotional Activities
 _____ ESRI® Software Releases and Related Documentation
 _____ Approved for All of the Above Uses

ESRI Domestic and/or International Business Partners

_____ All Marketing Activities: Benchmarks,
 Trade Shows, Seminars, General
 Marketing, and Promotional Activities
 _____ Web Pages

Brief description of sample data and related materials (if additional space is needed, please attach a separate sheet):

Once permission has been granted, ESRI and its Business Partners shall continue to use and redistribute Company's sample data and related materials until such time as Company provides written request that such activities cease. ESRI or its Business Partners may then continue their use until the current inventory of collateral materials, in any format, has been exhausted or undergoes a substantial revision, whichever comes first.

In order to assist in the proper usage of Company's sample data and related materials for which permission is granted, Company requests the following information accompany all sample data and related materials submitted:

Company copyright attribution notice (e.g., Copyright © <insert year(s)> <insert name of copyright owner(s)>.):
 Copyright © _____

Company trademark attribution notice: _____

Company source attribution notice: _____

Company warrants it owns and/or has rights to grant permission to the sample data and/or related materials submitted. To the best of Company's knowledge and belief, the sample data and/or related materials do not infringe upon the copyright or proprietary rights of others. Moreover, Company warrants that these sample data and/or related materials do not contain any information that is unlawful, libelous, or violative of any person's right to privacy. Company agrees to defend, indemnify, and hold ESRI harmless from and against any and all liability, expense, costs, and/or damage arising out of Company's failure to meet the obligations of this Agreement.

Accepted and Agreed:

By: _____
 Authorized Signature

Printed Name: _____

Title: _____

Date: _____

® ESRI is a trademark, registered trademark, or service mark of ESRI in the United States, the European Community, or certain other jurisdictions.

DATA DESCRIPTION

Please identify the sample data set and/or related material(s):

Name of data set or related material(s): _____

Data set version number or identification data: _____

Describe the sample data by placing a check mark in the appropriate boxes below (check all boxes that apply):

MEDIA TYPE

- ☐ 8-mm Data Cartridge*
☐ ¼-inch Data Cartridge*
☐ CD-ROM
☐ 3.5-inch Diskette
☐ Bernoulli
☐ Other* _____

OPERATING SYSTEM FORMAT

- ☐ UNIX File System Format
☐ DOS File System Format
☐ Windows 95
☐ Windows NT Version _____
☐ Macintosh
RASTER FORMAT
☐ SunRaster File
☐ TIFF
☐ GIF
☐ BIL
☐ Other _____

DATA TYPE

- ☐ ArcInfo™ Coverages
☐ ArcView® GIS 3 or later
 (e.g., shapefiles and projects)
☐ EXPORT Format (E00)
☐ dBASE Tabular File
☐ ASCII Comma Delimited
☐ Compressed
☐ Proprietary with Extraction Software
☐ BusinessMAP®
☐ Atlas AGF/SDK
☐ Other _____

* NOTE: If data is supplied on data cartridge or other tape media, please include an itemized file list with approximate file sizes. What ESRI software (type and version) was used to create the data (e.g., ArcInfo 7.2, PC ARC/INFO® 3.5)?

Does the sample data include applications software (e.g., AML™, SML™, Avenue™, or Visual Basic)? If so, which? _____

What is the geographic extent of the sample data? _____

In what map projection/coordinate system is the sample data? _____ What is its scale? 1: _____

Briefly list the geographic features, layers, and/or attributes included in the sample data. (The sample data set must reflect what a customer would get if he/she were to license your product [i.e., it must contain all of the possible layers and all of the attributes normally provided].)

Is this data set a ☐ final, deliverable version of the product, or a ☐ development version?

List any items meant to be relational keys:

	FIELD (ITEM) NAME	EXAMPLE VALUE	FIELD (ITEM) DEFINITION
Example:	Cnty_fips	057	Integer (or Number)

Please attach a complete set of documentation (e.g., data dictionary, layers description, and functional description) identical to what an end user would receive if he/she were to license this data set.

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Table 1. -- Description of Hardware.

CGIAR Centre Name: International Center for Tropical Agriculture (CIAT)

Licence Option = 1

Licence Server #	Operating system	Machine Name	Make/Model	Type	HostID	Location
1	SOLARIS	RAPTOR	SUN ULTRA 1	SERVER	80865244	Cali, Colombia
2	SOLARIS	LISA	SUN ULTRA 60	WORKSTATION	80b3cce9	Cali, Colombia

Example of how to fill in Table 2.

CGIAR Centre Name: ICGSAR (International Center for Geo-Spatial Agricultural Research)

Licence Option =

Licence Server #	ArcGIS ArcInfo	ArcGIS ArcEditor	ArcGIS ArcView	3D Analyst	Network	Spatial Analyst	Geostatistical	Schematics	ArcPress	Publisher	StreetMap	Hardware Key Serial #	Networked Licence Server	Non Network Licence	Notes
Raptor	5	10	10	5	5	5	5	5	5	5	5				
Lisa	5	10	10	5	5	5	5	5	5	5	5				
3	1	0	0	1	1	1	1	1	1	1	1				
4	1	0	0	1	1	1	1	1	1	1	1				
5	1	0	0	1	1	1	1	1	1	1	1				
6	1	0	0	1	1	1	1	1	1	1	1				
7	1	0	0	1	1	1	1	1	1	1	1				
8	1	0	0	1	1	1	1	1	1	1	1				
9	1	0	0	1	1	1	1	1	1	1	1				
10	1	0	0	1	1	1	1	1	1	1	1				
11	1	0	0	1	1	1	1	1	1	1	1				
12	1	0	0	1	1	1	1	1	1	1	1				
Total #	20	20	20	20	20	20	20	20	20	20	20				

Additional 11 Hardware Keys required.

APPENDIX C. HARDWARE INVENTORY

INFORMACION CIAT		MODELOS					CONFIG RED				
Nº	USUARIO	PLACA	EQUIPO	O.S	MARCA MODELO	FECHA MODELO	NOMBRE	IP	MICRO	RAM Mb	HDD
1	German Lema	45184	PC	Win2000	Dell Dimension xps T800r	April 1, 2000	Gis-pc099	99	PENTIUM II	128	Quantum (4.73 - 4.73) Gb
2	Jorge Humberto Becerra		SUN-SPARC10	Win2000	Sun SPRAC STATION 10	September 1, 1996	NICARAGUA	74	SPARC10	512	
3	Carlos E. Gonzalez	46023	PC	Win2000	CLON	March 1, 2000	Gis-pc152	152	PENTIUM 4	512	Maxtor (14.6 - 61.6)Gb
4	Lilian Patricia Torres	44647	PC	Win2000	Dell Optiplex GX1	November 1, 1999	Gis-pc062	62	PENTIUM II	128	(3.91 - 3.94)Gb
5	Annie Jones	43916	PC	Win2000	Gateway G6-233	August 1, 1996	Gis-pc189	189	PENTIUM II	128	(4.04 - 1.98) Gb
6	Ovidio Rivera(de baja)										
7	Jorge Cardona	45200	PC	Win2000	Dell Dimension XPS T800r	April 1, 2000	Gis-pc104	104	PENTIUM 2	256	(9.46 - 18.64)Gb
8	Dowglas White (de baja)	44160									
9	Peter Jones	13378	PC	Win2000	Dell Dimension XPS T 600	April 1, 2000	Gis-pc203	203	PENTIUM III	256	Maxtor(18.1-19.5-19.5-9.41)Gb
10	Fernando Sevilla	43912	PC	Win2000	Gateway 2000	February 1, 1998	Gis-pc121	121	PENTIUM II	64	Quantum (3.99 - 1.98)Gb
11	Yuviza Barona	44781	LAPTOP	Win 98	IBM ThinkPad 770z	October 1, 1999	Gis-Laptop109	109	PENTIUM II	128	(1.9 - 11.1)Gb
12	Yuviza Barona		LAPTOP	Win2000	IBM ThinkPad 560x	October 1, 1999	Gis-Laptop027	27		96	(1.94 - 1.86)Gb
13	Yuviza Barona	30494233u -3	LAPTOP	Mellenium	TOSHIBA TECRA 8100	November 1, 2000	Gis-Laptop026	26	PENTIUM IIII	64	(5.58)Gb
14	Yuviza Barona	44780	LAPTOP	Win2000	IBM ThinkPad 770z	October 1, 1999	Gis-Laptop162	162		128	(13.1)Gb
15	Yuviza Barona	44309	PC	Win2000	Gateway GP6 450	September 1, 1998	Gis-pc127	127	PENTIUM II	128	Quantum (9,55-18,9)Gb
16	Thomas Oberthur	45970	LAPTOP	Win2000	IBM ThinkPad R32	April 1, 2003	Gis-Laptop157	157	PENTIUM 4	520	(17.4)Gb
17	Thomas Oberthur		PC	Win2000	Dell Dimension 8100 P4	April 1, 2000	Gis-pc022	22	PENTIUM 4	256	(18.6)Gb
18	Gloria Stella Torres	44161	PC	Win2000	Gateway G6-233	August 1, 1997	Gis-pc233	233	PENTIUM II	128	(3.92 - 8.71)Gb
19	Simon Cook		PC	Win2000	Dell Dimension XPS B733r	April 1, 2000	Gis-pc107	107	PENTIUM III	128	Quantum (3.89 - 24.0)Gb
20	Liliana Rojas	44655	PC	Win2000	Dell Optiplex GX1	November 1, 1999	Gis-pc60	60	PENTIUM II	128	(3.29 - 3.93)Gb
21	Jenny Correa	43919	PC	Win2000	Gateway G6-233	August 1, 1997	Gis-pc182	182	PENTIUM II	128	(4.03 - 1.94)Gb
22	Alex Cuero		PC	Win2000	Dell precision 220	July 1, 2001	Gis-pc106	106	PENITUM III	256	(9.49 - 9.49)Gb
23	Sandra Bolaños		PC	Win2000	Dell precision 420	July 1, 2001	Gis-pc024	24	PENTIUM II	256	Maxtor (57.2 - 9.44 - 9.55)Gb
24	Sandra Bolaños	44873	SUN-WS-Ultra30	SOLARIS	Sun Microsystem ultra 10	June 1, 1999	pluto	96		256	
25	Silvia Elena Castaño	44668	PC	Win2000	Dell Optiplex GX1	November 1, 1999	Gis-pc031	31	PENTIUM II	256	(9.76 - 8.87)Gb

CONFIGURACION EQUIPO

PERIFERICOS

DISPLAY	MULTIMEDIA	NETCARD	MOUSE	MONITOR	UPS
Rage 128 pro - 16Mb	CD-ROM LITE-ON LTN4835	3Com Etherlink (3c905-tx)	Microsoft	Gateway CrystalScan 19'	Power Ware3 110
		Intel (R)pro/100+server adapter	Sun	Sun Microsystem	PATRIOT 600
AG 315-64 - 64Mb	SoundMax Integrated	Realtek RTL8139 (A)	Microsoft	Gateway Vivitron	PATRIOT 450
Ati 3d Rage pro - 4Mb	Crystal SoundFusion	3Com FastEtherlink (3c905b-tx)	Dell	Dell Trinitron 17'	PATRIOT 600
ATI Technologies IN 3D - 8Mb	CD-ROM MITSUMI FX240S IB	3Com Etherlink XL (3c905-tx)	Microsoft	Dell Trinitron	IBM Office Profesional
Ati Rage 128 pro	Creative Auidio PCI (ES1371,ES1373)(WDM)	3Com Etherlink XL 10/100 PCI	Logitech	Gateway VX1100	PATRIOT 450
Nvidia Riva TNT2 - 32Mb	Aureal Vortex 8830 Audio	3Com Etherlink XL(3c905c-tx)	Microsoft	Gateway VX 900	American Power Conversion
S3 Virge DX/GX - 4Mb		3Com Etherlink XL (3c905-tx)	Logitech	Gateway CrystalScan 19'	PATRIOT 450
IBM ThinkPad(cyber9397DVD)	MATSHITA SR-8171	3Com Megahertz Lan card			
NeoMagic MagicGraph 128zv/zv +/xd		PCMA adapter pci 1250			
S3 Savage /MX w/MX - 8Mb	CD-ROM TEAC CD- 224E- B	Dial- Upadapter #2(VPN support)			
Trident 3D Cyber9397DVD	Cristal SoundFusion	3Com Megahertz Lan card	Logitech(extra)		
Ati Technologies 3D RAGE PRO AGP 2X	Creative Auidio PCI (ES1371 ES1373)(WDM)	3ComEtherlink (3c905B-tx)	Microsoft	Gateway 17' VIVITRON	Power Ware3 110
Ati Mobility Radeon - 16Mb	SoundMAX Digital Audio	INTEL (R)pro/100 VE Network Connection	NO	NO	NO
ATI Radeon AGP - 32Mb	SoundBlaster Live!	3Com 3c920 integrated (3c905c-tx)	Logitech	Dell TRINITRON	PATRIOT 450 y 600
SIS 5598/6326 - 8Mb	Creative Auidio PCI (ES1371 ES1373)(WDM)	3Com Etherlink XL nic(3c905-tx)	Microsoft	Dell TRINITRON 19'	PATRIOT 450
Nvidia Riva TNT2 model 64 - 32Mb	SoundBlaster Live!	3Com Etherlink XL nic (3c905c-tx)	Logitech	Dell 19"	PATRIOT 600
Ati Technologies 3D RAGE PRO AGP 2X	Crystal SoundFusion	3Com FastEthernet (3c905b-tx)	Logitech	3M AF150 XL	Power Ware3 110
Ati Mach64 - 2Mb	CD-ROM Mitsumi FX 2405 IS	3Com Etherlink XL (3c905 -tx)	Microsoft	Gateway 17'	Power Ware3 110
Nvidia Geforce 256 (Dell) - 32Mb	CD-ROM Lite-ON LTN4835	3Com 3c920 FastEthernet (3c905c-tx)	Microsoft	Gateway Vx1100 20"	PATRIOT 600
Nvidia GeForce - 32Mb	Crystal SoundFusion	3Com 3c920 Integrated FastEthernet (3c905c-	Logitech	DELL Trinitron	PATRIOT 600
Ati Technologies 3D RAGE PRO AGP 2X	Cristal WDM Audio	3Com 3c918 Integrated FastEthernet (3c905B-	Logitech	Tektronix 22"	PATRIOT 600

26	Rosalba Lopez	44310	PC	Win2000	Gateway GP6 450	September 1, 1998	Gis-pc154	154	PENTIUM II	256	Quantum(6.32 - 6.31)Gb
27	SCANNER-IMPRESORA	43901	PC	Win2000	Gateway 2000	February 1, 1998	Gis-pc053	53	PENTIUM II	128	(3.92 - 2.08)Gb
28	Victor Soto		PC	Win2000	CLON 2 Procesadores	March 1, 1999	Gis-pc050	50	PENTIUM II	256	(24.4 - 7.85 - 12.8)Gb
29	Carlos Nagles	44736	SUN-WS- Ultra5	SOLARIS	Sun Microsystem ultra 5	June 1, 1999	mandrake	79		128	
30	Ovidio José Muñoz	44666	PC	Win2000	Dell Optiplex GX1	November 1, 1999	Gis-pc061	61	PENTIUM II	128	(7.85 - 19.0)Gb
31	Jaime Jaramillo	44925	PC	Win2000	Gateway E-4200	May 1, 1999	Gis-pc125	125	PENTIUM II	256	(9.76 - 47.4)Gb
32	Jaime Jaramillo	45511	Laptop	Win2000	IBM ThinkPad X21	December 1, 2002	Gis-Laptop070	70	PENTIUM III	128	(17.4)Gb
33	Nohelia	43914	PC	Win2000	Gateway G6 233	August 1, 1997	Gis-pc123	123	PENTIUM II	128	Quantum(6.03 - 9.55)Gb
34	Lix Dany	44902	SUN-WS- Ultra5	SOLARIS	Sun Microsystem ultra 5	June 1, 1999	shaggy	74		128	
35	Carlos Barona	43958	SUN-WS- Ultra1	SOLARIS	Sun Microsystem ultra 1	September 1, 1997		74		128	
36	Supermaquina A		PC	Win2000	Dell Dimension XPS B866	April 1, 2000	Gis-pc055	55	PENTIUM III	128	Quantum(13.9 - 13.9)Gb
37	Supermaquina B	45813	PC	Win2000	Dell Precision 530	July 1, 2002	Gis-pc064	64	Xeon	512	(20.7 - 53.7)Gb
38	Marisol Calderón	44664	PC	Win2000	Dell Optiplex GX1	November 1, 1999	Gis-pc065	65	PENTIUM II	128	(7.85 - 6.04)Gb
39	Yolanda Rubiano	45490	PC	Win2000	Dell Optiplex GX150	August 1, 2001	Gis-pc078	78	PENTIUM III	256	(9.31 - 9.31)Gb
40	Marcela Quintero (de baja)	43750									
41	Ligia Garcia	41953	PC	NT 4.0	Compaq Prolinea 5100	May 1, 1997	Gis-pc108	108	PENTIUM	32	2.38Gb
42	Andy Jarvis		PC	Win2000	CLON	March 1, 2002	Gis-pc170	26		512	(19.5 - 37.2 - 17.7)Gb
43	Adriana Fajardo	44680	PC	Win2000	Dell Optiplex GX1	November 1, 1999	Gis-pc080	80	PENTIUM II	128	(4.92 - 2.92)Gb
44	Rachel O'brien (out)										
45	Andrew farrow	45183	PC	Win2000	Dell Dimension XPS T800r	April 1, 2000	Gis-pc098	98	PENTIUM III	256	(4.77-4.77-2.32-2.32-2.42)Gb
46	Jorge Rubiano	44669	PC	Win2000	Dell Optiplex GX1	November 1, 1999	Gis-pc084	84	PENTIUM II	128	(7.85 - 9.55)Gb
47	Martha Otero	44525	PC	Win2000	Gateway E-5200	May 1, 1999	Gis-pc066	66	PENTIUM II	400	80Gb
48	Glenn Hyman		PC	Win2000	Dell Dimension 8100	April 1, 2000	Gis-pc155	155	PENTIUM 4	256	(8.39 - 10.2)Gb
49	Glenn Hyman		LAPTOP	Win2000	IBM ThinkPad X21	December 1, 2002	Gis-Laptop164	164	PENTIUM III	256	(17.4)Gb
50	Elizabeth Barona	44337	PC	Win2000	Gateway GP6-450	September 1, 1998	Gis-pc126	126	PENTIUM II	256	(9.49 - 9.50)Gb
51	Herman Usma	44523	PC	Win2000	Gateway E-5200	May 1, 1999	Gis-pc025	25	PENTIUM II	256	(6.30 - 6.30)Gb
52	German Escobar	44162	PC	Win2000	Gateway G6-300	September 1, 1997	Gis-pc054	54	PENTIUM II	228	Quantum (3.99 - 1.98)Gb
53	William Diaz	44355	PC	Win2000	Gateway GP6-450	September 1, 1998	Gis-pc041	41	PENTIUM II	256	Maxtor(21.4 - 10.3 - 3.92 - 3.92)Gb
54	Ottoniel Madrid	44623	PC	Win2000	Dell Optiplex GX1	November 1, 1999	Gis-pc063	63	PENTIUM II	128	Quantum (7.85 - 9.56)Gb
55	Claudia Perea	44524	PC	Win2000	Gateway 5-200	April 1, 1999	Gis-pc180	180	PENTIUM II	128	(9.39 - 18.6)Gb
56	Luz Amira Clavijo		PC	Win2000	Dell Dimension XPS B733	April 1, 2000	Gis-pc105	105	PENTIUM III	128	Quantum (10.2 - 17.6)Gb
57	Andres Peña	43918	PC	Win NT	Gateway G6 233	August 1, 1997	Gis-pc153	153	PENTIUM II	72	(2.92 - 3.07)Gb
58	Jorge Cardona	AA-G9FBY	LAPTOP	Win2000	IBM ThinkPad i Series		Gis-laptop036	36	PENTIUM III	180	(8,03)Gb

Ati Technologies 3D RAGE PRO AGP 2X 8Mb	Creative Audio PCI ES1371,ES1373) (WDM)	3Com Etherlink (3c905B-tx)	Microsoft	Gateway vx 1100 19"	PATRIOT 600
S3 Virge DX/GX - 4Mb	CD-ROM Mitsumi FX240S IB	3Com Etherlink XL (3c905-tx)	Logitech	Dell Trinitron	STANDBY 500
Matrox Millenium II - 8Mb	Creative Advanced Ware Effects WAE 32	Intel 82558 based Integrated	Microsoft	Nec Multisync XE17 /	PATRIOT 600
			Sun	Gateway vx 1100	STANDBY
Ati Technologies 3D RAGE PRO AGP 2X 4Mb	Cristal WDM Audio	3Com 3c918 Integrated FastEthernet (3c905B-tx)	Logitech	Dell Trinitron 17'	UP CENTRAL
Ati Technologies 3D RAGE PRO AGP 2X 4Mb	Creative Audio PCI	3Com Etherlink XL (3c905B-tx)	Microsoft	Gateway VX 1100	UP CENTRAL
Ati Rage Mobility M - AGP - 4Mb	Crystal SoundFusion	Intel Pro/100 SP Integrado	Microsoft	Integrado	UP CENTRAL
Sis 5598/6326 - 8Mb	Creative SoundBlaster Audio	3Com Etherlink (3c905-tx)	Microsoft	Viewsonic	STANDBY 500
			Sun	Gateway Vivitron	APC PRO 650
			Sun	Sun Microsystem	PATRIOT 450
Nvidia Riva TNT2 model 64 - 32Mb	Creative SB live! Basic	3Com Etherlink XL nic(3c905c-tx)#2	Microsoft	Gateway Vivitron	STANDBY 500
Nvidia Quadro 4700 XGL- 64Mb	Creative SB live! Basic	3Com 3c920 Integrated FastEthernet (3c905-tx)	Logitech	Dell	PATRIOT 600
Ati Technologies 3D RAGE PRO AGP 2X 4Mb	Crystal SoundFusion	3Com 3c918 Integrated FastEthernet (3c905B-tx)	Logitech	Gateway VX1100	UP CENTRAL
Intel Graphics - 4Mb	SoundMax Integrated	3Com 3c920 FastEthernet (3c905c-tx)	Microsoft	Dell (negro) 15'	PATRIOT 600
Teag labs ET 6000 - 2Mb	SoundBlaster 16	3Com FastEtherlink (3c595)	Microsoft	NEC Multisync 6FCp	
Ati Technologies mach 64 GX - 2Mb		3Com Etherlink (3c905b-tx)	Logitech	NEC Mulisync XE17	UP CENTRAL
Nvidia Geforce2 MX/MX 400 - 64Mb	Sis 7018 Wave	Sis 900 pci FastEthernet	Logitech	DELL	PATRIOT 600
Ati Technologies 3D RAGE PRO AGP 2X 4Mb	Crystal SoundFusion	3Com 3c918 FastEthernet (3c905B-tx)	Logitech	Dell Trinitron	PATRIOT 600
Rage 128 Pro 16Mb	Creative soundBlaster	3Com Etherlink (3c905c-tx)	Microsoft	Tektronix 22"	Power Ware3 110
Ati Technologies 3D RAGE PRO AGP 2X 4Mb	Crystal SoundFusion	3Com 3c918 FastEthernet (3c905B-tx)	Logitech	Dell Trinitron	PATRIOT 450
Accel Star II - 8Mb	Creative SoundBlaster	3Com Etherlink (3c905b-tx)	Microsoft	Gateway Vivitron 22'	
Radeon DDR - 32Mb	SB live! Wave device	3Com 3c920 FastEthernet (3c905c-tx)	Logitech	Dell Trinitron	BACK PRO 650
Ati Rage Mobility M - AGP - 4Mb	Crystal SoundFusion	Intel(R) Pro/100 SP	Microsoft		
Rage pro turbo AGP 2x - 8Mb	SoundBlaster 16	3Com Etherlink (3c905b-tx)	Microsoft	Gateway VX1100 21'	Power Ware3 110
Accel Star II - 8Mb	SoundBlaster Awe32	3Com Etherlink (3c905b-tx)	Logitech	Dell	PATRIOT 450
Velocity 128 - 4Mb	Creative soundBlaster PCI	3Com Etherlink (3c905-tx)	Microsoft	Gateway CrystalScan 19'	PATRIOT 450
3Dfx Voodoo - 16Mb	Creative soundBlaster PCI	Intel(R) Pro/100+ Management Adapter	Microsoft	Gateway VX1100 22'	PATRIOT 600
Ati Technologies 3D RAGE PRO AGP 2X 4Mb	Crystal SoundFusion	3Com 3c918 FastEthernet (3c905b-tx)	Microsoft	Dell Trinitron 19'	BLACK PRO 650
Velocity 128 - 4Mb	Aureal Vortex 8820 Audio	3Com Etherlink XL(3c905b-tx)	Microsoft	Dell Trinitron	PATRIOT 450
Nvidia Riva TNT2 model 64 - 32Mb	Creative SoundBlaster Live!	3Com Etherlink (3c905)	Microsoft	Dell Trinitron 22'	PATRIOT 450
S3 Virge DX/GX - 4Mb		3Com Etherlink (3c905)	Genius	Viewsonic E773	PATRIOT 450
Trident Video AcceleratorCyberBlade-Ai1	Ali Audio Accelerator WDM	Intel pro/100B PCI Adapter(TX)	COMPAQ		PATRIOT 450

PRINTERS & SCANNER

	MODELO	SERIAL	PLACA	IP	SPEED	RESOLUCION	UBICACION - USUARIO
IMPRESORAS	HP LASERJET 5SI	USDK190986	44163	165	24ppm	600dpi	Ofi. YUVIZA BARONA
	HP Officejet d155xi	SG274411RN	45903	131			Ofi. YUVIZA BARONA
	HP LASERJET 4000	USRB027858	44547	166	17ppm	1200dpi	LILIAN PATRICIA TORRES
	HP LASERJET 4M	JPBH005758	42396	99	8ppm	600dpi	GERMAN LEMA
	HP LASERJET PLUS	USFC196342	43392	233	12ppm	600dpi	GLORIA STELLA TORRES
	HP LASERJET 4M PLUS	JPGJ026191	43569	200	12ppm	600dpi	SALA DE CAPTURA DE DATOS
	HP DESKJET 890c Professional series	US7AQ13003	44271	53	9ppm	600dpi	SALA DE CAPTURA DE DATOS
	HP DESKJET 870cxi	USGAC130Q7	43789	65	8ppm	600dpi	MARISOL CALDERON
	HP DESKJET 890c	US7BM1112H		102_port3	9ppm	600dpi	SALA DE IMPRESION (EO-301)
	HP LASERJET 4MV	JPFH010945	43727	160	16ppm	600dpi	SALA DE IMPRESION (EO-301)
	HP LASERJET 4si	USCB175222	42766	168	17ppm	600dpi	SALA DE IMPRESION (EO-301)
	HPSL	USCB100717	43672	78	4ppm	400dpi	YOLANDA RUBIANO
	EPSON STYLUS PRO XL	2R8E002855	43885	102 Port2		720dpi	SALA DE IMPRESION (EO-301)
	HP COLOR LASERJET 5M	JPHF150644		161	12ppm	600dpi	SALA DE IMPRESION (EO-301)
	DESIGNJET 755CM	ESB7305921	43884	163	1ppm	300dpi	SALA DE IMPRESION (EO-301)
	DESIGNJET 3800CP	SG02H4200N		112	10ppm	600dpi	SALA DE IMPRESION (EO-301)
	HP PHOTOSMART 1218	MY08U120FX		72			SALA DE SISTEMAS GIS
SCANNER	HP SCANJET ADF		43724	53		4000dpi	SALA DE CAPTURA DE DATOS
	IDEAL FSC 8010 COLOR SCANNER	00409		106			Ofi. ALEX CUERO

ENCARGADO	ITEM	CANTIDAD	CARACTERISTICAS DESCRIPCION - ESTADO
Victor Soto y Carlos Nagles	Equipos GPS Wild System 200 de Leica, con sus respectivos tripodes para trabajos estáticos y un bastón para levantamientos rápidos, todos los equipos cuentan con sus baterías y cargadores.	4	Equipos milimétricos de doble frecuencia de los cuales solo 2 están en operación. Se debe evaluar la capacidad de las tarjetas de memoria para levantamientos milimétricos, porque actualmente son de 2 MB. y diagnosticar los daños de los restantes.
Victor Soto y Carlos Nagles	Software SKI de Leica versión 2.3.	1	Software para post proceso de datos de campo, ya sean líneas flotantes o redes geodesicas.
Victor Soto y Carlos Nagles	GPS Geoexplorer3.	2	Equipo de la marca Trimble con precisión centimétrica con base, no tienen antena externa.
Victor Soto y Carlos Nagles	GPS Proxr.	1	Equipo de la marca Trimble con precisión centimétrica con base, tiene moral fácil de llevar al campo.
Victor Soto y Carlos Nagles	Software Pathfinder Office versión 2.51.	1	Software para post proceso de datos de campo, en levantamientos con equipos Trimble.
Victor Soto y Carlos Nagles	GPS Garmin 12 XL.	3	Equipos para navegación y ubicación de posiciones geográficas aproximadas. Para prestamos a usuarios en CIAT.
Victor Soto y Carlos Nagles	GPS Megallan 3000 XL.	1	Equipos para navegación y ubicación de posiciones geográficas aproximadas. Para prestamos a usuarios en CIAT.
Victor Soto y Carlos Nagles	Distanciometro Láser.	1	LaserAce 300, para trasladar puntos de GPS y realizar mediciones de distancias.
Victor Soto y Carlos Nagles	Cámaras Fotográficas.	1	DC290 con tarjeta de memoria de 16 MB.
Victor Soto y Carlos Nagles	Cámaras Fotográficas.	1	DC215 con tarjeta de memoria de 31 MB.
Victor Soto y Carlos Nagles	Laptop Toshiba Tecra.	1	Para realizar post proceso en levantamientos GPS, tanto Trimble como Leica.
Victor Soto y Carlos Nagles	Esterescopios de espejos.	1	Tamaños grande, mediano y de bolsillo.
Victor Soto y Carlos Nagles	Brújulas.	2	
Victor Soto y Carlos Nagles	Altimetro.	1	
Victor Soto y Carlos Nagles	Nivel manual.	1	
Herman Usma	Distanciometro o laser	1	
Herman Usma	equipo de Cometa(FlowForm)	1	
Herman Usma	Un Globo	1	
Herman Usma	Camara digital Olympus D-40z	2	
Herman Usma	Camara Pentax ZX7	2	
Herman Usma	Filtros	3	
Herman Usma	Plataforma single camara	1	
Herman Usma	Radio control TOWER HOBBIES	1	
Herman Usma	scanner CanoScan Fs 4000US	1	

APPENDIX D. SOFTWARE INVENTORY

Table 1. – Description of Hardware.

CGIAR Centre Name: International Center for Tropical Agriculture (CIAT)

Licence Option = 1

Licence Server #	Operating system	Machine Name	Make/Model	Type	HostID	Location
1	SOLARIS	RAPTOR	SUN ULTRA 1	SERVER	80865244	Cali, Colombia
2	SOLARIS	LISA	SUN ULTRA 60	WORKSTATION	80b3cce9	Cali, Colombia

Example of how to fill in Table 2.

CGIAR Centre Name: ICGSAR (International Center for Geo-Spatial Agricultural Research)

Licence Option =

Licence Server #	ArcGIS ArcInfo	ArcGIS ArcEditor	ArcGIS ArcView	3D Analyst	Network	Spatial Analyst	Geostatistical	Schematics	ArcPress	Publisher	StreetMap	Hardware Key Serial #	Networked Licence Server	Non Network Licence	Notes
Raptor	5	10	10	5	5	5	5	5	5	5	5				
Lisa	5	10	10	5	5	5	5	5	5	5	5				
3	1	0	0	1	1	1	1	1	1	1	1				
4	1	0	0	1	1	1	1	1	1	1	1				
5	1	0	0	1	1	1	1	1	1	1	1				
6	1	0	0	1	1	1	1	1	1	1	1				
7	1	0	0	1	1	1	1	1	1	1	1				
8	1	0	0	1	1	1	1	1	1	1	1				
9	1	0	0	1	1	1	1	1	1	1	1				
10	1	0	0	1	1	1	1	1	1	1	1				
11	1	0	0	1	1	1	1	1	1	1	1				
12	1	0	0	1	1	1	1	1	1	1	1				
Total #	20	20	20	20	20	20	20	20	20	20	20				

Additional 11 Hardware Keys required.

CIAT

Listado de Llaves asignadas a los usuarios de PE4 Actualizado Mayo 2003

NRO	USUARIO	LLAVES(HARD KEY) Y EXTENSIONES
1	INIA-LIMA VICTOR SOTO	Arcview31(Llave)
2	Alex Cuero	Arcview32(Llave 70632 9939TA73036) - Arcview Erdas Imagine Analyst - R2V(Llave HASP-3 RQMOQ UE 200461)
3	Andy Farrow	ARCVIEW32(Llave) - 3D Analysis Network Analyst Spatial Analyst
4	Andy Jarvis	ARCVIEW32(Llave 70632-9837D59237) 3D Analysis Network Analyst Spatial Analyst -
5	Carlos Eduardo Gonzales	Arcview32(Llave 70632-9939TA73036)
6	Daniel Debock 01-15-2002 Aracelly Ospina (CIAT 3777) Orlando Toro (CIAT 400) Extension 3476 CIAT	Arcview32(Llave)
7	Elizabeth Barona	ARCVIEW32(Llave 70632-9837D59237) - 3D Analysis- Internet Map Server Network Analyst Spatial Analyst
8	GISSERVER Jorge Cardona (3523)	ARCVIEW IMAGE ANALYST (Llave 9910L24343) ARCVIEW32(Llave 9837D59237) - 3D Analysis - Network Analyst - Spatial Analyst - ERDAS IMAGINE(Llave fb3ad2dd14fb)
9	GUARDADA	Arcview32(Llave 70632-9943D73043)
10	GUARDADA	ARCVIEW32(92824-0251NC007491)
11	COMUNIDADES Y CUENCAS Pedro Lorenzo Burgos Grajales CIAT=10605	Arcview32(Llave 70632-0102D03546)
12	GUARDADA	Arcview32(Llave 70632-0102D03546)
13	GUARDADA	Arcview32(Llave 70632-9939TA73036)
14	GUARDADA	Arcview32(Llave 70632-9939TA73036)
15	GUARDADA	COPILOT (Llave W00563)
16	GUARDADA	COPILOT (Llave W00565)
17	Rosalba Lopez	Arcview32(Llave 70632-9931A29528)
18	GUARDADA	HELAVA(Llave) A18019A2
19	Herman Usma	
20	Honduras (Miguel Ayarza)	Arcview32(Llave) - 3D Analysis Network Analyst - Spatial Analyst

21	Jaime Jaramillo	PCI Geomatica 8.1 (Key Code VVQVWAGQ7UCXQDZVDY9NVXVQ2QQQA5XV) Package V8.0 gfl/ooc/gpm/ara/fly/lxx) ARCVIEW32(Llave) - Spatial Analyst
22	Luz Amira Clavijo	ARCVIEW32(Llave) - 3D Analisis - Network Analyst - Spatial Analyst
23	Nathalie Beaulieu (Francia)	PCI Geomatica 8.1 (Key Code 6VQGVAVQV7FXFQ85G2Q9NVXVQ2JQQQ5JVV) Package V8.0 gfl/ooc/gpm/ara/fly/lxx) ARCVIEW32(Llave) - 3D Analisis - Network Analyst - Spatial Analyst
24	Nicaragua (Axel Schmidt)	Arcview32(Llave)- 3D Analisis Network Analyst - Spatial Analyst Arcinfo PC, Data Automation Kit
25	Nohelia Juan Carlos, Lix Dany	Ecognition
26	Otoniel Madrid	ARCVIEW32(Llave)
27	Ovidio Muñoz	Arcview32(Llave 70632-0205NC0371)
28	PRINTSERVER	ERDAS IMAGINE (fb3ad2a11efb) ARCGIS KEY (37130011)
29	Sandra Bolaños	ARCVIEW32(Llave 70632-9837D59237) - 3D Analisis - Network Analyst - Spatial Analyst - Arcview ERDAS Imagine Analyst(Llave RB-4HJSAG-B-9910L24343) ERDAS IMAGINE(Llave fb3ad22a71efb)
30	Silvia Castaño	ARCVIEW32(Llave70632-9837D59237) - 3D Analisis - Network Analyst - Spatial Analyst- Imagine Analyst
31	Simon Cook	ARCVIEW32(Llave-9837D59237) - 3D Analisis - Network Analyst - Spatial Analyst-
32	Thomas Oberthur	ARCVIEW32(Llave 9837D59237) - 3D Analisis - Network Analyst - Spatial Analyst
33		ARCIEW32(Llave 75743-0243NC03724SP) - 3D Analisis (LLAVE 75741-0250NC007431)- SPATIAL ANALYSIS (Llave- 68661-0246NC03738SP) NETWORK ANALYSIS (Llave 68662-0247NC03737)

LISTADO DE LICENCIAS

NRO		DESCRIPCION		Fecha Renovación
Datacenter Server Edition Library Expansion Option Remote Agent for Windows NT/2000		05-7371-9998-003152 03-4708-2011-040354 00-4717-9997-006036		Terminada 20002
CPUID: Platform: Start Date: Expire: Status: Floating Users: Packages: License:		80ace86c Solaris Oct/01/2001 Jul/01/2050 Permanent ara/fly/glm/tx/occ VVVXQG6XXK6F5GY9NVZVQ9JVQGGYV		0
CPUID: Platform: Start Date: Expire: Status: Floating Users: Packages: License:		8083eed Solaris Oct/01/2001 Jul/01/2050 Permanent ara/fly/glm/tx/occ VVVXQ8VX6XFVY9GQY9NVZVQ9QVQ8QKV		0
CPUID: Platform: Start Date: Expire: Status: Floating Users: Packages: License:		8086c3b0 Solaris Oct/01/2001 Jul/01/2050 Permanent ara/fly/glm/tx/occ vvvvaxqu4fh5vggmzvq9nvq9qv		0
CPUID: Platform: Start Date: Expire: Status: Floating Users: Packages: License:		80b3cee9 Solaris Jun/05/2002 Jan/16/2050 Permanent 3 ara/fly/glm/tx/occ QVVGVQ8VZ5XF8QZ9QG96VXVGGJVQ8QEV		0
CPUID: Platform: Start Date: Expire: Status: Floating Users: Packages: License:		c3a2352 Windows NT - 2000 -XP Sep 30 /01 Never CIAT Sandra Boterlos glm/occ/gpm/fly/tx VVQ6VAV67FC5QGVZVQGNVXVQYQQ89QV		WINDOWS NT
CPUID: Platform: Start Date: Expire: Status: Floating Users: Packages: License:		3b35074 Windows NT - 2000 -XP Sep 30 /01 Never CIAT Jaime Jaramila glm/occ/gpm/fly/tx/ara VVQVAGQ7UCKQDZVDY9NVXVQ2QQQASXV		WINDOWS NT
CPUID: Platform: Start Date: Expire: Status: Floating Users: Packages: License:		c8a2d8f1 Windows NT - 2000 -XP Sep 30 /01 Never FRANCIA Nathalie Beaulieu glm/occ/gpm/fly/tx/ara 6vqgvaqv7lxk85g2qlmrvvq2qqq5vv		WINDOWS NT

SOFTWARE DE PCI
 GEOMATICA
 Analisis de imagenes de satelites
 CIAT CUSTOMER ID 1618

FLASH : FIREWORKS 2 FIREWORKS 3 DREAUWE AVER 2 Serial: DREAUWE AVER 2 SKU: Actualización a la Version 3 de DREAUWE AVER Serial Dream Weaver3 SKU: OTRO SERIAL FLASH: FLASH 5 SERIAL NUMBRE C USE SENSITIVE: SKU: DIRECTOR'S SERIAL: Fireworks 3 Insaller HOME SITE NUMBER	FLW300-6064-07032-51940 PWV300-04238-29229-96451 DWV200-07387-97074-90567 WEV20002 DWV300-07319-97291-15794 DWV300L10 FLW400-07962-37195-45479 FLW500-0787-08257-15345 FLW500L10 W3DV300-041571-57200-29448 PWV300-07733-7727-44626 HS40E-1376128227	Software de Macromedia
METRAFRAME CITRIX	EC-0074-9959-C8F7-60031-383C-8D0C	CITRIX METAFRAME
Adobe Acrobat COREL DRAW Omnepage pro RCV Shella 3 LICENCIAS SPREAD-ANALYSIS SparkFontworks 11Re2 SSPallatState15 Re2 S-PLUS S+SpallatState Ver 1.5 Hera32 Hera32 Upgrade Hera32 Upgrade (2001) Adobe Acrobat DELUXE 4.0 Ecognition NeuroShell	K0W400R7107506-592 DROXU-03EE694112 2889A-L00-331031 C2V587 (SN=34371446) (SN=4110022) (SN=3110714) SN(3T04572) PaaS=0208000000178674ejlun 122CCHILLINGER'S1041602504eulm105 3810000000000004-04110000 SN=sdm501b1834727-689 Harkkey Serie =20605	47743009 WINDOWS -NT Licencias Varias

SERVER

LISA 80865244 27005
FEATURE ARC/INFO ESRI 8 01 01-jan-00 9 8B8E30816CF26CDEB46 vendor_info="SR7530EM549EHLX6144" ck=52
FEATURE Plotting ESRI 8 01 01-jan-00 1 ABOEA081B4DFFE14FE62 vendor_info="H0S10JESA24X2TMP012" ck=110
FEATURE Network ESRI 8 01 01-jan-00 9 2B5E00C118F67DE32AA1 vendor_info="7AL197HFHJFLSAXSF215" ck=251
FEATURE TIN ESRI 8 01 01-jan-00 9 4B0E10810B50B9999582 vendor_info="9FJ5001A7CXEK8JL4022" ck=35
FEATURE COGO ESRI 8 01 01-jan-00 9 F80E5081E5C3F52A188A vendor_info="XADL07080KXJ2D2K2067" ck=52
FEATURE Grid ESRI 8 01 01-jan-00 9 182E3011D496EE340D9E vendor_info="S27JTHJHJEK9DVEFD12" ck=0
FEATURE ArcView31 ESRI 1 000 01-jan-00 8 5BF8041EB286966C00E vendor_info="BLK550SPH4H3DSC122" ck=34
FEATURE ArcSdeServer ESRI 8 01 01-jan-00 2 580EB02132A379CE367A vendor_info="BLMPPSHBH4M8PLSP6086" ck=63
FEATURE AVMS1 ESRI 1 000 01-jan-00 1 0B7E40E150460DE740FB vendor_info="4JC98K36MLR17XL00177" ck=31
FEATURE AVSpatial1 ESRI 1 000 01-jan-00 6 BB2EE0A12969A35527A3 vendor_info="SR7MCKYTMLEPDHDL1607" ck=47
FEATURE ArcSdeConnects ESRI 8 01 01-jan-00 10 8BFEB0412F828EE5E44 vendor_info="FRTPFP3PQZFFJUKJH222" ck=26
FEATURE AVNetwork1 ESRI 1 000 01-jan-00 6 AB2E002155E1BF516179 vendor_info="H0PLCE32C0TAENSX2120" ck=9
FEATURE AV3D1 ESRI 1 000 01-jan-00 6 1BF5071F8E94A48460E vendor_info="S2104B8HMDJN7HSL162" ck=60

SOLARIS

SERVER

RAPTOR 80b3ce9 27005
VENDOR ESRI /pkg/esri/var/cxe/80/syngen/ESRI
FEATURE ARC/INFO ESRI 8 01 01-jan-00 11 0B1E0081232EC222AC7C vendor_info="43PFLLR4P905XF08098" ck=232
FEATURE Plotting ESRI 8 01 01-jan-00 1 18BE203131B27E963946 vendor_info="SZJCLMBE7RYT7NH2K244" ck=10
FEATURE Network ESRI 8 01 01-jan-00 11 7BCED0A1908B7DA3B1C5 vendor_info="DOL25JL6YHHPBJE6175" ck=57
FEATURE TIN ESRI 8 01 01-jan-00 11 789EB0E19EFOF1221688 vendor_info="D06SRPFLTAE2EZ81199" ck=64
FEATURE COGO ESRI 8 01 01-jan-00 11 88DE20D1BATA057C8972 vendor_info="FRHBLHYOPZMHBLT77056" ck=46
FEATURE Grid ESRI 8 01 01-jan-00 11 ABFECD91894DCA367EC6 vendor_info="H0HCEAZKXGRERMYGG168" ck=86
FEATURE ArcView31 ESRI 1 000 01-jan-00 4 2B1ED0F1D04C815F5FEF vendor_info="7AF0S3H0E0LOOEY13048" ck=66
FEATURE ArcSdeServer ESRI 8 01 01-jan-00 2 8BAE308133BE1571C9D1 vendor_info="SRL2AAQL4JAZPJHP212" ck=88
FEATURE AVMS1 ESRI 1 000 01-jan-00 1 18AE9041614F4F57284D vendor_info="SZE8E7Y3BPFH8BLKR189" ck=38
FEATURE AVSpatial1 ESRI 1 000 01-jan-00 4 58CE70714A00502EEB0 vendor_info="BLFPLDFT4HCBOR8L0240" ck=248
FEATURE ArcSdeConnects ESRI 8 01 01-jan-00 10 8B7EB0916E6518693965 vendor_info="SR620R75XNXDL7DJ199" ck=250
FEATURE AVNetwork1 ESRI 1 000 01-jan-00 4 48EE60917262DEA3EAC vendor_info="9FFZFJL05PJZD1M190" ck=87
FEATURE AV3D1 ESRI 1 000 01-jan-00 4 1B6E4051A136C28EF6FC vendor_info="S2D98KGLM4ELTNHPK172" ck=26

SOLARIS

10 licencias de ArcView 3.2 windows,
10 licencias de Spatial Analyst windows,
10 licencias de 3D Analyst windows,
10 ArcPress,
5 Bundle Universitario de ArcView 3.2, Network, Spatial y 3D Analyst,
3 licencias Image Analyst,
1 lic ArcIMS 2 CPU,
5 MO Prof.,
5 MO LT,
5 MO IMS,
2 ArcView IMS

WINDOWS

Arcview ARCGIS 3D Analyst v. 10 Intl Keyed KEY 75741-98125927
ArcGIS GeoStatistical Analyst 8.2 Single User Keyed KEY755494462

SERVER

RAPTOR ~ a3f80b3ce9ff
SERVER this_host ERDAS_HOSTID=a3f80b3ce9ff
INCREMENT invect ERDAS 8.5 permanent 1 ISSUED=12-Feb-2002 NOTICE="Licensed to CIAT (Centro Internacional de Agricultura Tropical)" ck=217 SN=05130023273 SIGN="I"
INCREMENT invect ERDAS 8.5 permanent 3 ISSUED=12-Feb-2002 NOTICE="Licensed to CIAT (Centro Internacional de Agricultura Tropical)" ck=177 SN=05130023272 SIGN="I"
INCREMENT invect ERDAS 8.5 permanent 3 ISSUED=12-Feb-2002 NOTICE="Licensed to CIAT (Centro Internacional de Agricultura Tropical)" ck=221 SN=05130023272 SIGN="I"
INCREMENT invect ERDAS 8.5 permanent 3 ISSUED=12-Feb-2002 NOTICE="Licensed to CIAT (Centro Internacional de Agricultura Tropical)" ck=130 SN=05130023272 SIGN="I"
INCREMENT invect ERDAS 8.5 permanent 3 ISSUED=12-Feb-2002 NOTICE="Licensed to CIAT (Centro Internacional de Agricultura Tropical)" ck=204 SN=05130023272 SIGN="I"

SOLARIS

FLOAT_d1f3ad2dd14fb_ciat
FLOAT_d1f3ad2a71efb_ciat
FLOAT_d1f3ad2a11efb-1ciat

WINDOWS NT
3 lica Erdas Professional para
NT, 1 lica Imagine Orthobase, 1
lic Stereo Analyst

ROUTE 4.1.17 Ed. RPT. 1.6

LICENCIA ORACLE -CIAT

ESRI - PROSIS

Licencia de ERDAS
IMAGINE - PROSIS

APPENDIX E. HUMAN RESOURCES

CUESTIONARIO

El siguiente cuestionario tiene por objetivo obtener y organizar información acerca de las habilidades e intereses del personal de PE-4. Por favor responda a las preguntas de una manera precisa y detallada.

NOMBRE:

Capacidad y Experiencia Instrumental

1. En la siguiente lista de capacidades indique su nivel de desempeño para cada una de ellas usando la siguiente escala: Alto / Bueno / Limitado / Ninguno

ADMINISTRACION DE SISTEMAS (manejo de hardware y software)

Sistema operativo Windows NT

Sistema operativo Unix

Administración de hardware

Administración de la red física

Administración de software (SIG / teledetección, etc)

BASES DE DATOS

Externas

Client / server (Oracle)

CAPACITACION

GPS

MANEJO DE PROYECTOS (planificación, ejecución, informes, etc)

SIG

Captura de datos / digitalización

Captura de datos / uso del scanner

Análisis espacial

Modelación

Programación

SOFTWARE

Arc Info

Arc View

Idrisi

CAD / AutoCAD

Map Maker

Otros del mismo tipo

TELEDETECCION

Fotogrametría

Sensores ópticos

Sensores radar

WEB & HERRAMIENTAS GIS / WEB

2. En una hoja aparte haga una lista de sus experiencias de trabajo en aquellos aspectos en los que definió sus capacidades como Altas o Buenas.
3. Indique los aspectos en que sus capacidades sean Bajas o Inexistentes en los que tiene interés en capacitarse. Si hay aspectos que le interesan que no fueron incluidos en la lista del punto 1 y que le interesan, por favor inclúyalos.

Capacidad y Experiencia Temática

4. En la siguiente lista de temas indique su nivel de experiencia en cada una de ellos usando la siguiente escala: Alto / Bueno / Limitado / Ninguno

Apoyo a la gestión local (comunidades, Municipios, etc) de recursos naturales (agua, bosques, tierras, etc)

Apoyo a la identificación / mejoramiento de germoplasma

Apoyo a estudios de mercados/ procesamiento y/o mercadeo

Cuencas y/o recursos hídricos

Diagnóstico y/o monitoreo de recursos naturales

Dinámica del uso de recursos naturales

Dinámicas sociales (migraciones, pobreza, etc)

Indicadores

Monitoreo de procesos globales (país, continente)

Plagas y manejo de plagas

Sistemas de producción agropecuarios

Otros (nómbrelos)

5. En una hoja aparte haga una lista de sus experiencias de trabajo en aquellos aspectos en los que definió sus capacidades como Altas o Buenas.

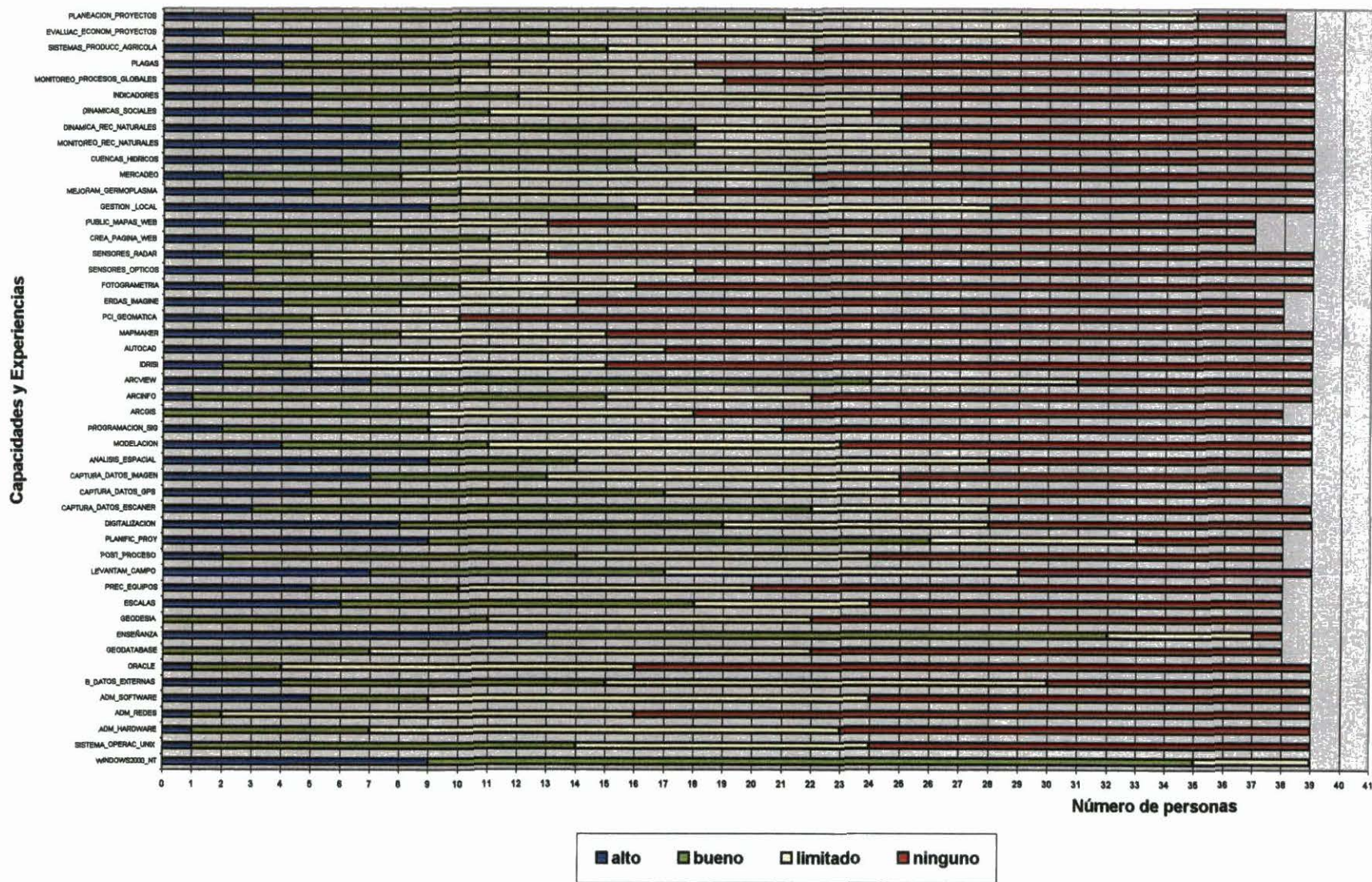
Preferencias

En las siguientes preguntas indique su preferencia. Cuando no tenga una preferencia definida responda "me da lo mismo".

6. Prefiere concentrarse en un sólo tema o puede manejar dos o tres cosas diferentes en forma paralela ?
7. Necesita un sólo jefe o cree que puede responder a dos o tres responsables diferentes en un esquema razonablemente organizado ?
8. Asumiendo el mismo nivel de estabilidad laboral, prefiere mantenerse en el mismo tema por períodos largos (varios años) o prefiere comenzar y terminar tareas cortas (meses)
9. Cómo trabaja mejor integrado a un grupo o solo ?
10. Prefiere trabajar en temas de investigación de punta o prefiere trabajar en cuestiones de utilidad inmediata para usuarios específicos ?
11. En cuáles de los campos temáticos indicados en la sección anterior le gustaría trabajar, independientemente de que tenga o no experiencia. Por favor no enliste más de tres.

Si tiene alguna otra preferencia muy fuerte en cuanto a la forma de trabajo que no ha sido incluída en las preguntas anteriores, por favor preséntela a continuación.

Distribución del personal de PE-4 según el nivel de desempeño en capacidad y experiencia Instrumental y temática



Distribución del personal de PE-4 según el nivel de desempeño en Capacidad y experiencia Instrumental.

Nivel de desempeño	WINDOWS2000_NT	SISTEMA_OPERAC_UNIX	ADM_HARDWARE	ADM_REDES	ADM_SOFTWARE	B_DATOS_EXTERNAS	ORACLE
alto	9	1	1	1	5	4	1
bueno	26	13	6	1	4	11	3
limitado	4	10	16	14	15	15	12
ninguno	0	15	16	23	15	9	23
Missing	8	8	8	8	8	8	8

GEODATABASE	ENSEÑANZA	GEODESIA	ESCALAS	PREC_EQUIPOS	LEVANTAM_CAMPO	POST_PROCESO	PLANIFIC_PROY
0	13	0	6	5	7	2	9
7	19	11	12	5	10	12	17
15	5	11	6	10	12	10	7
16	1	16	14	18	10	14	5
9	9	9	9	9	8	9	9

DIGITALIZACION	CAPTURA_DATOS_ESCANER	CAPTURA_DATOS_GPS	CAPTURA_DATOS_IMAGEN	ANALISIS_ESPACIAL	MODELACION	PROGRAMACION_SIG	ARCGIS
8	3	5	7	9	4	2	0
11	19	12	6	5	7	7	9
9	6	8	12	14	12	12	9
11	11	13	13	11	16	18	20
8	8	9	9	8	8	8	9

ARCINFO	ARCVIEW	IDRISI	AUTOCAD	MAPMAKER	PCI_GEOMATICA	ERDAS_IMAGINE	FOTOGRAMETRIA
1	7	2	5	4	2	4	2
14	17	3	1	4	3	4	8
7	7	10	11	7	5	6	6
17	8	24	22	24	28	24	23
8	8	8	8	8	9	9	8

SENSORES_OPTICOS	SENSORES_RADAR	CREA_PAGINA_WEB	PUBLIC_MAPAS_WEB
3	2	3	2
8	3	8	5
7	8	14	6
21	26	12	24
8	8	10	10

Distribución del personal de PE-4 según el nivel de desempeño en Capacidad y experiencia temática.

Nivel de desempeño	GESTION_LOCAL	MEJORAM_GERMOPLASMA	MERCADEO	CUENCAS_HIDRICOS	MONITOREO_REC_NATURALES	DINAMICA_REC_NATURALES	DINAMICAS_SOCIALES
alto	9	5	2	6	8	7	5
bueno	7	5	6	10	10	11	6
limitado	12	8	14	10	8	7	13
ninguno	11	21	17	13	13	14	15
Missing	8	8	8	8	8	8	8

INDICADORES	MONITOREO_PROCESOS_GLOBALES	PLAGAS	SISTEMAS_PRODUCO_AGRICOLA	EVALUAC_ECONOM_PROYECTOS	PLANEACION_PROYECTOS
5	3	4	5	2	3
7	7	7	10	11	18
13	9	7	7	16	14
14	20	21	17	9	3
8	8	8	8	9	9

	Capacidad y experiencia instrumental - PE-4																									Capacidad y experiencia temática																						
	ADMINISTRACION DE SISTEMAS				BASES DE DATOS		CAPACITACION	GPS				MANEJO DE PROYECTOS			SIG				SOFTWARE			TELEDETECCION		WEB																								
USUARIO	S. O.	WIN-NT	WIN2000	Admin software (SIG / teledeteccion, etc)	Admin red fisica	Admin de hardware	S. O. Unix	Enseñanza	Manejo de escalas	Conocimientos en Geodesia	Procesion y configuración de equipos	Levantamiento de características en campo	Post proceso	Planificación, ejecución e informes, etc	Captura de datos / uso del scanner	Captura de datos / digitalización	Captura de datos / uso GPS	Captura de datos / uso imágenes o fotos	Análisis espacial	Modelación	Programación	Arc Info	ArcView 3	Idrisi	CAD / AutoCAD	Map Maker	Geomática	ERDAS IMAGINE	Fotogrametría	Sensores opticos	Sensores radar	Publicación de Servicios de MAPAS	Creación y edición de páginas WEB	Apoyo a la gestión local (comunidades, Municipios, etc) de recursos naturales (agua, bosques, tierras, etc)	Apoyo a la identificación / mejoramiento de germoplasma	Apoyo a estudios de mercados/ procesamiento y/o. mercado	Cuencas y/o recursos hídricos	Diagnostico y/o monitoreo de recursos naturales	Dinámica del uso de recursos naturales	Dinámicas sociales (migraciones, pobreza, etc)	Indicadores	Monitoreo de procesos globales (país, continente)	Plagas y manejo de plagas	Sistemas de producción agropecuarios	Evaluación Económica de Proyectos	Planificación de Proyectos		
Adriana Fajardo	2	4	4	4	4	2	3	3	1	4	2	3	2	2	2	2	2	3	3	4	4	4	4	2	4	4	1	3	4	4	3	3	4	4	1	1	1	3	2	2	3	3	4	2	1	2	2	
Alex Cuero	2	2	2	2	3	3	3	4	2	3	2	4	2	4	2	1	2	2	2	3	3	3	3	2	2	3	3	2	3	4	3	2	2			4	4	4	4	4	4	3	4	4	4	4	4	
Andres Peña																																																
Andrew farrow	2	3	4	4	4	3	3	3	3	3	3	3	3	3	2	3	3	3	3	1	2	3	2	2	1	4	3	4	4	3	3	3	4	2	4	4	4	3	3	2	2	1	3	4	2	3	3	
Andy Jarvis	1	3	3	4	1	1	4	4	1	2	2	1	1	2	2	2	1	2	1	1	3	4	2	1	2	4	4	4	1	2	2	4	3	2	3	1	3											
Annie Jones																																																
Carlos Barona	2	4	2	4	1	1	4	2	2	2	1	1	1	1	1	2	1	1	1	3	2	4	2	4	1	3	1	1	1	2	4	4	4	4	4	4	4	4	3	4	4	3	3	4	4	2	2	
Carlos Eduardo Gonzalez	2	4	2	4	3	2	3	2	2	3	2	3	2	3	3	4	2	2	3	4	4	3	3	2	4	3	4	4	4	4	4	4	4	4	2	3	3	3	1	1	3	3	3	3	3	3	2	
Carlos Nagles	2	3	3	3	3	3	4	2	3	2	2	1	2	2	1	2	1	1	3	4	2	2	3	3	4	2	2	4	2	2	4	2	2	4	4	3	3	4	2	1	1	3	4	3	1	2	4	3
Claudia Perea	2	2	2	3	3	3	3	4	3	4	4	4	4	4	3	3	4	4	3	4	4	3	4	3	4	4	4	4	4	4	4	4	1	1	3	4	4	4	4	4	4	4	3	4	4	4	4	
Dowglas White																																																
Elizabeth Barona	2	2	3	3	2	2	3	3	1	3	1	3	3	2	2	4	3	3	2	3	2	2	2	1	3	4	4	4	4	3	4	4	3	2	3	3	3	4	3	4	2	2	3	3	4	3		
Fernando Sevilla	2	4	4	4	3	3	4	3	2	4	3	3	2	3	2	4	2	2	3	3	3	4	4	4	2	4	2	4	4	3	4	4	3	4	1	3	3	2	2	2	3	2	4	2	1	2	2	
German Escobar	2	3	4	4	4	4	4	4	1	3	1	2	2	2	1	4	3	2	3	4	4	4	4	4	3	4	4	4	4	4	2	4	3	4	1	1	2	1	1	1	2	4	1	1	2	2		
German Lema	2	2	4	4	4	2	3	3	1	4	4	4	4	4	2	4	4	4	2	2	2	2	2	2	1	4	4	4	4	4	4	4	2	2	4	2	3	3	3	1	1	2	2	2	3	3		
Glenn Hyman	3	3	3	3	3	2	4	2	2	2	2	3	2	2	1	3	2	2	2	2	2	2	2	1	2	4	4	4	4	4	2	3	3	3	2	2	2	2	2	2	2	3	2	2	3	3		
Gloria Stella Torres	1	4	4	4	4	4	4	4	2	4	4	4	4	4	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4	2		
Herman Usma	1	4	4	4	2	4	4	4	1	2	1	1	1	1	2	2	1	1	3	3	3	3	3	1	4	3	2	2	1	3	1	3	2	3	1	1	1	1	1	1	2	1	1	3	2			
Jaime Jaramillo																																																
Jenny Correa	1	4	4	4	4	3	4	4	2	4	4	4	3	4	3	4	3	4	4	4	4	4	4	4	4	4	3	4	4	4	4	4	1	2	1	4	4	3	3	4	4	4	4	4	2	2		
Jorge Cardona	1	1	1	1	1	1	2	4	1	4	4	4	4	4	4	3	2	3	4	4	3	1	3	3	2	3	4	4	3	4	4	4	2	1	4	4	4	4	4	4	4	4	4	4	4	3	3	
Jorge Humberto Becerra	3	3	4	4	3	3	3	3	2	4	4	4	4	4	3	2	2	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	3	4	4	4	4	4	2	2	
Jorge Rubiano	2	2	3	4	4	2	4	3	2	2	1	2	1	2	1	1	1	2	1	2	3	3	2	1	1	3	2	4	2	2	3	4	2	2	1	3	4	1	1	1	1	2	3	3	2	3	2	
Ligia Garcia	2	4	4	4	4	4	4	4	3	4	4	4	3	4	2	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	3	4	4	4	4	4	4	4	3	4	4	4	3	
Lilian Patricia Torres	1	4	4	4	4	4	4	4	2	4	4	4	4	4	1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	2	4	3	4	4	3	4	4	2	3	4	4	4	1	1	
Liliana Rojas	2	4	4	4	4	4	4	4	1	4	4	4	3	4	2	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	2	4	3	4	3	3	3	4	4	4	1	2	4	3		
Lix Dany	1	3	3	4	3	4	4	4	1	3	4	4	4	3	3	4	1	4	1	1	3	4	4	4	3	4	3	4	4	2</																		