

PD-ABM-602

ISN 98697

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT DATA SHEET

1. TRANSACTION CODE

A A = Add
C = Change
D = Delete

Amendment Number

DOCUMENT CODE

3

COUNTRY/ENTITY

Africa Regional

3. PROJECT NUMBER

698-0565

BUREAU/OFFICE

Africa

06

5. PROJECT TITLE (maximum 40 characters)

Leland Initiative: Africa GII Gateway

6. PROJECT ASSISTANCE COMPLETION DATE (PACD)

MM DD YY
06 19 00

7. ESTIMATED DATE OF OBLIGATION
(Under "B." below, enter 1, 2, 3, or 4)

A. Initial FY 95

B. Quarter 4

C. Final FY 99

8. COSTS (\$000 OR EQUIVALENT \$1 =)

A. FUNDING SOURCE	FIRST FY			LIFE OF PROJECT		
	B. FX	C. L/C	D. Total	E. FX	F. L/C	G. Total
AD Appropriated Total	3,000		3,000	15,000		15,000
(Grant)	3,000		3,000	15,000		15,000
(Loan)						
Other 1.						
2.						
Host Country						
Other Donor(s)						
TOTALS	3,000		3,000	15,000		15,000

9. SCHEDULE OF AID FUNDING (\$000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE		D. OBLIGATIONS TO DATE		E. AMOUNT APPROVED THIS ACTION		F. LIFE OF PROJECT	
		1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan
(1)									
(2)									
(3)									
(4)									
TOTALS									

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each)

11. SECONDARY PURPOSE CODE

12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)

A. Code

B. Amount

13. PROJECT PURPOSE (maximum 480 characters)

To increase access of selected African countries to information on the Internet and other Global Information Infra-structure (GII) technologies which the Africans can use to promote sustainable development activities.

14. SCHEDULED EVALUATIONS

Interim MM YY 09 97 Final MM YY 09 00

15. SOURCE/ORIGIN OF GOODS AND SERVICES

000 941 Local Other (Specify)

16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a _____ page PP Amendment)

The Controller has reviewed and approved the financing/contracting provisions

Altamir AFR/DP
7/26/95

17. APPROVED BY

Signature

Title

John F. Miller

Date Signed MM DD YY

18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION

MM DD YY

LELAND INITIATIVE: AFRICA GII GATEWAY [698-0565]

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U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT
AFRICA BUREAU
Office of Sustainable Development (AFR/SD)
Washington, D.C. 20523-0089

DATE: 9/29/95

ACTION MEMORANDUM FOR THE ASSISTANT ADMINISTRATOR FOR AFRICA

FROM: Jerome [Signature] Director, AFR/SD

SUBJECT: Project Paper Authorization: Africa Regional - Leland Initiative: Africa GII Gateway - 698-0565

PROBLEM:

Your approval is required for 1) an Authorization of the Leland Initiative: Africa Global Information Infrastructure (GII) Gateway project and 2) FY 95 obligations totalling \$2,000,000 from Section 496 of the Development Fund for Africa account. This will be a five year project, with a life-of-project funding level of \$15,000,000. This grant, which is described in the attached Project Paper, is a regional initiative which will provide selected African countries with access to GII technology and information with which to undertake sustainable development activities.

BACKGROUND: This project is the core element for implementation of the recently approved Africa Bureau strategy known as the Leland Initiative: Empowering Africans in the Information Age. New technologies (known as telematics) which make information more accessible, transferable and manageable are the catalysts which are transforming economic and social structures around the world and supporting fast-paced sustainable development. African countries face formidable constraints on continued development in such areas as environment, disease prevention, literacy and private sector development. Africa needs access to such information to adapt its development programs. The project purpose is to increase access of selected African countries to information on the Internet and other GII technologies which the Africans can use to promote sustainable development activities.

The project will bring up to 20 countries in Africa into contact with the GII and will provide access to Internet and other sources. The project will address issues affecting introduction of telematics, will provide appropriate hardware, and will address issues affecting how African societies use information that is becoming available. Based on country assessments, the project will diagnose policy constraints, stimulate a private sector role for service providers, and support activities to enlarge the user base for using information to support sustainable development. While hardware provision is an important element of telematics connectivity, it is critical that the African users and private sector realize the potential benefits to be gained by access to global information. Limited short-term advisory assistance is planned, mostly directed toward training users to extract beneficial information for development. The project will be phased, initially engaging those African countries closest to achieving telematics connectivity.

DISCUSSION:

Goal and Purpose: The Goal of this project, as set forth in the Leland Initiative Strategy Paper, is to accelerate sustainable development efforts in African nations by enhancing their ability to access, produce, and use information as full and equal participants in the global community. The project purpose is to increase access of selected African countries to information on the Internet and other GII technologies which Africans can use to promote sustainable development activities.

The project addresses three Strategic Objectives, with related results as shown below. On a country basis, the impact will be traceable using a baseline and following key indicators:

Strategic Objective 1 - Policy context: The project will promote policy reform to permit the introduction of telematics and reduce barriers to open connectivity. The results are expected as follows: A) allocation of space on the communication spectrum to Internet operators; B) liberalization of policy environment to encourage open market access by private sector providers; and C) policy climate conducive to broad expansion of the user base.

Strategic Objective 2- Hardware/software: The project will provide appropriate hardware and identify and train private sector service providers for full Internet connectivity. The results are expected as follows: A) indigenous service providers, trained in marketing and business plan development, offering full access to Internet and better communication between counterparts in Africa and the world; B) country-wide access, with special attention to extension issues; and C) low cost computer networking sustained by user revenues.

Strategic Objective 3 - Enhancing user applications for sustainable development: The project will increase the ability of African societies to use information and communication to capitalize on the benefits of the global information infrastructure. The results are expected as follows: A) local and international partnerships for sharing information related to sustainable development in manufacturing, business, the environment, health, democracy, education, and others; B) indigenous partnerships to create and maintain new information resources based in the African experience which feed the GII; C) increased African capacity to use telematics information in decision-making and in managing scarce resources; D) broadened user base for information systems and telematics services; and E) indigenous training capacity for users and service providers.

Implementation:

The project will be a regional activity with extensive involvement by bilateral Missions. The initial countries in the project will be selected by a country assessment team process which will ascertain the priority countries in terms of policy appropriateness, USAID focus, user awareness and potential economic benefit. Based on these assessments, each of these countries will then undertake appropriate activities in policy adaptation, hardware provision, and expansion of the user base in order to achieve the projected results for the given country. It is

anticipated that the policy analysis activities will be performed through the State Department (EB/CIP), while the hardware procurement and installation will be done by IRM and NASA. Expansion of the user base will be effected by Mission interaction with Global Bureau sector contractors through buy-ins funded by the project (for core costs) and by the bilateral Missions (for costs identifiably associated with the given country). A Cooperative Agreement is anticipated to be provided to the Internet Society which will provide service provider training and will establish an African Internet PVO which can continue such training.

The design of the Leland Initiative project is fully consistent with the spirit of the re-engineering of USAID that is currently underway. It represents a rolling design which attempts to maximize the possibilities of success by selecting countries which are nearest to achieving Internet connectivity. It also requires the involvement of the Missions in the funding, on a parallel basis, with the regional project.

Other donor interest, especially the World Bank and Canada, in telematics in Africa is very significant and will be coordinated through the process of country assessments. The project will leverage considerable other donor participation.

As this project will be implemented with DFA funds, the Africa Bureau will be responsible for its management. The USDH Project Officer, Lane Smith, will be located in the Africa Bureau's Office of Sustainable Development/Strategic Analysis (AFR/SD/SA). The Project Officer, to be assisted by a Project Steering Group with representatives of many of the interested USAID/W offices, both functional and geographic, will be responsible for the management of the project and will assure that project resources are used according to project objectives. The Project Officer will supervise a RSSA project manager, who will be responsible for day-to-day oversight of the project. Financial management for the project will be provided by the Office of Financial Management (M/FM).

Review and Approval:

The Leland Initiative Strategy Proposal document was approved on August 11, 1995 and was specifically identified as substituting for a New Activity Description (NAD). At the Project Paper Issues meeting, held on August 28, 1995, several issues were discussed and actions to resolve them recommended. The discussion is outlined below:

Review of Issue 1 - Whether the management structure of the project has sufficient resources available to assure effective implementation. Discussion centered on what was to be the role of the Missions in the implementation process and where the project manager was to be located. Comments were made on the importance of the management of SO1 and SO2 being in AID/W. The conclusion of Issue 1 was that Missions will need help, such as with hardware issues, implementation, training, and support. Support for SO2 would most effectively be managed by IRM and possibly by NASA because they have access to contracting mechanisms which can be mobilized quickly and can provide adequate technical support in this highly technical area. Overall policy coordination (SO1) on a region-wide basis

is also most effectively managed from AID/W in conjunction with the State Department. However, SO3 is best managed by the Missions (with input from AID/W) for two reasons; the Missions must buy into the project and the Missions are most knowledgeable regarding activities in their country.

Review of Issue 2 - Whether the Strategic Objective (SO1) associated with policy dialogue is best managed by assigning responsibility to the Department of State, EB/CIP.

Discussion concluded that it was best to utilize the State Department's comparative advantage for work on telecommunications policy. At the same time, USAID should be engaged in providing overall direction to the policy dialogue. An Inter-Agency Agreement is necessary to work with the State Department.

Review of Issue 3 - Whether the project should attempt to invest resources in all twenty of USAID's emphasis countries.

The conclusions were that the Internet project would be good for American business in two ways: US products will be purchased for the "pipes" and US companies will continue to dominate Internet's web of information. Representatives of the design team attended the Mission Directors meeting to enlist Mission support. Based on Mission response, if 20 countries are kept in the project, countries will get access to resources according to defined need, not simply because a given line item is available. If resources are limited it may be more effective to broaden and deepen the scope of work in selected countries even if it means working with fewer than 20 countries.

Review of Issue 4 - Whether the project, designed at \$15 million, is competitive with complementary bilateral initiatives and funding needs. Discussion on this issue included the following comments: SO1-2 should be focused in AID/W while SO3 must have contributions from Missions. SO3 will have buy-in's to Global Bureau projects such as AMIS2 and GreenCOM, etc. It is important for AID/W to take the first step as this will stimulate support from other donors thus allowing AID/W to leverage more resources and get more "bang for the buck." AFR/DP raised an issue regarding regionalization and regional investments. It was stated that there is a lot of sharing of information, e.g., WAEN, CILSS, etc., and that AID/W has regional funding designated to support regional programs. The conclusion was that if there are regional programs with SO3 regional initiatives in information and communication, such programs can access project money in the same manner as prescribed for bilateral programs.

Two concerns were noted in the Issues Paper. Concern 1 was that the project should take every opportunity to ensure that information from the GII will be available to address and resolve development constraints North-South, South-North, and South-South. Concern 2 was that the design team development, based on the Leland Strategy Document, had created a template for selecting and phasing countries without sufficient Mission input. It was concluded that the project document would be revised to include the necessity of having Missions buy into the project. It is anticipated that bilateral funds devoted to SO3 activities would exceed 50% of the amount spent on SO3 activities in each country.

In overall conclusion, the following remarks were made:

- There was concern that there was not enough time to allocate funds for this fiscal year;
- Mission Directors need to be met with to obtain their ideas and to obtain an indication of their level of commitment;
- The project paper needs to include clear, illustrative examples of the benefits of the Internet especially in the user benefit area (SO3).

Initial obligation of \$2.0 million in project funds will be effected during FY95 to commence activities in the following areas: for SO1 activities, \$340,000 to State; for SO2 activities, \$500,000 to NASA, \$150,000 to IRM and \$450,000 to NISEWEST (Navy); and for SO3 activities, \$560,000 to Global Bureau for support in Agribusiness Marketing, Environmental Education, and Decentralization and Local Governance. Field project implementation will commence with a team of experts visiting the first group of countries selected to validate the needs and opportunities involved in bringing the GII revolution to benefit sustainable development in Africa.

CONDITIONS PRECEDENT: There are no specific Conditions Precedent to the disbursement of funds.

CONGRESSIONAL NOTIFICATION: A Congressional Notification was submitted on September 14, 1995 and the 15 day waiting period expires on September 29, 1995.

RECOMMENDATION: That you sign the attached Authorization and Project Data Sheet (face sheet) and thereby: (1) authorize the Leland Initiative: Africa GII Gateway project (698-0565) with life of project funding of \$15,000,000 in DFA grant funds, and (2) authorize the allocation of \$2,000,000 in FY95 DFA funds to be obligated according to the procedures set out in the PP.

ATTACHMENTS:

Project Data Sheet
Authorization
Project Paper

CLEARANCES:

AFR/WA: LTaylor (CGrigsby) Date: 25 September 1995
AFR/EA: GSlocum (GLewis-draft) Date: 25 September 1995
AFR/SA: WThomas (draft) Date: 26 September 1995
AFR/DP: JGovan (draft) Date: 26 September 1995
GC/AFR: DLuten (draft) Date: 25 September 1995
PPC/Econ: RGreene(draft) Date: 25 September 1995
DAA/AFR: NFields *N Fields* Date: *9/29/95*
DAA/AFR: GBombardier Date: *9/29/95*
AFR/SD: AGetson (draft) Date: 25 September 1995
AFR/SD/SA: PThormann (draft) Date: 26 September 1995
AFR/SD/SA: LSmith (draft) Date: 22 September 1995

P:\AFRPUB\DOCS\LELAND\DRAM Drafter: JGraham *JGraham*

PROJECT AUTHORIZATION

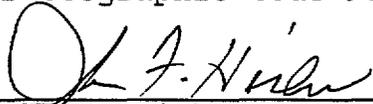
NAME OF COUNTRY : AFRICA REGIONAL
NAME OF PROJECT : LELAND INITIATIVE: AFRICA GII GATEWAY
PROJECT NUMBER : 698-0565

1. Pursuant to Section 496 of the Foreign Assistance Act of 1961, as amended, I hereby authorize the Leland Initiative: Africa GII Gateway project (the "Project") for the Africa region, involving planned obligations of not to exceed Fifteen Million Dollars (\$15,000,000) of grant funds over a five year period from the date of authorization, subject to the availability of funds in accordance with the USAID OYB/allotment process, to help in financing foreign exchange and local currency costs for the Project.

2. The Project will assist up to 20 countries in Africa in gaining contact with the Global Information Infrastructure (GII) and in selected countries will provide access to Internet and other communications sources. The Project will address issues affecting the introduction of telematics, will provide appropriate hardware and will address issues affecting how African societies use newly available information.

3. The Project Agreement(s) which may be negotiated and executed by the officer(s) to whom such authority is delegated in accordance with USAID regulations and delegations of authority shall be subject to the following essential terms and covenants and major conditions, together with such other terms and conditions as USAID may deem appropriate:

a. Commodities financed by USAID under the Project shall have their source and origin in the United States, the Cooperating Countries, or countries included in USAID Geographic Code 935, except as USAID may otherwise agree in writing. The suppliers of commodities and services shall have the United States, the Cooperating Countries, or countries included in USAID Geogrpahic Code 935 as their place of nationality, except as USAID may otherwise agree in writing. Ocean shipping financed by USAID under the Project shall, except as USAID may otherwise agree in writing, be financed only on flag vessels of the United States or countries included in USAID Geographic Code 935.



John F. Hicks
Assistant Administrator
Bureau for Africa

Date: 9/29/95

Glossary

Bandwidth - A defined range of radio spectrum (see Spectrum). Electronic items such as radios are set to operate in selected "bands."

Connectivity - A description whether a particular area, generally a country, has store-and-forward communication (see definition) or full Internet access.

Email (Electronic mail) - A method of transmitting computerized messages from one computer to another computer using modems and telephones.

GII (Global Information Infrastructure) - The initiative to foster a world where everyone has access to computerized information banks and has the ability to share knowledge via electronic communication. The purpose of the GII Initiative is to support a "robust and sustainable economic progress, strong democracies, better solutions to global and local environmental challenges, and improved health care."

Information Elite - People who have access and/ or control of information in a society where information has recognized value and is not easily obtainable.

Internet - A global interconnection of computer mail networks. The networks exchange data with one another; it is estimated that there are over twenty million people who utilize the Internet.

Last Mile - The concept of outreach to areas and people who lack access to information and telecommunications.

Modem - An electronic device which allows a user to send and receive electronic messages, from their computer, via a phone connection.

Network - A collection of computers connected to one another, either by cable or through a central computer.

On-Line - The ability to communicate and/ or search digitized databases electronically, using phone lines.

Packet - A technical term for a small collection of data. When messages are electronically exchanged, they are sent in a stream of packets, across a telecommunications link. Packet technologies include packet radio and packet satellite.

Router - A piece of equipment which connects networks together in order to exchange data.

Service Provider - An organization which offers email service.

Spectrum - A range of radio frequencies within a defined range. The International Telecommunications Union, as well as government Ministries of Telecommunications, allocate the use of spectrum.

Spread Spectrum - A technology which utilizes multiple radio frequency ranges.

Store-and-forward - The type of communication when messages are exchanged with a time delay. The delay can represent minutes to days. The opposite of store-and-forward is "real-time" communication.

Telecenter (a.k.a. information kiosk) - A place where people can go to exchange electronic communication and search for information.

Telematics - The combination of the study and application of telecommunications and informatics.

User - A person who uses mail. The user either has a personal or a company account with which they can exchange messages and information.

VSAT - A piece of equipment which is used to inexpensively receive satellite signals.

EXECUTIVE SUMMARY

This project is the core element for implementation of the recently approved Africa Bureau strategy known as the **Leland Initiative: Empowering Africans in the Information Age**. New technologies (known as telematics) which make information more accessible, transferable and manageable are catalysts which are transforming economic and social structure around the world and supporting fast-paced sustainable development. African countries face formidable constraints on continued development in such areas as environment, disease prevention, literacy and private sector development. Africa needs access to such telematics to adapt its development programs. **The Leland Initiative's purpose is to increase access of selected African countries to information on the Internet and other Global Information Infrastructure (GII) technologies which the Africans can use to promote sustainable development activities.**

This \$15 million, five year project will bring up to twenty USAID emphasis countries in Africa into contact with the GII and will provide access to Internet and other sources. The project will promote policy reform to permit the introduction of telematics and reduce barriers to open connectivity, provide appropriate hardware, identify and train private sector service providers and increase the ability of African societies to use information now becoming available. Since it is critical that both the African private sector and user base capitalize on the benefits of global information, limited short-term advisory assistance is planned to increase the technical and business skills of the new private sector service providers and the rich array of potential users to extract beneficial development information. The project will be implemented in phases, beginning with those African countries closest to achieving telematics connectivity.

The project addresses three Strategic Objectives, with related results as shown below. On a country basis, the impact will be traceable using a baseline and following key indicators:

1. Policy context:

- 1.1 Allocation of space on the communication spectrum to Internet operators;
- 1.2 Liberalization of policy environment to encourage open market access by private sector providers; and
- 1.3 Policy climate conducive to broad expansion of the user base.

2. Hardware/software:

- 2.1 Indigenous service providers, trained in marketing and business plan development, offering full access to Internet and better communication between counterparts in Africa and the world;

- 2.2 Country-wide access, with special attention to extension issues; and
 - 2.3 Low cost computer networking sustained by user revenues.
- 3. Enhancing user applications for sustainable development:**
- 3.1 Local and international partnerships for sharing information related to sustainable development in manufacturing, business, the environment, health, democracy, education, and others;
 - 3.2 Indigenous partnerships to create and maintain new information resources based in the African experience which feed the GII;
 - 3.3 Increased African capacity to use telematics information in decision-making and in managing scarce resources;
 - 3.4 Broadened user base for information systems and telematics services; and
 - 3.5 Indigenous training capacity for users and service providers.

Other donor interest, especially the World Bank and Canada, in telematics in Africa is very significant and will be coordinated through the process of country assessments. The project will lever considerable other donor participation.

Project management will reside in the Africa Bureau Office of Sustainable Development which will chair a Steering Group consisting of representatives of the principal interest groups from both a geographic and functional perspective. Implementation will commence with a team of experts visiting the first group of countries selected to validate the needs and opportunities involved in bringing the GII revolution to benefit sustainable development in Africa.

A. CONTEXT/BACKGROUND

Information is now a critical, strategic resource for all countries, regardless of their level of development. Telecommunications and the information revolution are providing the driving forces to transform economic and social structures, and support fast-paced, sustainable development. Information technology (a.k.a. telematics) has taken on an enabling role; allowing the most isolated of communities a global reach, and the most centralized of global organizations to localize control.

Vision of the Future - the Example of Mali

Before proceeding further, let us attempt to portray a vision of the type of economy/society which would be functioning in Africa once the GII revolution becomes imbedded in the given nation. Let us take the example of Mali. Mali currently does not have full Internet connectivity. It does have an indigenous commercial service provider (named BINTTA) which performs the service of

store-and-forward for email messages. That is the equivalent of what America Online does for the computer-owning American who is only interested in email. If information is needed by one of BINTTA's clients, he must at present, for instance, send an e-mail query to a source of information (at an institution on the Internet) which he knows and await a response from that source. The process is slow, either the question or the answer may miss the mark, and there is no opportunity for effective interaction.

If Mali were to take part in the Leland Initiative: Africa GII Gateway, one can project that, in the year 2000, one could see changes in government policy, in the information services provided, and in the effective uses of the information by the people receiving it. The policy of the government will have encouraged the establishment of several "Mali Online" type service providers who competitively offer the public the full range of information available from GII sources. This range would include such services as international prices, stock markets, regional weather, entertainment, literature, education, and health (everything that you can get from America Online). The government policy would not interfere with information transmission, within the country or coming into the country. The service providers would be competitive and provide a wide range of services for the users. Service providers would be using updated equipment which they have procured using their own resources derived from the profits of charging fees to users. The people using the information, outside the commercial sector, were initially based in institutions, PVOs, and government agencies. These people/ institutions have benefited from specific sector oriented training and guidance provided by information advisors from developed countries so that the information that they seek is responsive to their questions and assists them in applying the knowledge to the Malian development scene. For example, if Malian forestry needs to combat a specific tree blight, it will be able to search the Internet for other experience, obtain the necessary information, and take remedial action. A further example could be in the field of health. The Ministry of Health might be aware of an outbreak of an epidemic. It could do research on the Internet to see if there have been similar outbreaks of that particular disease, and if so, what has been used to successfully combat and cure the problem.

A benefit to the people is their ability to produce their own information to share within the country, within the region, which ultimately means they can communicate interests and reactions to their government and thereby influence governmental decision making. In summary, the country of Mali in the year 2000, will have a network of computer ends in place. They will have a cadre of competent users who can seek and obtain information by sector, which they can use to address development problems in their communities. The computers will function because the service providers have found sufficient use of the "nets" to be able to

competitively offer services. The government policy allows for open competition and a more open society.

Telematics provide the development community with both opportunities and challenges. The opportunities include better access in Africa to the global knowledge base, more efficient management and development of resources (e.g., human, natural, and financial), reduced isolation, more transparent and effective governance, and increased local, regional, and international competitiveness. The challenges include ensuring that the effects of information poverty do not uncouple Africa from the rest of the global economy as information technology and telecommunications systems spur the structural changes (e.g., just-in-time procurement, and flexible manufacturing systems) that limit Africa's comparative advantages, and provide better access to markets.

Telematics Today - The Current State of Play

Africa has seen a vibrant, grass roots evolution of electronic networking during the 1990s. About half of its countries have daily (albeit dial-up) connections to the Internet. Over 3,000 users are estimated to be connected to these systems. As much as \$10 million in international assistance has been made available for telematics infrastructure and training.

South Africa and Zambia have public access to full Internet connectivity. Full Internet connections are in "late stages of development" in Ghana, Lesotho, Mozambique, Swaziland, and Zimbabwe. Plans exist, though largely unfunded, for bringing a degree of Internet connectivity to the rest of the SADC countries, the IGADD countries, Senegal through the Panafrican News Agency, 10 capital cities through the French government, and 10 national and 5 regional nodes through Italian funding to UNESCO.

Many of the service providers in Africa today are in some way linked to universities and research centers. These origins reflect the early motivations for electronic networking. Today, broader African applications are emerging. In Zambia, telematics are being used to address health issues like the provision of services. In countries like South Africa and Kenya, community information centers are being developed. Their purpose is to satisfy the basic information needs of residents (e.g., where to find medical services, or extension information). As these centers are linked, they can add broader functions like providing market information.

Africa's ability to develop is adversely effected by its poor level of telecommunications services. For example, foreign direct investment (FDI) has been deflected from Africa because communications generally are so difficult, and advanced services are for the most part unavailable. Often, establishing private

communications systems is a prerequisite for international business operations. In 1991, private investment in Africa accounted for 8.5% of GDP; the average for developing regions as a whole was 16%. Much of the difference is attributable to limited FDI. Equally edifying is the difference in Africa's share of Overseas Development Assistance (ODA) and FDI. This suggests that improved telecommunications in Africa would take pressure off ODA by attracting significantly higher levels of FDI.

Speaking on behalf of the African continent on April 7, 1995 in Addis Ababa, the African Regional Symposium on Telematics for Development was hosted by the Pan Africa Development Information System (PADIS - part of UNECA). Other sponsors of the meeting included the ITU, UNESCO, UNECA, and IDRC. The symposium brought together over 250 government policy makers, PT&T officials, system operators, equipment suppliers, non-governmental organizations, educational institutions, users, and donors. There were two outputs to from the symposium: a set of recommendations, and the "*Communique of Addis Ababa*." The official symposium outputs in general advocated:

1. High level lobbying for increased emphasis on telematics within the development sphere;
2. Increased collaboration and coordination;
3. Organizing support for countries interested in creating enabling environments for the development of telematics services;
4. Common strategy for telematics training; and
5. Full Internet connectivity in all African countries as expeditiously as possible.

Relation to Agency Goals, Objectives and Policies

The vision which frames the Leland Initiative is to **accelerate and bolster sustainable development efforts in African nations** by exploiting the potential of the Global Information Infrastructure. This will be an over-arching telecommunications and information network which "transmits messages and images with the speed of light from the largest city to the smallest village on the globe." By enhancing the ability of Africans to access, produce, and use information through the GII, this project will place powerful new tools at the fingertips of Africans.

This project will strengthen USAID's ability to achieve its own strategic objectives on the continent by: (1) encouraging broad-based economic growth; (2) stabilizing world population growth and promoting human health; (3) protecting the environment; (4) building democracy; and (5) providing humanitarian assistance and disaster relief.

The impact of these technological tools on the processes of development, however, will depend upon the problems to which they are applied and the relevance of the information communicated. Simply promoting the use of GII technologies is not sufficient. Putting equipment in place and establishing connectivity are viewed as necessary, but not sufficient, for development impact. Development impact comes from the uses to which the equipment and connectivity are put.

USAID's draft Policy Determination (PD) on Telecommunications and the Global Information Infrastructure identifies two interrelated aspects of these technologies which are legitimate interests of the Agency. One, **telematics development**, focuses on putting the technologies in place and includes infrastructure investments, technical assistance, and training to enhance the capabilities of local providers and users. The other focuses on **effectively using Global Information Infrastructure tools** to achieve the goals of sustainable development.

Telematics development characterizes the first two Strategic Objectives of the Leland Initiative Strategy document and of this project is to create an enabling environment that facilitates electronic networking and access to GII technologies and ensure the availability of reliable, accessible, and cost-effective services for accessing information.

The project will help African nations establish an environment that will enable a strong national telematics sector to emerge. This can include assistance with privatization, regulatory frameworks and legal structures, including intellectual property rights. Such activities will also help create the enabling environment for investment--private, national, foreign, multilateral--in telematics. USAID can facilitate such investments.

The third Strategic Objective of this project is to increase broad-based utilization of information and GII technologies to enhance USAID sustainable development objectives. A key feature of this objective will be "cross-leveraging"--establishing links with existing USAID activities. Ongoing USAID projects and initiatives in Africa will benefit from the improved communication capabilities made possible through the Initiative. Current Africa Bureau activities which might benefit from cross-leveraging include:

- New Partnerships Initiative (NPI) - An effort to speed up the graduation of countries from U.S. assistance by strengthening grassroots institutions: NGOs, small businesses, and local governments;
- Greater Horn of Africa Initiative (GHAI) - A response to the accelerating pattern of emergencies in the region which focuses on the root causes of food insecurity; and

- Initiative for Southern Africa (ISA) - A response to both the substantial progress made by Southern African nations in implementing the political and economic reforms needed for equitable and sustainable development and the tremendous opportunities for stimulating economic growth and democracy in the region.

Relationship to the Development Fund for Africa Objectives

When the U.S. Congress established the Development Fund for Africa (DFA) in 1987, it was with the clear intent that USAID would no longer conduct business as usual in Africa. Rather, USAID was encouraged to take advantage of the greater flexibility of the DFA to find new ways to make U.S. assistance to the region more coherent and effective.

Throughout Africa, the DFA has been instrumental in improving health conditions, enhancing food security and increasing the openness of markets. This project will help to carry on these successes by improving the access to information for indigenous African development groups. The strategic objectives discussed under the Leland Initiative will enable the indigenous development actors to access a broader base of information, techniques, and experience so that they may improve their results.

Increased access to information, in turn, will facilitate the ultimate goal of the DFA which is to promote sustainable, broad-based, and market-oriented economic growth in Africa. The four key objectives for achieving the DFA's goal are:

- Improving the management of African economies by redefining and reducing the role of the public sector;
- Strengthening competitive markets to provide a healthy environment for private sector-led growth;
- Developing the potential for long-term increases in productivity in all sectors; and,
- Improving food security.

This project falls in line with the original thinking set out in the DFA: it is a new and creative approach to development assistance. This project will provide Africa with the most vital factor in the development process--information. Most importantly, this project will allow USAID to concentrate its resources in countries where demand for telematics is high and the economic and political environment is conducive to success.

B. PROBLEM TO BE ADDRESSED

The problem to be addressed by this project is insufficient access of selected African countries to information on the Internet and other GII sources which they can use to promote sustainable development activities. Thus, the purpose is to increase access of selected African countries to information on the Internet and other Global Information Infrastructure (GII) technologies which the Africans can use to promote sustainable development activities.

Several constraints can be identified as contributing to "insufficient access" including, (1) conscious or inadvertent control policies by governments; (2) physical/technical limitations; (3) lack of effective demand in the African countries involved, due to limited awareness of what is available; and (4) limited resources to maintain access once connected (sustainability of the network). A further constraint is that the countries are at widely varying levels in addressing the constraints listed above. Furthermore, donors do not know what levels each of the countries is at or what sort of resources, in what mix, may be appropriate to assist the given country most effectively and efficiently. Lack of coordination is a significant detriment to resolving the problem. However, the very interest of the donors causes potential concern in two of the constraint areas: application of donor resources may create functioning systems for access which are untenable once donor flows cease and donor initiatives may be predicated on donor's perception of demand rather than indigenous user demand. One way to mitigate the impact of following donors' agendas is to ensure that the private sector (ideally African) but not excluding others) plays a role in providing services.

The challenge of this project is to achieve results by reducing or eliminating identified constraints. The methodology used to assess constraints needs to be reasonably consistent from country to country in order to arrive at a satisfactory level of compatibility. The mix of overall resources required will vary in each country depending on the assessment, and the requirements for project resources will change depending on interest from other donors, the private sector and PVOs.

C. RESULTS EXPECTED

Speaking broadly, the project will be successful if the 20 countries of Africa have identifiable improvements in their development activities which can reasonably be traced to improved access to better and more timely information available through GII technology. As envisioned above in the case of Mali, the countries of Africa will have a network of computer services in place and have a cadre of competent users who can seek and obtain information by sector, which they can use to address development problems in their communities. The computers will function because the service providers have found sufficient market for the "nets" to be able to competitively offer services. Government policy allows for open competition and a more open society.

Results in the 20 countries identified in the Strategy will vary depending on their original situation when activities commenced in that country. Based on individual country assessments, the project may undertake in implementation to broaden and deepen SO3 activities in a given country in order to reinforce sustainability of the Internet connection in the given country. The results expected by the end of this project on an Africa-wide basis will include the following:

In **Strategic Objective 1**, the results are expected as follows:

- 1.1 Allocation of space on the communication spectrum to Internet operators;
- 1.2 Liberalization of policy environment to encourage open market access by private sector providers; and
- 1.3 Policy climate conducive to broad expansion of the user base.

In **Strategic Objective 2**, the results are expected as follows:

- 2.1 Indigenous service providers, trained in marketing and business plan development, offering full access to Internet and better communication between counterparts in Africa and the world;
- 2.2 Country-wide access, with special attention to extension issues; and
- 2.3 Low cost computer networking sustained by user revenues.

In **Strategic Objective 3**, the results are expected as follows:

- 3.1 Local and international partnerships for sharing information related to sustainable development in manufacturing, business, the environment, health, democracy, education, and others;
- 3.2 Indigenous partnerships to create and maintain new information resources based in the African experience which feed the GII;

- 3.3 Increased African capacity to use telematics information in decision-making and in managing scarce resources;
- 3.4 Broadened user base for information systems and telematics services; and
- 3.5 Indigenous training capacity for users and service providers.

Evidence to demonstrate the achievement of these results is set out in Section G.

To realize the first objective, the creation of an enabling environment, the project will provide targeted policy analysis. Specific country reviews will determine whether government policies facilitate or constrain telematics development. Limitations on private service providers will be identified. Dialogue in-country and in international fora will address the principal constraints, foster a market-driven approach to service provision, encourage governments to liberalize licensing and connectivity requirements, and generally promote freedom in cyberspace within reasonable national guidelines.

A cross-cutting activity will be the design and delivery of appropriate training. This will be essentially short-term, offered through workshops, short courses, and visits to operational facilities. Host country personnel from both the public and private sector will be able to benefit from learning the important role that government policy plays in nurturing the development of telematics systems. The types and uses of equipment available will be an important area of focus. Pricing determinations, billing, delivery standards, and various management support services are likely subjects. The advantages of exploiting telematics and the value of the information available on the various electronic networks will be another topic, so that people can understand and use this resource. An important locus of training will be community telecenters already established in several countries through support from other donors and private voluntary organizations.

USAID will furnish appropriate equipment for telematics systems as defined by country diagnostic teams. Again, the intent is to enhance the capability of both service users and providers to take advantage of the information resources offered by Internet. We expect that substantial support for physical infrastructure development will come from the private sector. Thus, USAID's provision of equipment will be highly selective with the limited objective of nurturing systems and users that private investment is unlikely to assist. Examples of equipment might include modems, personal computers, packet radios, routers, and small satellite receivers.

Examples of Expected Results, Uses and Benefits:

Uses and benefits of the Internet will vary by country; yet an overriding theme is apparent - *communication affects development*. As anyone who has worked in Africa knows, communications are difficult. When communication is reliable, it positively affects all sectors of the economy such as health, finance, trade, environment, democracy, education, and agronomy. As the Internet will be able to provide an exceptional vehicle to improve communication, users will find that information can more easily be acquired, shared, and distributed during this information revolution. Several of the anticipated user applications which are foreseen to assist in sustainable development are as follows:

Agricultural Sector

In the agricultural sector, lack of information acts as a constraint to growth by limiting factor productivity. Better information about markets in other countries can lead to a larger base of demand and a higher volume of sales for individual farmers. Improved access to information could increase efficiency and productivity through better planning (e.g., response farming, crop choices, inventorying). At the regional level, better information and improved channels of communication can promote market integration, giving Africans access to a consumer pool large enough to generate economies of scale which will lead to a sector that can compete internationally. In addition, better access to information from researchers and extension agents promotes the adoption of improved agricultural technologies and processes.

Natural Resource Base

Sustainable development in Africa depends on maintenance of the natural resource base. This is seldom the province of a single ministry or department within an African nation and often, in the case of trans-border resources such as wildlife and water conservation, management issues require both inter-ministry and international cooperation. One example of the concern for sharing information is in the Southern Africa Development Community Forestry Unit, which has recently completed a study of the information requirements to manage the region's forestry resources. There is a wide imbalance of forest resources within countries and between countries. The study found that there was a lack of information flowing between researchers, trainers and extension agents [both Government and NGO] and the private sector to ensure optimal utilization of forest resources. The report recommended the establishment of a forest information communications network.

Information Access for Researchers and Scientists

The productivity of human capital investments in Africa is also seriously constrained by poor access to information. Researchers and scientists become isolated from current developments in their fields. Without reasonable communications, researchers lose the kind of peer interaction they enjoyed during training. This leads to decreased productivity because the search for information becomes much costlier, and the quality of research diminishes through ignorance of relevant scientific developments. Other knowledge-based service providers such as teachers and medical workers are also constrained in their ability to deliver up-to-date services to their clients because of poor access to current research findings. The implementation of new technologies like distance learning and teleconsulting can enable knowledge-workers in Africa to overcome the constraints of their physical isolation from international peers. By the same token, planners, policy-makers, and managers have their effectiveness limited through an inability to collect or utilize information which constrains their decision-making ability and competitiveness for scarce resources.

Emergency Relief

Efforts to cost-effectively coordinate, manage, and anticipate emergency relief efforts in Africa are hampered by the lack of reliable, readily accessible information on existing and potential food needs and availability. Expanded access to Global Information Infrastructure technologies offers new means to improve the efficiency of relief efforts. For example, with support from USAID, one of the largest movers of international food-aid, the World Food Programme (WFP), has begun to electronically exchange donor food-aid delivery schedules during the past two years. Now WFP is also beginning to send shipping instructions and to develop a standardized pipeline analysis report which will be sent electronically to all concerned users. WFP's efforts were made possible by telematics.

Health

As most of the current medical information has become available electronically, health related institutions in Africa are now able to take advantage of the electronic libraries, through the advances of the Internet. Institutions connected via email can send and receive this digitized (able to be sent over telephone wires) information with life saving results. Institutions such as the Ministry of Health, medical school and library, central drug repository, HIV clinics, as well as provincial, rural, and Mission hospitals have come on-line.

Information can be shared across borders - as disease knows no boundaries. There was an outbreak of Meningitis in Eastern Zambia.

They sent out an email broadcast to the neighboring countries asking if they had similar experiences. Mozambique responded that they had an outbreak of Meningococcal Meningitis, and the drugs they used to treat it. This information was relayed to the beleaguered hospital. Another example would be of a hospital runs out of a certain drug. It is now able to email surrounding hospitals and the central drug repository to see if any is available. Previously, hospital staff were sent in a jeep, searching one hospital at a time, to see if it was available.

Decentralization and Local Governance

Many countries on the continent, confronted with burgeoning needs for local government services in the face of very limited resources, seek to decentralize authority and responsibility. Promising examples abound of the application of telematics to this process.

In Tunisia, USAID has assisted the Ministry of Interior to develop a municipal decision-making model that captures virtually all aspects of city management and colorfully demonstrates the impacts of potential policy changes on levels of service, debt carrying capacity, tax receipts, public-private joint ventures and the like. Elected municipal officials are now using this model to better inform the local decision-making process, through debates and public hearings.

In Ethiopia, US experts are assisting the GOE to prepare a **Geographic Information System (GIS)** that will use Internet connectivity to access satellite imagery being offered through a U.S./Russian joint venture. This imagery, with a resolution of 2.5 meters, will give local development officials real time information on the physical growth occurring from the smallest hamlet to the largest city, measurably aiding the planning for services and management of the tax base.

Access to the Internet could permit African municipalities, PVOs and the private sector to obtain these services, receive training in their use and begin meeting their responsibilities more transparently and effectively.

Community Information Networks

An indigenous application of telematics started in South Africa. Originally conceived of as a way to control rumor problems during the transition from apartheid, communities were asked to establish community information centers that would have accurate and current information on transition activities. Over time these centers began to compile electronic data bases of information of use within the community served by each center. An impressive range of information (from where to find doctors to market information) are

now available in each center. Because of the success of these information centers, South Africa is now linking them together using Internet. Other countries are also trying to establish similar networks. In Kenya, for example, women's groups are setting up community information centers in some locations. Dissemination of market information, particularly for fish, has a high priority. The Leland Initiative has called for information to be made available through *information kiosks*.

Information Kiosk

An information kiosk, also known as a community information center, is a place where individuals can go to gain access to relevant information through the Internet. At the kiosk, there can be a trained Internet librarian on hand to field requests. As many Africans people do not have a telephone line, own computers, or cannot afford accounts, an information kiosk would be a way to provide access to the Internet. Additionally, the Internet librarian could skillfully navigate the potentially confusing Internet to find information which might not be easy to find for novice researchers.

The information kiosk can be supported through the private sector, the government, or the NGO/ PVO community. They can also recoup costs by charging for its services as people recognize the value and importance of information. The institutions which utilize the service could also supply information on their activities, allowing for the dual stream of data flow.

An essential result of the kiosks is that information and communication will be made available to the presently disenfranchised. There is the concern that those who have Internet 'available in their homes' will become a new set of information elite. The information elite would be able to capitalize on the benefits of the Internet which might widen the communication/information disparities. Thus, the information kiosk has the potential to alleviate the dichotomy. For more information regarding the social implications of the Internet, see Annex G, the Social Soundness Survey.

New Partnership Initiative

Another area of potential innovation lies with the New Partnership Initiative. In order to take advantage of the increasing use of network communication at USAID -- particularly as such linkages become more innovative -- high priority was given to the establishment of an electronic network and discussion group specifically dedicated to the initiative, NPI-NET. All public documents are accessible on-line and may be retrieved by subscribers, who currently number sixty-seven.

The network serves a number of functions: (1) it is an effective vehicle for disseminating information on NPI to the gamut of USAID development partners, particularly those outside the Washington area; (2) it provides a widely accessible, open and interactive forum for all those interested in the initiative, particularly USAID/W employees and field personnel, and a wide variety of nongovernmental actors in the U.S. and abroad; (3) it serves as a means for generating ideas, stimulating discussion, voicing concerns and increasing communication among all development partners; and (4) it provides a mechanism through which countries (or sector activities in a country) which are "graduating" from direct USAID support can maintain a development dialogue with the nongovernmental institutions they were associated with when under the umbrella of USAID programs.

Mali

In Mali's 1996 - 2002 Country Work Plan, they plan on capturing the benefits of the Internet through the three strategic objectives in their strategy:

- Providing the means of disseminating information on reproductive health services, AIDS prevention, child care, and the importance of girls' education within the Youth Strategic Objective;
- Providing the means for the dissemination and reception of timely market-relevant information both nationally and internationally in support of the Sustainable Economic Growth Strategic Objective; and
- Promoting greater public participation in the democratic process by providing the means of dissemination of information on the structure, performance and procedures of elected officials and feedback from constituents within the Governance strategic Objective.

Madagascar

USAID Madagascar plans to use telematics to:

- Broaden access to international agricultural markets; and
- Improve the levels of democracy and governance by providing for increased interaction between elected officials and citizenry.

Madagascar has one of the poorest communications systems in the world. As a result of the tremendous difficulties in communication, Madagascar is profoundly isolated from world markets. Internet will be used to link producers in the country's

high potential zones with international markets. Government officials have a difficult time collecting relevant information for policy making and the citizenry have little information about the activities of the legislature. The government plans to establish information kiosks around the country to make legislative activities more transparent by broadly disseminating information thereof, and provide legislators with a mechanism to directly canvass popular opinion on key issues.

Relevant Experience from other Regions

There are communication/ information experiences which can be shared, across continents, when put into the African context. A decision made at the Summit of the Americas was to promote an "Information Infrastructure of the Americas." Improved telecommunications and information infrastructure in Latin America is seen by policy-makers as a key ingredient to future economic growth and sustainable development. The LAC Bureau has embarked on a broad-based program to improve telecommunications capabilities in the region and to develop a series of practical applications that will stimulate trade. In addition to supporting activities like the UNCTAD Trade Points program, LAC will support activities such as AGRINET which will be designed to give smallholder farmers access to world markets through Internet. The system will work through farmers' cooperatives, receiving the necessary hard/software and training to operate an information bureau for the farmers. These bureaus will be linked to national export cooperatives to get needed information on commodities and prices. Eventually the system will be able to conduct transactions. The export groups in turn will be linked to world markets.

In the African context, the experience gained in Latin America is relevant. Programs like Trade Points benefit by having market information. Agricultural cooperatives have been very successful in Africa in improving yields and market prices. Programs like the West African Enterprise Network (African/WA) are now utilizing email for information and communication for exporting products ranging from pineapples to furniture.

D. METHODS TO ACHIEVE RESULTS

Given the disparities existing between African countries, there is no single formula which will produce Internet connectivity for sustainable development. Rather, this project proposes that a **template** be developed and applied to each of the priority countries so that scarce project resources can have maximum leverage (see Annex A). Application of this template to each of the countries involved will permit funding to be addressed to the highest

priority needs. The template will be designed to assess the country's levels related to the three Strategic Objectives of the project. The design team applied the template concept to identify the initial round of countries which are slated for immediate implementation activities (see Annex B). Prior to specific country investments, a field visit by a small team, consisting of a technical expert, a policy analyst and an expert in user applications, will be performed to validate requirements. These results will be subjected to a thorough review in USAID/W to ensure that funding being proposed for each country is effectively used. Furthermore, selections of countries made on a preliminary basis by the Project Steering Group (see Section E below) and validated by similar field visits will be subjected to similar USAID/W scrutiny on an annual planning basis.

The methods to achieve results are presented in a summary fashion by Strategic Objective.

Strategic Objective 1 - Policy context - Effecting changes in the policy context will require not only the analysis of the policy context to identify the optimum policies to promote but also ensuring that the information on optimum policy is brought to the level of decision makers who can change policy. Thus, the project will need access to policy analysis and to policy promotion. Analysis can be obtained on an ad hoc, intermittent basis from U.S. agencies, associations and/or private firms conversant with the policy/technical context in the U.S. and overseas and can be adapted to the specific circumstances in the country where activities are occurring. Policy promotion will be most effective if its message is delivered by a source which can attract the attention of the policy decision makers. In most African countries in question in this project, such a delivery mechanism is the U.S. Ambassador, or as available, the USAID Mission Director. To obtain the combination of analysis and delivery of message, this project proposes to negotiate an Interagency Agreement with State (EB/CIP) which will obtain policy analysis expertise from assorted sources such as the FCC, etc., as well as private sector contractors.

Strategic Objective 2 - Hardware/software - Upon diagnosis on a country basis of the specific needs for connectivity, this project intends to attempt to fill the identified gaps. Gap filling may be accomplished in several ways, depending on the situation in the given country. Ideally, the diagnostic report could be used to stimulate the country's government and private sector to invest in filling the gaps. Other options may include involving other donors, off-shore private sector interests and project financial resources. The mix of financial resources will vary from country to country. To the extent that project resources are required to fill gaps, funding may be channeled through buy-ins to existing projects such as IRM's Technology Transfer project or through an Interagency agreement with NASA. Associated with the installation

of hardware/software, there is a clear need to ensure that there are sufficient numbers of service providers trained to maintain the accessibility of Internet service. This impacts on sustainable maintenance of Internet access and the development of tools and an expanded user base to take advantage of Internet access. The selection of trainees should be a collaborative effort between development specialists and the **Internet Society (ISOC)** which has submitted and unsolicited proposal that includes such activities. It is considered essential that trainees be drawn from the academic, government and business communities. Particular attention should be paid to ensuring government involvement so as to facilitate a policy environment conducive to an increased user base outside of government. The ISOC should either train technicians or identify alternate training opportunities. The ISOC should be engaged to sponsor the establishment of an African Internet society that would ultimately take responsibility for training and technical consultation.

During the training period, information management consultants and Internet access providers from the private sector will be sought on a competitive basis to provide managerial and technical assistance and economic advice to institutions either seeking to become end users of the Internet or those seeking to become access providers themselves. The experience of commercial information management consultants will be a good basis for the development of indigenous information management policy. Drawing from their private sector experience, Internet access providers will augment ISOC training by addressing issues such as resource management and business strategies.

When possible, Internet access to PVOs and businesses will be through indigenous providers. This will simultaneously support local capacity building, foster a healthy competitive environment, and support last mile access.

Training for service providers could be included with installation, but would likely be more sustainable if developed and provided by an African institution such as the African Internet Forum as it takes on an identifiable and auditable institutional structure. Such training would include both technical and marketing information.

Strategic Objective 3 - Enhancing user applications for sustainable development - Again, the template process described above will identify those institutions, public and private, which appear to be most likely to benefit from Internet connectivity as a means to stimulate sustainable development. Considerable concern has been expressed that Internet will remain the purview of the elites in the capital city with negligible effect on the less prosperous in rural areas. It may well be that the uptake of technology in the capital requires no outside assistance as this

project will be bringing a desirable information mechanism to users who may already be conversant with other forms of communication such as fax or telex. In such countries, the maximum effort will then be placed on institutions, commonly PVOs (both American and indigenous) which undertake sustainable development activities outside the capital. Included in this context could be Peace Corps volunteers, especially those involved in education. The mechanism for supporting the increase of the user base would be grants and agreements with PVOs for purposes of training activities as well as to defray initial costs of connection and use. Country grants would be prioritized by the USAID, in collaboration with the Embassy, and managed by a PVO grants management mechanism such as the PVO/NGO NRMS consortium which currently manages grants to environmental PVOs in Africa. Peace Corps involvement would be subject to a separate Interagency Agreement.

The blend of activities addressing these objectives will vary from country to country. In addition, the activities of the USAID Mission in the given country will be very important, especially in strengthening the user bases in sectors of Mission priority. In the process of the country assessments, USAIDs will be encouraged to identify resources from their existing and future portfolio to amplify the impact on the user bases.

On an illustrative basis, we anticipate the following sets of activities to take place. We will use the example of Ghana.

Methods to Achieve Results - the Example of Ghana

In the first quarter of FY 1996, a small team of three people will visit Ghana to validate the basis for Ghana's selection to receive project assistance. This initial team will probably be drawn from available USDH staff (or seconded from State and/or NASA) in order to commence implementation on a timely basis and to ensure the Bureau that project activities are launched consistent with the approved strategy and project. The team will apply the detailed template found in Annex D to flesh out details on potential information producers, the types and quality of available information, planned information sharing systems, mechanisms for collection of network user data, status of the electronic network infrastructure, constraints to sharing information, plans of other donors in the country regarding telematics, and the potential users in the country potential training needs. The team will include a specialist in policy, technological hardware, and an information analyst. It may also be appropriate to include subject matter specialists on the team to broaden the area of applications for development in support of USAID/Ghana development priorities.

The team will work closely with the Embassy, USAID and the government of Ghana to refine the requirements and responsibilities

for Internet connectivity. For example, USAID may discover that costs involved with getting Internet to Accra are covered by other sources (donors and/or private sector) while the links from Accra to potential user sites outside the capital require financial assistance. The team may find that service providers need more training in marketing their services in order to build a sustainable fee paying user base. The team may find that a Trade Point or a telecenter kiosk needs a trained monitor to help potential users to find needed information. These needs will then be prioritized within the amount of funding available from the project. Roles for the Embassy (technical relationship with the PT&T as well as access to top level decision makers in the government) will be refined. USAID roles in promoting the user base for sustainable development will also be further refined.

After a visit of approximately 10 days the team will have a **final plan for implementation** setting out what procurement actions are required and which office is to take responsibility. In terms of hardware procurement, it is anticipated that orders can be processed through existing negotiated contracts to speed delivery. In terms of training or requirements for short term advisory services, it is anticipated that the project will access existing Global Bureau contracts/cooperative agreements for the benefit of activities in Ghana. A nominal amount of project funding may be required to defray local installation and training costs and such funding would be handled by the Mission.

Once hardware needs are known it will be possible to determine when Ghana goes "on line" in terms of full Internet connectivity, at least in Accra. Training for service providers and for user groups can be scheduled accordingly.

E. MANAGEMENT STRUCTURE FOR THE PROJECT

As this is an Africa Bureau project, ultimate management responsibility will reside in the Africa Bureau of USAID. Within the Africa Bureau, the Office of Sustainable Development (AFR/SD) has been designated as the responsible office. AFR/SD will assign overall management responsibilities to a USDH Project Officer, who will be assisted on daily implementation tasks by a project manager procured under a RRSA arrangement. Further technical support will be secured by arranging for the assignment of consecutive AAAS fellows who have the requisite technical credentials.

The Project Officer will be the Chair of the **Project Steering Group** drawn from the following group of people: a representative of each of the three geographic sub-regions (GHAI, ISA and West Africa/Sahel), a representative of IRM, a representative of State

(CIP and/or AF), a representative of NASA, and a representative of Global. This Steering Group is intended to be primarily advisory, but, at the direction of the Project Officer, can be asked to assume specific implementation roles. An extremely important responsibility will be to scrutinize each of the validation team country studies to ensure that the allocation of funds is consistent with the established project priorities. (See Economic Analysis section for further discussion) Another task will be the selection of countries to receive project support in years 2-5 of the project. This country selection process needs to take place at the latest by the first quarter of the new fiscal year in order for required hardware orders to be placed on a timely basis.

The Project Officer will be responsible for reviewing project documentation as appropriate and for providing information on the project to interested parties in the Africa Bureau.

How will the project work in terms of management of the individual components? This project is driven in part by Mission initiative and associated with Mission strategic objectives. There are certain management requirements which can be best filled in USAID/W while others are necessarily field managed.

Regarding Strategic Objective #1 - Policy context - Management will be in with USAID/W. While policy analysis will primarily be assured through the IAA with State/EB/CIP, that office will cooperate with the Project Officer and the Steering Group to provide such analysis as may be required. For example, the country assessment team may indicate that policy in a given country is sufficiently cooperative for GII to arrive in that country. There may be specific technical questions which the host government requests the USAID/Embassy to assist it in addressing. The USAID/Embassy would forward the host government request to State/EB/CIP, which will not proceed with implementation actions to respond to the request until it is reviewed with the Project Officer. Thus, management of this SO remains in Washington, though close interaction would be maintained with the field for specific requests to help host countries.

Regarding Strategic Objective #2 - Hardware/software - Management would again remain with USAID/W which would use the technical expertise of IRM and NASA. Procurement would be performed by those offices based on the findings of the country assessment teams. As the field missions have no expertise in such technical procurement and as NASA and IRM can procure quickly and very economically using existing contractual relationships, management of activities under this SO appropriately stays in USAID/W under the surveillance of the Project Officer and the Steering Group. Also included in this SO is the proposed Cooperative Agreement with Internet to train service providers in the field.

Regarding Strategic Objective #3 - Development of user applications for sustainable development - Becomes a more complicated management process. The country assessment teams, working closely with the USAID missions, will return with recommended training and short term technical assistance requirements for the given country. As this project will require field funding participation in SO3, management of field training activities can only be effectively done in the field. Nevertheless, there will be a significant role for the Project Officer and the Steering Group to ensure that the training and technical assistance is forthcoming on a timely manner from the appropriate Global Bureau buy-in. An example of this would be if the country assessment team to Ghana determined, with USAID/Ghana input, that training and technical assistance was needed to expand the user base in the environmental sector. USAID/Ghana would be expected to provide from the bilateral account the costs which could be identified as pertaining to activities in Ghana, while USAID/W would provide core costs of the Global Bureau contractor from within the project. The bilateral contribution would be kept as parallel (outside the project) for purposes of being able to associate funding with the country where the activities take place (Ghana). While the breakout of cost sharing will vary from country to country and would depend on the type and range of SO3 activities undertaken, our first impression is that the USAID/W (project) share would be in the range of 25-35% while the field would need to provide 65-75%.

Roles and Responsibilities

The roles and responsibilities of the principal players are detailed as follows. All Washington based Departments listed here will contribute a member for the Steering Committee (whose responsibilities are detailed at the end).

Africa Bureau/SD

The Africa Bureau/SD will have overall management responsibility for the project, in collaboration with the individual Missions. Select responsibilities include:

- Chair the Steering Committee;
- Facilitate linkage of USAID regional projects and initiatives to the Leland Initiative;
- Finance SO1 and SO2 inputs wholly, and SO3 inputs in part;
- Conduct evaluations;
- Supervise RSSA; and
- Manage donor coordination.

USAID Missions and Regional Field Offices

The Mission are responsible for in-country coordination of project

be training. It will provide a represented to the Steering Committee. Select responsibilities include:

- Train system operators; and
- Support the establishment and initial functioning of the African Internet Society.

Global Bureau

The Global Bureau will be the chief source of expertise on the development applications of Internet. It will provide a member for the Steering Committee. Through its technical projects in areas such as agriculture marketing, environmental education, local governance, etc.), the Global Bureau will:

- Provide member for country assessment team;
- Assist in the market development training of the system operators;
- Assist in the training of the Internet librarians at the information kiosks; and
- Assist Missions to propose and implement sector and/ or project specific uses of Internet connectivity for sustainable development.

Steering Committee

The Steering Committee is the chief interagency mechanism for coordination and guidance of the Leland Initiative. State Department/CIP, IRM, NASA, Internet Society, the Global and Africa Bureau offices, among others, will serve on the Committee. Select responsibilities include:

- Review SOWs for project assessment and technical expertise;
- Review country assessments and resulting action plans;
- Review implementation plans and calendar; and
- Assist, where needed, with telecom policy, equipment, and user issues.

F. RESOURCES REQUIRED

The resources required are presented below and are not restricted to simply financing. A considerable amount of management time will be required to ensure that USAID resources are provided on a timely basis, but equally important, time will be required on the part of Embassy and USAID personnel in-country to address policy issues, donor coordination issues and expansion of the user base for sustainable development. While overall coordination will rest in Washington, much of the work will involve field personnel. While project funding in selected countries may represent a significant

inputs. Select responsibilities include:

- Initiate policy dialogue with government/PT&T for Internet;
- Assist with the dialogue with other ministries (e.g., Finance, Health, Trade, etc.);
- Provide financial assistance for SO3 implementation;
- Link USAID projects to Internet;
- Provide outreach to the community to detail benefits of the Internet;
- Clear equipment from Customs; and
- Collaborate on evaluations.

State Dept./ Office of Communication and Information Policy (CIP)

CIP will be the main provider of SO1 inputs, as part of its broader telecommunications policy dialogue across the continent. It will be represented on the Steering Committee. The State Department working through the Mission will:

- Provide member for country assessment team;
- Support policy dialogue with PT&T over issues such as Internet implementation, spectrum allocation, modem use, equipment importation, and tariffing;
- Support policy dialogue with other ministries (e.g., Finance, Health, Trade; and
- Provide US based training (USTTI) for PT&T engineers, as necessary.

IRM or NASA

IRM or NASA will provide SO2 technical inputs; both will be represented on the Steering Committee. Select responsibilities include:

- Participate on country assessment team;
- Provide technical specifications to government;
- Determine types of international connection;
- Supply contacts to identify telecommunications provider;
- Identify service providers;
- Prepare MOU with service providers;
- Purchase, ship, and install equipment;
- Train equipment managers;
- Determine location for hub;
- Assist in the last mile technical issues; and
- Service, or establish the local maintenance capability, to repair non-functioning equipment.

Internet Society

The Internet Society has been conducting training courses for African email systems operators at its annual conference for a number of years. The Internet Society's chief responsibility will

portion of the funding being devoted to telematics, the field missions are expected to allocate financial resources from their bilateral budgets to enhance the impact of telematics on their current or planned development portfolio (see section below).

USAID Experience and Complementary Activities/Projects

USAID has been involved with GII issues both in Africa and on a global scale for some time. This project intends to tap into the experience already gained through Global Bureau buy-ins and in terms of on-the-ground experience with a number of small bilateral and regional African initiatives. AFR/SD has indicated that there is as much as \$1.6 million being devoted to telematics-related activities in Africa during FY 1995 (see Annex C). A portion of this activity is related to hardware, and complementarity with that will be assured through the country assessment process described above. Nevertheless, a related initiative funded by ISA scheduled for September will assess GII connectivity status in four of the ISA countries (Tanzania, Zambia, Zimbabwe and Botswana/ S. Africa) for the purpose of linking PVO/NGO's in the agricultural/natural resources sector. Any information on the status of hardware will be pertinent to the objectives of this project.

Regarding use of Global Bureau experience, the project anticipates the possibility of making buy-ins to Global Bureau projects such as GLEEN, DEVNET, AMIS2, GREENCOM, and others as field needs become better defined.

Information Regarding Donor Coordination

There are a number of donor and multi-lateral organizations involved in telematics in Africa. USAID, using this project has a significant opportunity to lever investment by other donors as well as strengthen the development impacts of USAID bilateral projects. In fact, USAID will use the level of other donor interest and participation in a given country as a factor in the country selection process.

USAID expects to be the key player in the donor community; this can be accomplished by taking the first steps and having others follow at the commencement of this project. Since USAID implementation will commence in only six to eight countries per year, it is possible that several of the targeted countries (see Annex A) will have already come on-line by the time USAID is scheduled to commence. Where this is the case, USAID will be able to optimize what it does best. For example, if the World Bank is interested in putting in the hardware in Ghana, USAID will focus on the user base, marketing, and last mile development issues.

International Telecommunications Union (ITU) - The ITU promotes policies, implements projects and provides coordination. It hosts the World Telecommunications Conferences (WTDC). The 1994 WTDC resulted in the Buenos Aires Action Plan (BAAP) which provides a framework for development. The BAAP has two components that are particularly relevant to this project: Program 9 which covers the provision of rural service, and Program 12 which covers Telematics and Computer Networks.

United Nations Conference on Trade and Development (UNCTAD) - In 1992, the 172 member countries of the UN launched the Trade Efficiency Initiative through UNCTAD. The main objective of the initiative is to open international trade to new participants (especially small and medium sized enterprises) by simplifying and harmonizing trade procedures worldwide and giving traders access to advanced technologies and information networks. A key component of the initiative is the Trade Point Program which consists of creating and connecting trade facilitation centers all over the worldwide. Each Trade Point is locally connected to the GII.

World Bank - The Bank is developing a framework for its efforts to increase "Internet connectivity in sub-Saharan Africa". The Bank has begun providing modem support for the growth of indigenous networks through its bilateral projects. The elements of the policy the World Bank is considering are: (1) conduct an intense policy dialogue with national governments to emphasize the need to take advantage of the information revolution, and the importance of an enabling policy environment for the telecommunications sector; (2) augment the supply of Internet services; and (3) stimulate demand for African Internet service providers (by encouraging purchase of connectivity and support services from indigenous service providers by the expatriate donor community).

United Nations Development Program (UNDP) - The UNDP has two telematics programs: the Sustainable Development Networking Program (SDNP), and the Small Islands Developing States Network (SIDSNet). The principal objective of SDNP is to promote the exchange of information pertaining to sustainable development as a part of the UNCED. This program also makes modest investments to facilitate connectivity as well. SIDSNet is in the feasibility stage, and expects to link the African small island nations with the aim of promoting their social and economic development.

United Nations Education, Scientific, and Cultural Organization (UNESCO) - UNESCO has been funding the Intergovernmental Informatics Program (IIP) to assist in developing national networks for the public sector (with an emphasis on science and education). The IIP includes a project that is involved in building up the necessary infrastructure called Regional Informatics Network for Africa (RINAF). RINAF has long term plans to establish 5 regional

nodes and 10 national nodes.

France - France has through ORSTOM established the Reseau Intertropical d'Ordinateurs (RIO) to service anyone involved in research and development. Through RIO, it also offers access to various data bases and libraries. It is planning to establish 10 hubs with full Internet connectivity. In addition, they have given \$400,000 to IGADD for trade point connectivity.

Canada - Canada has been among the most active donors in the area of telematics. Its funding has sustained the CABECA project at PADIS. The Canadian government also has been active in the area of telecenters. The French speaking higher education and research agency, Agence Francophone pour l'Enseignement Superior et la Recherche (AUPELF-UREF) has established a series of information centers in 14 African universities which offer local on-line access to information and electronic mail services through packet switched (PSDN) access to the Minitel videotex system and through temporary Internet connections over the PSDN.

Italy - Italy has recently given \$900,000 towards the RINAF regional/national hubs, and announced a \$400,000 grant to Ethiopia to establish Internet connectivity for a Trade Point. Past funding has gone to telecommunications activities at AGRHYMET.

Portugal - Portugal has established networking capabilities for Lusophone Africa.

Sweden - The Swedish International Development Agency (SIDA) has a special focus on rural development. Under that umbrella they have established a program for telecenters.

The Netherlands - The Dutch provide funding to the Dutch NGO TOOL which operates an Internet service in up to 7 African countries, and provides a range of technical support services as well.

European Union - The EU in 1992 provided \$2,000,000 to the Djibouti Chamber of Commerce through IGADD to establish commercial Internet service in the Greater Horn of Africa countries to support a Trade Point Program.

Satellife - Satellife, a US based NGO, has launched a low earth orbiting (LEO) satellite, and established ground stations in 14 African countries. The purpose of the network (called HealthNet) is to improve health communications in developing countries. HealthNet also offers connectivity to Internet for its users.

G. VERIFICATION OF RESULTS

The goal of the Leland Initiative is sustainable development in Africa and a self-supporting Internet program. At the end of project, there will have been a great number of changes brought about by the way in which people utilize the Internet. A baseline study will be done at the start of project activities in each country. This baseline study will be done by the country assessment team, comprised of three specialists covering the areas of public policy, technical issues, and social science. Each country study must be adapted to the local situation and may be contracted locally by the USAID Mission. It is further recommended that three evaluations are done during the project.

An **annual review** is performed by USAID Missions or agencies on the progress of the Internet project. These reports can be compared to the original baseline study. Results will need to be compiled and distributed to all Internet project sites.

A **mid-term evaluation** is performed to learn what in the project has been successful. The lessons learned from this survey should be shared with other countries. At this point, it is envisioned that not all Internet sites will have been implemented; thus it is important to share the data that is gathered in the planning process of new sites. The gathered data can be used to make appropriate changes to enhance program results.

A **final evaluation** is performed at the end of the project. The results concluded in this survey should be compared to lessons learned in related projects from Asia, Latin America, and the NIS.

Strategic Objective 1 - Policy context - Governmental policies will need to be liberalized to assist in the adoption of the Internet. The project will have success if the:

1. The government/ PT&T grants radio frequencies needed for Internet services.
2. The government/PT&T favorably revises its long distance rates;
3. The government/PT&T reduces the duties on telecommunications equipment; and
4. The government/PT&T works toward the improvement of rural communication service;

Strategic Objective 2 - Hardware/software - Service provider and user needs must be met while the hardware and software must be reliable. The SO2 will be successful if:

1. Internet services are self-supporting;
2. There is an increase in the volume of email traffic domestically and internationally;
3. There is indigenous capability for training additional system operators;
4. The system operators obtain retraining visits, if necessary, from neighboring Internet countries or USAID sponsored institutions;
5. Store-and-forward email services, which existed prior to the Internet, are still in operation, either by being in competition, or in collaboration, with the Internet; and
6. Appropriate technology is provided.

Strategic Objective 3 - Enhancing user applications for sustainable development - USAID sponsored programs, such as, New Partnership Initiative, Greater Horn of African Initiative, and Initiative for Southern Africa, utilize Internet services. Projects should assist: 1) economic growth; 2) stabilize world population and improve upon local health conditions; 3) protect the environment; 4) promote democracy; and 5) provide humanitarian assistance. SO3 needs will be met if:

1. USAID sponsored programs adopt Internet services;
2. The government and private businesses invest money to support the Internet;
3. Government Ministries, Universities, NGOs/ PVOs, and individuals adopt the Internet into their programs;
4. The rate of new users increase over time;
5. Users are satisfied with the service;
6. Community information centers/ information kiosks are established;
7. Users recognize the value (and pay for) information; and
8. The Internet is accessible outside the capital city.

H. SUMMARY OF ANALYSES

This section includes brief summaries of the appropriate analyses for this project. For fuller discussions the reader should consult the appropriate annex.

Technical Analysis

The Technical Analysis is attached in the Annex E. It concludes that the Leland Initiative is technically sound and feasible since it uses reliable technology, appropriate to the regions involved, which can be supported and maintained in Africa.

Economic and Financial Analysis

A. Project Feasibility Assumption.

As indicated elsewhere in the body and in Annex F of this document, the benefits that can be realized from the appropriate introduction of Internet and GII in general into a country can be substantial. Conceptually, the direct benefits and beneficiaries are fairly easy to articulate and identify qualitatively. Conversely, measuring the benefits for a typical with and without benefit/cost analysis is extremely difficult. The problem is particularly acute for this project, since the specific activities have not yet been identified.

Though GII benefit measurement may be difficult and heroic at best, there is satisfactory evidence to indicate that when properly introduced, the increased availability of GII will produce rates of return sufficient to justify the expenditures. That is the basic premise and the foundation for justifying this intervention. No formal benefit/cost or internal rate of return analysis will be conducted to justify the overall project or specific elements thereof.

B. Procedure for Assuring Efficient Allocation of Funds.

To assure efficient use of funds, selection criteria will be developed for use in establishing priorities between countries and among activities within a given country. The contractor/ implementors will be charged with this responsibility and will submit to AFR/SD the selection criteria for approval prior to its use as a decision tool and the expenditure of any funds except those associated with the establishment of the six gateways already identified. The major challenge for those assigned responsibility for developing the selection criteria will be the identification of a common "benefit unit" or some proxy.

Social/Institutional Analysis

The Social Soundness Analysis presented in Annex G, reviews a number of social considerations related to the impact of information technology on society. The results of the project are not only contingent upon the kinds of information that are made available and exchanged but also on how that information is internalized by the adapters and users in the society for the purpose of supporting sustainable development.

The analysis points out that the diffusion of an innovation such as GII can be looked at from the demand perspective (the adopters in the recipient society) and the supply perspective (the sources of information in the developed countries as well as neighboring countries facing similar situations). It is pointed out that

Benin
Burundi
Ethiopia
Eritrea
Ghana
Guinea
Kenya
Madagascar
Malawi
Mali
Mozambique
Namibia
Niger
Rwanda
Senegal
South Africa
Tanzania
Uganda
Zambia
Zimbabwe

information technology is a great social leveler, and this point alone demands attention to the implications of Strategic Objective 3, the expansion of the user base. In this context, it is important that the project deal with the "last mile" issue, how to get the benefits of the GII revolution to those who, under the current situation, have no access to the information involved.

In summary, the social soundness analysis concludes that the design of this project is feasible from a social soundness perspective provided that several considerations are built in to project activities. There must be an active effort to help beneficiaries understand the purpose and utility of the technology. There must be support to local institutions to mobilize and facilitate the pattern of adoption and use. There must be conscious avoidance of a situation wherein an "information elite" is created exacerbates existing disparity problems. With these considerations in mind, the implementors of the project have the tools with which to promote the maximum positive response by Africans to the opportunities afforded by GII technology for sustainable development efforts in Africa.

Environmental Analysis

The appropriate Initial Environmental Examination (IEE) is presented in Annex H. A Categorical Exclusion is recommended.

LELAND INITIATIVE: AFRICA GII GATEWAY ANNEXES

ANNEX A -- TEMPLATE

The design team concluded that the only way to prioritize activities among the 20 countries eligible for project activities was to create and apply a template. Drawing from the approved strategy (p.13), we assigned numerical weights to each of the criteria as presented below:

- An acceptable level of political risk (30 - representing a country in which such risks were considered minimal) Included in this category were certain assumptions regarding risks considered by business for investment decisions.

- High economic potential - (15) The assumption here was that the high potential was associated with economic activities which could be positively affected by greater internet connectivity, not just vast, untapped resources (such as Zaire).

- Undergoing, or open to, telecommunications sectoral reform. (25) Given the role of African governments in the telecommunications sector, it was considered important that the government was acting positively (or at least not interfering) in the evolution of the sector toward greater competition and private sector interest.

- Key USAID program focus. (15) The assumption was that the USAID had expressed strong support for internet connectivity and could be counted on to participate in the implementation of activities which could strengthen the development impact of the rest of its portfolio.

- Strong in-country support willing to facilitate expansion of the user base which could lead toward earlier network sustainability based on usage fees. (15) This in-country support is extremely important to long-term success and early indications of interest are given greater numbers of points. Several institutions (government or other) that are eager and able to take advantage of the Internet to meet policy objectives including the support of development activities, economic empowerment, and academic and professional communication. The existence of such institutions assures that project activities support and expand extant information interests in the host country, and that local capacity be augmented rather than entirely constructed.

The 20 countries included in the Leland Initiative Strategy document are as follows:

ANNEX B -- COUNTRY SELECTION

The application of the template described in Section D of the Project Paper resulted in the following countries being identified by the design team for the initial round of country activities. The countries are Ghana, Madagascar, Mali, Niger, Kenya and Tanzania selected from a larger group upon which the design team applied the template concept. A brief sketch of each country's current situation will follow.

LELAND INITIATIVE -- GII -- GATEWAY FOR AFRICA

GHANA, KENYA, MADAGASCAR, MALI, NIGER, AND TANZANIA

by Tony Villasenor, Jim Russo, Jonathan Metzger, and James Graham

17 August, 1995

This document evaluates the technical situation in Ghana, Kenya, Madagascar, Mali, Niger, and Tanzania. In particular, it provides development related information and information regarding existing email services. Additionally, it briefly states the state of development and USAID's focus with each country evaluated. It will be used as an annex to the Leland Initiative - GII With African Project. This document should serve as a foundation of knowledge of a particular countries, in relation to the Leland Initiative. It will be superseded by in-depth field studies.

1A. Ghana

Congressional Presentation Summary

FY 1996 Development Fund for Africa Request:	\$39,750,000
FY 1996 Development Assistance Request:	\$5,545,000
FY 1996 P.L. 480 Title II Request:	\$8,611,000

Ghana, with a population nearing 16 million and a per capita Gross National Product (GNP) of \$450 per year, is ranked among the low income countries of the world. It is a young democracy, deeply engaged in a program of economic adjustment to foster and sustain broad-based economic growth. U.S. assistance to Ghana (7% of donor aid) supports U.S. interests in promoting democratic governance and free-market development. Ghana has taken major steps in terms of establishing democratic institutions: a constitutional democracy was established in 1992 and a President was elected under that democratic process. National Presidential and Parliamentary elections are scheduled for 1996. Ghana is also a lead country in economic reform and committed to providing an environment more favorable to private sector investment and export.

Since 1983, Ghana has pursued free-market policy reforms and

become increasingly attractive for U.S. trade and private investment. Ghana has also demonstrated a clear commitment to slowing population growth. The government has started to reform its telecommunications sector including drafting liberal legislation. The prospects look good for the sustainability of Internet vis-a-vis telecommunications policies.

The Development Challenge.

By the time Ghana began its Economic Reform Program in 1983, its economy and social sectors were in shambles after years of mismanagement and state control. Although Ghana has achieved significant improvements over the past 12 years, poverty is prevalent, with average incomes at \$450 per capita, and education, health and food security for large portions of the population still inadequate. Ghana also remains overly dependent on a few export commodities, notably cocoa and gold. As the democratic reforms progress, demands on the public sector have increased. The Government is currently grappling with how to contain budget deficits and control inflation.

The Government has taken meaningful steps to privatize state-owned enterprises, maintain macro-economic stability and enhance its food security. Its programs to promote economic growth, through investments in human capital -- especially primary education -- and through efforts to diversify exports require external assistance. It also needs assistance to stabilize population growth, to stay the course with democratic reforms, to make public institutions more accountable to local communities, and to address the humanitarian needs of its most vulnerable populations.

Strategic Objectives (SOs).

The USAID/Ghana program is focused on three strategic objectives. Limited assistance is also provided in areas that underpin all three SOs: Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome (HIV/AIDS) prevention, child survival, building democracy, and natural resource conservation and historic preservation.

ENCOURAGING BROAD-BASED ECONOMIC GROWTH (\$27,200,000).

SO 1. Increased Private Sector Non-Traditional Exports (\$19,264,000 of which \$17,980,000 is for Economic Growth, and \$1,284,000 is for Protecting the Environment).

STABILIZING WORLD POPULATION GROWTH (\$15,278,000).

SO 2. Reduce Fertility (\$15,228,000).

SO 3. Improved Quality of Primary Education (\$8,000,000).

BUILDING DEMOCRACY (\$1,582,500).

HIV/AIDS PREVENTION (\$1,220,000).

PROVIDING HUMANITARIAN ASSISTANCE (\$8,611,000).

Other Donor Resource Flows.

In FY 1993, the United States was the fifth largest donor to Ghana, providing 6.8% of all donor contributions. Major donors are the World Bank, Japan, the European Development Fund and Germany.

1B. Telecommunications Overview in Ghana

Network Computer Systems

Nii Quaynor and William Tevie

Private Mail Bag Osu, Accra

Tel: 233 21 22 06 22, 22 54 72, 77 33 72

Fax: 233 21 77 22 79

Email: <tevie@gh.com>

They are the first group in Ghana to start supplying Internet style services and will shortly offer real time communication links. They have been providing services for the past nine months. The dedicated international leased line will be between Ghana and the UK. They support dial-up ppp through routers and sun workstations on an ethernet network. They provide 4800 for dialup TCP/IP and expect to do 9600 on the international leased line. At present, they have seventy subscribers. Nodes will expand to Kumasi and Takoradi.

GhastiNet

John Villars and William Dankwah

Council For Scientific & Industrial Research

PO Box M32, Accra

Tel: 233 21 77 33 15

Fax: 233 21 77 30 68

Email: <wdankwah@ghastinet.gn.apc.org>

GhastiNet offers store-and-forward email services through GreenNet in the UK. Their user base (eight people) has been slow to expand due to the difficulties in securing telephone lines; they do accommodate walk in traffic.

Association Of African Universities

John Bart-Plange

Box 5744, Accra-North

Tel: 233 21 77 44 95

Fax: 233 21 77 48 21

Email: <jbp@aaau.org>

They have a 2,400 baud UUCP dial up connection to Rhodes University in South Africa. They have just started offering services. They have an unknown number of subscribers at present.

HealthNet
Tony Williams and Titus Tei
Korle-Bu Teaching Hospital, Accra
Tel: 233 21 23 02 20/ 66 70 25
Email: <tony@gha.healthnet.org>
Email: <ttei@gha.healthnet.org>

While there are two satellite earth stations in Ghana, the only station which accepts subscribers is based in Accra (the other terminal is in the North at the Navrongo Health Research Center). They have thirty different connecting points (representing multiple users).

2A. Kenya

Congressional Presentation Summary

FY 1996 Development Fund for Africa Request:	\$23,845,000
FY 1996 Development Assistance Fund Request:	\$7,775,000
FY 1996 P.L. 480 Title II Request:	\$6,951,000

Kenya was one of sub-Saharan Africa's best economic performers until the late 1980s. It has both human and natural resource potential for sustained development. Kenya is currently in a difficult transitional stage, making halting progress toward improving democratic governance following the multi-party election in December 1992. Nevertheless, Kenya continues to maintain a stable, pro-Western government and a free-market economy with a vibrant private sector. The government continues to be responsive to U.S. interests, collaborating with the United States on humanitarian and refugee operations in Ethiopia, Rwanda, Somalia, Sudan, and other neighboring countries located in the Greater Horn of Africa.

The Development Challenge.

Though significant progress was made over the past year with economic liberalization and structural reforms, the continuing challenge is to maintain the gains to date and encourage further progress on democratic governance. The challenge for the United States is to continue to engage the Government in constructive policy dialogue and to reinforce donor coordination in pressuring for accelerated reform. The government is working on new laws regarding telecommunications reforms; progress is slow, but moving. The United States intends to continue working toward improvements in economic policy and the political environment while addressing the longer-term development challenges of reducing population growth, while improving health services, and promoting sustainable, broad-based economic growth and employment opportunity. During the past year, progress was made in stabilizing and liberalizing the economy. Inflation was brought under control and continues to decline. The budget

deficit has been reduced and interest rates have come down. Other reforms include decontrol of all prices, abolition of trade and foreign-exchange controls, and some progress on parastatal and civil service reforms. Since November 1991, USAID has decreased economic assistance to Kenya pending progress on a variety of economic and political reforms.

Strategic Objectives (SOs).

USAID supports three strategic objectives in Kenya. The program also has cross-cutting themes which include building democracy, training, enhancing household food security, and strengthening capacity of private voluntary and non-governmental organizations (PVOs/NGOs).

STABILIZING POPULATION GROWTH (\$14,883,000 of which \$6,608,000 DFA and \$7,775,000 DAF).

SO 1. Reduce Fertility and Incidence of HIV/AIDS (\$14,383,000).

ENCOURAGING ECONOMIC GROWTH (\$11,792,000).

SO 2. Increase Agricultural Productivity and Farm Incomes (\$7,835,000 of which \$4,600,000 is for Economic Growth and \$3,235,000 is for Protecting the Environment).

SO 3. Increase Private Enterprise Employment (\$6,717,000).

BUILDING DEMOCRACY (\$1,461,000).

TRAINING (\$300,000).

PROVIDING HUMANITARIAN ASSISTANCE (\$6,951,000).

Other Donor Resource Flow.

In 1993, the U.S. was the fourth largest bilateral donor and the sixth largest overall donor, providing about 7% of all bilateral and 3% of total donor funding. The leading donors in Kenya are the World Bank, the European Union, Japan, United Kingdom, Germany and the United States.

2B. Telecommunications Overview in Kenya

East African Internet Association is in the process of establishing itself as a not-for-profit limited company. For more information, contact Ben Parker <ben.parker@sasa.unep.no>

African Regional Centre for Computing (ARCC)

Dr. Shem J. Ochuodho

Ngong Road

P.O. Box 58638, Nairobi

Tel: 254 2 72 35 52/ 72 69 14/ 72 78 10

Fax: 254 2 72 83 51

Email: <shem@arcc.permanet.org>

Shem has been involved with Kenyan email issues for several years. He is very active posting information and producing

papers. It is unknown the number of users and the types of services he offers.

FidoNet services: ThornTree, ELCI, and ARSO
The three nodes written about below can exchange messages locally without having to go through their hub in the UK. It is reported that they have roughly the same number of points connected to the node.

ThornTree
Crispin Sikuku
PO Box 38941, Nairobi
Tel: 254 2 22 96 50
Fax: 254 -2 22 96 50
Internet: <omega@tt.gn.apc.org>

ThornTree is one of many FidoNet nodes. It has been operating for only five months. It provides store-and-forward email service, reduced charges for NGOs. ThornTree charges

Environment Liaison Centre International (ELCI)
Makau Ngola and Doug Rigby
Tel: 254 2 56 20 22
Email: <mngola@elci.gn.apc.org>
Email: <drigby@elci.gn.apc.org>

They have been providing email service longer than other FidoNet services. They have ARSO (see below) as a sub-node.

Africa Regional Standards Organization (ARSO)
Edward Chonelwa
Tel: 254 2 21 87 92
Email: <echonelwa@arso.gn.apc.org>

They are a sub node of ELCI.

HealthNet
Bill Okelo-Odongo, PhD and Fred Bukachi, MD
University of Nairobi
Institute of Computer Science,
PO Box 30197, Nairobi,
Tel: 254 2 44 78 70/ 71 47 57
Fax: 254 2 44 78 70
Email: <fbukachi@ken.healthnet.org>
Email: <wokelo@ken.healthnet.org>

The HealthNet node has been operational since 1991. They connect users oriented working on issues related to development, environment, and medicine.

3A. Madagascar

FY 1996 Development Fund for Africa Request: \$30,277,152

FY 1996 Development Assistance Request:	\$1,000,000
FY 1996 P.L. 480 Title II Request:	\$3,174,000

Madagascar has a population of twelve million, and is a conundrum of poverty and promise. One of the world's poorest nations with a per capita gross national product of \$223, Madagascar has moved peacefully from a dictatorship to a democratic, multi-party government while beginning to take important strides toward a liberalized, market economy. Supporting these positive trends, the USAID program is focused on accelerating economic growth through stimulating private investment and employment and balance population growth, with the country's unique natural resources. Assistance to Madagascar supports U.S. interests by promoting free enterprise development, opening new or formerly protected markets for American firms (e.g., tourism, exotic raw materials) or products (e.g., telecommunications, heavy construction and agricultural machinery), promoting democratic values and institutions, and reducing the destruction of one of the globe's most valuable sources of biodiversity with, as yet, fully unknown and unexploited agricultural, pharmaceutical, and commercial potential.

The Development Challenge.

Agriculture is the heart of the Malagasy economy, with rice the principal crop. High population growth (2.9%) contributes to the ongoing decline in the standard of living while severely threatening Madagascar's rich and unique ecology. Indeed, widespread poverty (it is likely that half of all households are under the poverty line) may be the largest threat to the fledgling democracy and realization of Madagascar's high economic potential. Fifty-one percent of children under five are chronically undernourished. Forty-five percent of the population is under 15. These factors produce a high labor force growth rate and increasing high unemployment and under-employment levels. This bleak picture is in striking contrast to the country's rich resource base.

Transformation to a market economy began belatedly under the socialist dictatorship. Between 1986 and 1990, the economy grew by 13%. While the two-year transition to democracy which began in 1991 was important and necessary, the unfortunate side effect was putting economic growth on hold, thus further aggravating the downward poverty spiral. The recent free Presidential election and the installation of an economic reform government, however, have increased the prospects for putting Madagascar's macro-economic house in order and re-starting economic growth. The government has started to reform its telecommunications sector by separating the Posts and Telecoms into separate entities.

Strategic Objectives (SOs).

USAID's four strategic objectives are presented below. Cross-portfolio activities include a democracy and governance target to strengthen civil society, along with training and a P.L. 480 Title II program.

ENCOURAGING BROAD-BASED ECONOMIC GROWTH (\$13,017,000).

SO 1. Establish a competitive market environment for micro and small firms (\$1,500,000).

SO 2. Increase market access for neglected regions (\$9,192,000 of which \$8,527,000 is for Economic Growth and \$665,000 is for Building Democracy).

PROTECTING THE ENVIRONMENT (\$11,979,000).

SO 3. Reduce natural resource depletion in target areas (\$11,979,000).

STABILIZING POPULATION GROWTH (\$5,416,000 of which \$4,416,000 DFA and \$1,000,000 DAF).

SO 4. Reduce total fertility (\$8,006,000 of which \$2,590,000 is for Economic Growth and \$5,416,000 is for Stabilizing Population Growth).

BUILDING DEMOCRACY (\$865,000).

PROVIDING HUMANITARIAN ASSISTANCE (\$3,174,000).

TRAINING (\$200,000).

Other Donor Resource Flows.

In FY 1994, the United States provided about 10% of all donor assistance to Madagascar. The other major donors are: the World Bank, the IMF, France, the European Union, Switzerland, the United Nations agencies, Italy, Germany and Japan.

3B. Telecommunications Overview in Madagascar

ORSTOM/ RioNet
Rue Samuel Rahamefy
BP 74 - Ambatonakanga Antananarivo
Tel: 261 2 25 386
Fax: 261 2 33 669
Email: <postmaster@antana.rio.org>

RioNet is the only email service provider in Madagascar. RioNet Madagascar operates in a similar fashion as to Rio's in Niger and Mali reviewed in this study. They utilize x.25 UUCP. They have thirty different connection points. Each point can represent more than one user.

4A. Mali

Congressional Presentation Summary

FY 1996 Development Fund for Africa Request	\$34,990,000
FY 1996 Development Assistance Fund Request:	\$800,000
FY 1996 P.L. 480 Title II Request:	\$309,000

Mali is a landlocked country of nine million people straddling the savanna and desert in West Africa. Its per capita Gross Domestic Product of \$310 has decreased by 2.7% annually since 1980. Yet, Mali has one of the best records in West Africa in carrying out economic reform and earning the respect and confidence of the international community. Mali separated the Post from the Telecommunication section several ago but has not gone further to privatize. They are open to total reform of the sector and have many ideas under study. It has, in addition, made significant progress in creating a true democracy following more than twenty-two years of military dictatorship. U.S. assistance in Mali supports U.S. interests in democratic governance, free market development and food security.

The Development Challenge.

Mali's high population growth rate of 3% and its extremely high fertility rate of 7.1 are obstacles to improving living conditions. Health conditions are among the poorest in the world, with 102 out of every 1,000 children dying before the age of one. Only 30% of children and 22% of girls attend primary school. As a result, the literacy rate is one of the lowest in the world.

Mali became a parliamentary democracy in 1992 and is struggling to establish democratic institutions. It will take time for Malians to be convinced of the capacity of these institutions to resolve the country's problems. As the national Government decentralizes power to local communities and regional bodies, and as these institutions gain the power to address their own problems, the population is becoming more confident in the entire system of governance. The survival of democracy in Mali has been challenged by an ongoing rebellion by minority populations in the North and the efforts by well-organized interest groups to impose their agenda on the Government.

Strategic Objectives (SOs).

USAID is pursuing three strategic objectives in Mali. In addition, the program consists of activities in training, and democracy and governance which cut across sectoral boundaries in support of these objectives.

ENCOURAGING BROAD-BASED ECONOMIC GROWTH (\$28,270,000).

- SO 1: Increase private sector participation in the economy (\$7,000,000).
- SO 2. Increase incomes in areas of high productive potential (\$12,962,000: of which \$10,000,000 is for Economic Growth and \$2,962,000 is for Protecting the Environment) .

STABILIZING POPULATION GROWTH (\$4,300,000 of which \$3,500,000 DFA and \$800,000 DAF).

SO 3. Improve the delivery of health and educational services (\$15,570,000 of which \$11,270,000 is for Economic Growth and \$4,300,000 is for Stabilizing Population Growth).

BUILDING DEMOCRACY (\$260,000).

Other Donor Resource Flows.

In 1992, the United States provided 9.7% of all official donor assistance to Mali. Other major donors include France, Germany, the World Bank, the European Union, the Netherlands, Canada, and Switzerland.

4B. Telecommunications Overview in Mali

MaliNet

Eric Stevance

BP 5083, Bamako

Tel: 223 22 01 01, 22 00 44

Fax: 223 22 22 52

Email: <stevance@djata.malinet.ml>

Bureautique, Informatique, Nouvelle Technologies, Telecommunications, Audiovisuel (BINTTA) founded MaliNet. BINTTA is a French organization founded by Africans which believes that private enterprise can support an InterNet style hubs in Africa. Eric Stevance, who ran the ORSTOM node in Bamako for one year and a half started working for MaliNet at the start of 1995. They have quickly attracted many users, with over one hundred users at, at least, thirteen sites. MaliNet's is an expensive service at \$100 a month, partly because they are using UUCP technology for over X.25 phone links.

ORSTOM/ RioNet

Mamadou Diamoutani

BP 2528 Quartier du Fleuve

Tel: 223 22 43 05, 22 27 74, 22 57 47

Fax: 223 22 75 88

Email: <diamoutani@bamako.orstom.ml>

ORSTOM is a French scientific research institution which created RioNet. Rio stands for Reseau Intertropical d'Ordinateurs and will not only connect ORSTOM scientists, but also the local science, research, and ngo community. Thus, they are not looking to offer InterNet style services to the general public. In addition to the ORSTOM scientists, they have about fifteen local institutes which are connected and have lost several clients to MaliNet. Like MaliNet, RioNet uses UUCP technology over X.25 phone links.

Balazan Institute/ FidoNet

Dr. Modibo Dicko and Modibo Tamboura
BP 2502, Bamako
Tel: 223 22 31 90
Fax: 223 22 02 07
Email: <Modibo.Tamboura@f1.n7741.z5.fidonet.org>

Mali's local FidoNet option is sponsored by Capacity Building for Electronic Communication in Africa (CABECA) project. It is hoped that they will be able to reach out to the four hundred registered NGOs. They had their node installed in July. It is not clear if they have started to accept customers.

5A. Niger

Congressional Presentation Summary

FY 1996 Development Fund for Africa:	\$27,315,000
FY 1996 Development Assistance Fund:	\$1,000,000

Niger made a successful transition to democratic government in 1993, which was actively supported by the United States. Economic conditions remain grim despite progress in policy reform and the devaluation of the regional CFA (West African Franc) currency. USAID's major focus is to support Niger's movement from a centrist military state towards a broad-based, free-market economy built on a more participatory civil society. This evolution is essential for the success of Niger's democracy and for real economic growth. The government has decided to separate the Post from the Telecom but has not accomplished this to date. Economic development, more moderate population growth, and democratic governance will enhance productivity and food security, thus reducing the need for far greater expenditures in the event of natural disasters such as chronic droughts and possible future political instability.

The Development Challenge.

Landlocked at the southern edge of the Sahara desert, bordered by Algeria and Libya to its north and Nigeria to its south, Niger is among the poorest countries in the world: its per capita Gross National Product (GNP) was estimated at about US \$300 in 1994 and the GNP has shown negative growth for several years. While it grew in 1994 due mainly to better rainfall, it's growth is still lower than the population growth rate of 3.3% per year. Niger's mid-1995 population will total over 9 million, concentrated along its 900 mile border with Nigeria. Despite some advances in family planning, population growth is in its most accelerated phase. Social and economic production systems have not caught up. Natural replenishment of land resources no longer suffice to maintain a population - environment equilibrium, given widespread devastation of the natural resource base. Levels of illiteracy, especially among females, and rates of infant, child and maternal mortality are among the world's highest.

The emergence of democracy at the national level, recent adoption of more realistic currency exchange rates in the CFA zone, and several seasons of fairly good rainfall now present Nigeriens with unusual opportunities to reverse years of stagnation and promote the diffusion of social, economic and technological innovations favoring improved quality of life. The United States is encouraging and assisting major policy reforms in the areas of human rights, land reform, public health, and legal codes that enhance the rights for women and local control of agricultural resources.

Strategic Objectives (SOs).

USAID's program in Niger supports three objectives. Progress and constraints to achievement of these objectives are closely inter-related, and the impact of activities are synergistic across objectives. Some activities cut across all three objectives including: (a) democratic governance initiatives; (b) mitigation of disasters and humanitarian assistance; and (c) training.

ENCOURAGING BROAD-BASED ECONOMIC GROWTH (\$16,890,000 of which \$16,090,000 DFA and \$800,000 DAF).

SO 1. Increased use of family planning and other maternal and child survival services (\$10,062,000 of which \$9,262,000 DFA and \$800,000 DAF including \$5,591,000 for Economic Growth, \$4,216,000 for Stabilizing Population Growth, and \$255,000 for Building Democracy).

SO 2. More decentralized financial services and an improved environment for productivity (\$5,479,000 of which \$5,224,000 DFA is for Economic Growth, \$200,000 DAF is for Protecting the Environment and \$55,000 DFA is for Building Democracy).

PROTECTING THE ENVIRONMENT (\$6,172,000).

SO 3. Increased use of improved natural resource management (NRM) practices (\$8,345,000), of which \$5,587,000 is for Protecting the Environment; \$2,530,000 is for Economic Growth and \$228,000 is for Building Democracy).

Cross-Cutting Issues.

Disaster Preparedness and Humanitarian Assistance (\$3,245,000, of which \$2,675,000 is for Economic Growth, \$270,000 is for Protecting the Environment and \$300,000 is for Building Democracy).

BUILDING DEMOCRACY (\$1,038,000).

HUMAN RESOURCES DEVELOPMENT (\$984,000).

Other Donor Resource Flows.

In FY 1993, the United States was the fifth largest donor to Niger, providing 7.5% of all donor contributions. Other major donors

included France, Germany, Japan and the European Development Fund.

5B. Telecommunications Overview in Niger

ORSTOM/ RioNet
Julien Bonfort
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Fax: 227 72 28 04
Email: <bonfort@niamey.orstom.ne>

As with the RioNet node in Mali, the Niamey node was established by ORSTOM (see notes under Mali for more information). RioNet is the only local service provider. The network has at least twenty subscribers. It is a store-and-forward message system; they exchange messages with the InterNet three times a day. They use UUCP technology over X.25 phone lines.

6A. Tanzania

Congressional Presentation Summary

FY 1996 Development Fund for Africa Request:	\$38,330,000
FY 1996 Development Assistance Request:	\$4,303,000

Although extremely poor, Tanzania remains one of the most politically stable and economically promising countries in Africa. Progress in economic reforms since 1986 has led to significant results. The U.S. foreign-assistance program in Tanzania recognizes the country's role and position as a stabilizing influence among some of its troubled neighbors. The government has separated the Post and the Telecommunications branch; it developed and passed new legislation which improved reforms.

Tanzania is part of two major international initiatives: the Greater Horn of Africa Initiative and the Initiative for Southern Africa, which are intended to assist both the eastern and southern Africa regions to overcome poverty, conflict and ethnic strife and put themselves on the path to sustainable development. The proposed assistance program in Tanzania promotes U.S. national interests through: 1) support for a moderate and stabilizing country at the crossroads of East and Southern Africa, 2) the creation of a modern economy with democratic institutions which reflect the aspirations of the people; and 3) investments in economic growth and well-being which reduce poverty and raise incomes and create potential markets for U.S. goods and services.

The Development Challenge.

The development challenge in Tanzania is understood by the government and most donors: to move the economy from 25 years of

low income countries than in the high income countries, at least in terms of benefit per extra dollar spent. (Source: ITU/BDT Telecommunication Indicator Database).

Another recent analytical study by Rand (presented by Christopher R. Kedzie at the Internet Society Conference, June 28, 1995) provides some additional interesting relationship between network interconnectivity on one hand and democracy and economic development on the other. The results of the study include the following: (1) network interconnectivity proves to be a significant predictor of both democracy and economic development, but the reverse is not true in either case; (2) interconnectivity, population and regional variables explain almost two-third of the worldwide variance in democracy, (3) correlation between interconnectivity and democracy is highest in regions undergoing political transformation and lowest in established democracy. For U.S. foreign aid and foreign policy, the study's implications are: (1) at a minimum, understand the relationship of communication and information technologies on foreign and assistance policy objectives, and (2) at the maximum, elevate the priority of international information and communication programs to at least that of other programs to influence international affairs.

D. Internet Environment

Cheap, fast and democratic, Internet is proving to be the perfect tool for PVOs/NGOs and charities as well working in the third world. In a recent paper, "It's All in Good Cause" (Independent, April 24, 1995, p. 26), Paul Gosling makes the observation that Christian Aid, which does a lot of work in Latin America and Africa where phone lines are poor and electricity supplies irregular, finds e-mail more reliable than either faxes or telephone links. Now, Oxfam, along with many other charities, is setting up e-mail links with its overseas workers and partners. Greenpeace has been using e-mail for some seven years. For them, e-mail is quicker and, therefore, more democratic, allowing member groups in 30 countries to react quickly to proposed initiatives. Amnesty International is increasingly dependent on a e-mail to communicate with 100 partner organizations worldwide. Speed and democracy are factors for Amnesty, making electronic distribution of materials possible that would otherwise be banned.

In both small and big businesses, owners turn to e-mail system to keep communication costs in line. Shipping owners look at ways to minimize communication costs through use of e-mail rather than using voice mail or faxes through systems such as Inmarsat.

The age of virtual corporation is here. E-mail, internet and videoconferencing mean that we can stay home, get more done, and be more efficient. Internet is being used effectively for international trade via access to trade statistics and sales

with tutor-supported small group learning. (Such hybrid programs have already been used in countries such as Zimbabwe and Papua New Guinea using alternating periods of residential and distance training. P. 29).

c. Cost-Effectiveness

(1) In Sri Lanka, the DL program for teachers' training program was more cost-effective than the conventional pre- and in-service training programs

(2) In Indonesia, the DL language program was more cost-effective than its conventional (pre-service) equivalent, but the mathematics program was less so.

(3) The least efficient program in Sri Lanka was the conventional campus-based in-service training program.

(4) The least efficient program in Indonesia was the DL program in mathematics.

(5) In both countries, if the cost-effectiveness ratios are computed using only government costs (not counting private costs in terms of opportunity costs), distance education program appear to be even more efficient compared to conventional programs.

Telecommunications and Economic Development

There have been some attempts to develop cost-benefit analyses of information technology for developing countries. The relevant variables include (a) costs: personnel, hardware, installation, operations, technical support; (b) benefits: cash benefits, time saved, reduction in expenses, reduction in paper work, value of public gain; and (c) qualitative elements: improvements in quality of organizational performance, increase in productivity, democratic (sharing common heritage), can do work from home (Source: "Implementing Automated Information Systems in Developing Countries", Economic and Management Consultants International, Washington D.C., p.13.). However, it may be somewhat early to expect a large bibliography of studies on the economics of the Internet and telecommunications for the developing world. The following section attempts to provide a brief analysis of the benefits of the Internet and other telecommunication tools for the developing world.

Telecommunications are powerful tools to support improved operations decision making by the governments of developing nations. The relation between telecommunications and economic development has been the topic of numerous studies. Though the studies differ on the exact degree to which telecommunications contribute to economic development, virtually everyone agrees that there is a close relationship. The strength of the relationship between GDP per capita (as a surrogate for economic development) and teledensity (telephone lines per 100 inhabitants) is evident. For every extra \$1,000 of GDP per capita, the relationship predicts an extra 2.24 main lines per 100 population (ordinary Least Square Regression, based on 1991 data for 164 countries, shows R-Square= 0.85, where 1.0 would equal perfect correlation). Graphically, this relationship is sometimes known as Jipp Curve, and it implies that telecommunications investment brings higher social and economic rewards in the

respond to social demand to urgently train human capital.

The third Report (Education and Training Series Discussion Paper, No. EDT 43, 1986) first describes distance education in Africa to include the use of correspondence course, the work of open universities, and education in-school and out-of-school based on radio and television, including interactive radio. Within Africa, it has been used for teacher training, and for primary, secondary and tertiary education. In primary education, the most important application of distance teaching has been in interactive radio where it is used for direct classroom teaching. At both secondary and tertiary level, "equivalence" courses have been developed offering an alternative route to formal qualifications for students outside school or college. Cost data presented on all these applications show a reduction in costs at all levels. It is argued in the Report that distance education's potential to increase access to education and reduce costs justifies further investment along with alternative strategies for education in Africa.

Another study, "The Cost-Effectiveness of Distance Education for Teacher Training", by Dean H. Nielson et al., (BRIDGES, HIID, April 1991), makes a comparative cost-benefit analysis of the traditional and distance learning in two Asian countries, Sri Lanka and Indonesia. It summarizes costs, effectiveness and cost-benefits as follows:

a. Program Costs

(1) The distance teacher education program in both Sri Lanka and Indonesia are significantly cheaper than their conventional counterparts. Total annual costs per capita are one-sixth to three-fifth of campus-based programs.

(2) The proportion of total costs borne by the trainees is considerably higher in distance learning than in conventional programs. In Sri Lanka, the actual amount spent or foregone by trainees is still lower for the distance education program than for conventional programs; in Indonesia it was higher.

(3) From the government's point of view, higher student costs represent a form of cost recovery. The relatively high level of cost recovery in distance learning program for both Sri Lanka and Indonesia implies that the cost to "sponsor" (the government) was much lower than the "total" (both public and private) cost involved. In Sri Lanka, the government costs for DL were about one-tenth to one-eighth those for the Colleges of Education and Teachers Colleges respectively, whereas in Indonesia the costs to the government for DL are about one-fourth of the conventional pre-service program costs.

(4) Economies of Scale had kept the unit costs down in both countries.

b. Program Effectiveness

(1) In Sri Lanka, the DL in-service teacher training program is effective in improving the knowledge skills and attitudes of trainees. However, it was more effective for language than for mathematics compared with campus-based system.

(2) In Indonesia, the DL students did better in Language and worse in mathematics than their campus-based counterparts.

The best form of DL seems to be "not too distant" that combines self-instruction

in one course offering it has saved a total of 76% (in labor costs and other expenses saved) by using interactive television in 1995 (Electronic Delivery of Training: Interactive Television, Distance Learning Department, DOE, Albuquerque, NM). Xerox Company finds that its interactive DL network reduces cost 64%, 87% and 71% over centralized training delivery, cascaded training delivery, and roadshow training delivery respectively. The increased productivity was made possible by decreasing cycle time (by 81-98%) and reducing time out of field (by 50-79%) in DL compared with centralized, cascaded or road show system ("Xerox Interactive Distance Learning Network Case Study, February 1995). The Technical Education & Training Program Office (paper presented by Jim Chenoweth, at the Distance Conference, March 23, 1995, Washington D.C.) trains workforce of multidomestic \$23 billion/year manufacturing group including Pratt & Whitney, Sikorsky, Hamilton-Standard, Carrier, Otis etc. using DL network e.g., videoconferencing, microwave network, satellite downlinks, videotape, and computer-based/assisted tools. It has established that DL benefits come from increased efficiency e.g., less travel, lower delivery costs, and economies of scale; and enhanced effectiveness, e.g., access to high quality instructors, reduced learning time, and on-demand/as-needed service. The Caterpillar Television Center in Peoria, Illinois was a successful training initiative launched jointly with PACCAR Inc. The Ford Motor Company is investing \$100 million on a satellite network that would enable them to provide interactive distance learning to its 6,000 dealerships in the U.S. and Canada. Recent journal/newspaper reports cover periodic news of how labor productivity has gone up after e-mail has come alive.

Developing Country Studies

Three World Bank Reports find **Distance Learning (DL)** in Africa and elsewhere to be cost-effective and essential. One Report (EDI Development Policy Case Series; No.9, 1992) observes that the greatest educational challenge facing Africa today is how to design a system or a learning package that both meets individual country's priorities and also maximize learning in a cost-effective way using the resources available. A distance education system that combines radio and electronic techniques could be Africa's salvation. The reality is that distance education can and should be a more efficient and cost-effective method of education. (Distance Education in Anglophone Africa: Experience with Secondary Education and Teacher Training, Economic Development Institute, Prepared by Murphy, Paud, Zhiri, and Abdelwahed, 1992).

The second Report (Education and Training Series Discussion Paper, No. EDT 68,1987) reviews Bank experience with 32 investments in DL projects. Lessons learned indicate that investments in distance are most effective when there is an agreement between the Bank and the borrower on the educational objectives of the distance learning component. Distance education has proved to be an advantage when (a) it is sharply focussed on improving the quality of teaching, (b) it is used to teach nonformal "equivalency" education, and (c) it is used to

B. USAID Policy

The Draft USAID Policy Determination on "Telecommunications and the Global Information Infrastructure" (PD XX, 6/30/95) states that the developing countries will need easy access to the Global Information Infrastructure if they are to become active members of an emerging global economy and benefit from more efficient channels for international trade and worldwide communications (p. 1). It also recommends that USAID : (1) assist countries in the process of deregulating, liberalizing and privatizing telecommunications towards free and open markets; (2) to provide "enhanced credit" to small and medium-sized businesses if necessary; (3) assist countries in making sound technical and policy decisions when they make major investments in new communications capacities, and in promoting the design and development of country-specific information superhighway; (4) assist in strengthening intellectual property rights; and (5) improve the use of information technology and media to increase the flow of market information, e.g., agriculture, financial services, transportation, manufacturing, and trade opportunities (p. 5).

C. Multisector Benefits for Developed and Developing Countries

Training/Distance Learning Benefits

Study Results for U.S.

There are numerous studies that demonstrate the cost-effectiveness of information infrastructure in business and in training/learning for the United States. For example, a recent study prepared for USAID by The Academy for Educational Development, Delivery Order no.9, June 1995 concludes that any of the three different technology-based distance learning (DL) alternatives proposed for the Training Division of USAID is less expensive than the current resident-classroom model, with benefits ranging between 23-26%. The Department of Defense has experienced (J.D. Fletcher study) that interactive videodisc instruction cost was only 36% of conventional instruction cost, while it improved the student achievement by about 0.50 standard deviation. Computer-based achievement has been found to reduce training time in the range of 30% and increase achievement by about 14%. (see Reference in AED Study cited above). U.S Postal Service has realized an average of \$1,000 savings per postal trainee in DL over conventional classroom training for a typical two-week course, primarily in avoided travel expenses ("Distance Learning Case Study", U.S. Postal Service, Technical Training Center). Again Department of Defense, in a recent study has observed that interactive computer courseware gave an improvement of one letter grade over classroom instruction ("DOD Training: Distance Learning Training", speech by Commander L.E. Rezendes at the Distance Learning Conference, March 23, 1995, Washington D.C.). The Department of Energy has found that

Global trade and investment are increasing, and developing countries are catching up by exporting high-skill and low-skill services. Investments and money are flowing globally through an increasingly integrated and volatile financial market. Information built on telecommunications are essential for this expanded global market. Increased participation in the world economy has become the key to domestic economic growth. It works as an insurance against domestic economic turbulence and recession. In fact, countries that have experienced fast growth in global trade are also the countries that have had fast growth in their domestic economies (example, Japan and S. Korea).

Broader global trade and investments that now include participation of the third world nations have increased competition. On the other hand, markets for developed countries have also expanded as incomes have risen in developing countries. In the information global economy, countries and firms are competing by acquiring knowledge, networking and agility. Those that lag behind risk shrinking market share, or worse, extinction. To remain competitive in the global market, countries today have to depend more on information and networking than on natural resource endowment and low wage scales.

Traditional economic structure is being transformed as it adjusts to the new information age environment. Products and processes are redesigned around information technology. Traditional industries are rediscovering their competitive advantage in terms of processing information and knowledge. The nature of jobs is transforming to tasks that are easily exportable electronically, and is going where the local economy has cost advantages in terms of white collar services rather than raw materials extraction.

The Bank Report also finds that electronic communication has become an economic and social leveler. It is reducing cultural barriers, income inequalities, and even intellectual disparities. Technology can put unequal human beings on an equal footing. That makes it the most potent democratizing tool ever devised.

Finally, technical factors such as hardware, software and computer skills are important for a sustainable environment. However, some of the critical determinants of the success of telecommunication adoption efforts are management factors rather than technical factors. Some elements of good management are (1) leadership, (2) nature and attitude of the power structure, (3) organization culture, (4) incentive system, and (5) training in use of information. Some other factors that help promote Internet diffusion include minimum or no regulatory constraints, availability of cost-based private leased lines, local access lines and computers; competition, and individuals and institutions skilled in designing and operating computer network. (Ruthowski Paper cited above).

ANNEX F

LELAND INITIATIVE: GII GATEWAY TO AFRICA An Economic Background

A. Background

Computers are diffusing faster than any previous communication technology. Internet is being built through computers into home, local and enterprise networks. It's the ultimate engine for collaboration, education, research, economic development, information sharing, product development, marketing, sales, and, of course, correspondence. Internet allows very low-cost, instant entry into global markets. It also creates open, competitive, and fair-market opportunities, helps grow the global economy, builds a network-based economy, enhances international collaboration, improves international human rights and quality of life, and allows national open societies and diversity. In the year 2000, Internet will have more than 100 million connected hosts, over one million connected networks with a traffic that will exceed voice telephony, support thousands of different applications, support a trillion dollars a year transactions; and reshape institutional, business, financial and political boundaries.¹

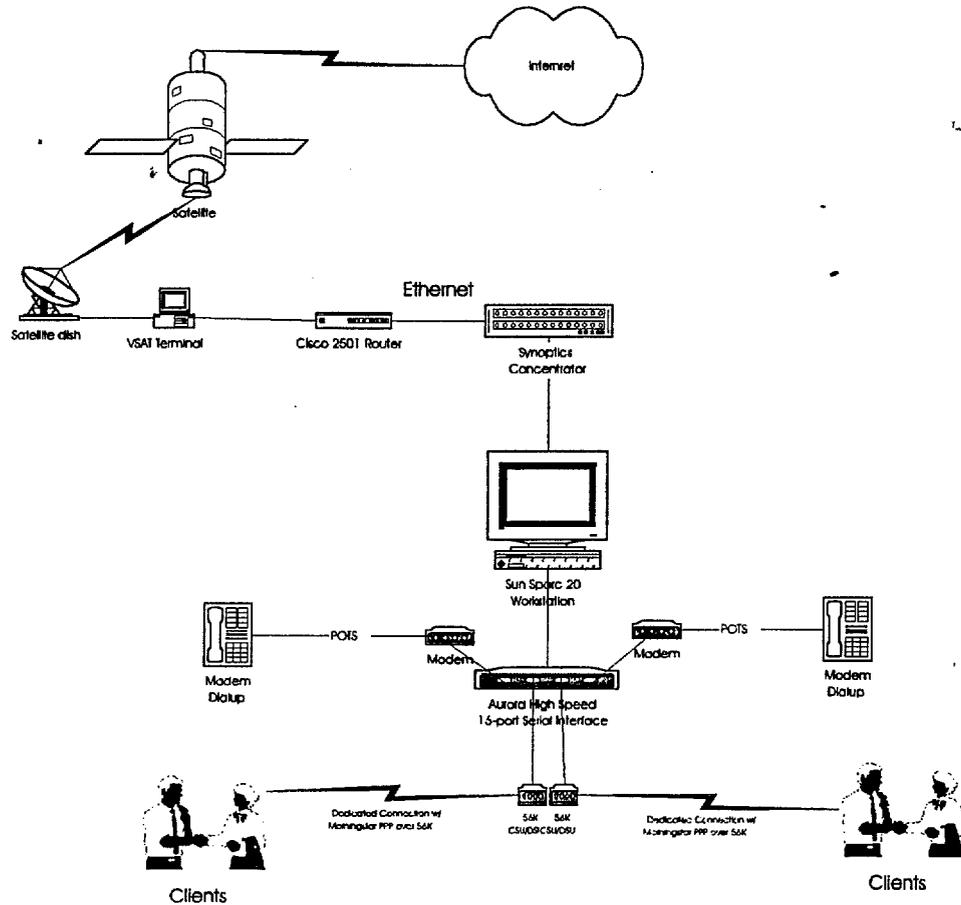
The critical role of information infrastructure for the economic development of the third world is articulated in a recent World Bank report.² The findings pertinent to the Leland Initiative are discussed below.

Electronic communication has added huge new capacities to human intelligence. It offers an opportunity to the developing nations to leapfrog without being held back by poor infrastructure. In fact, they can access telecommunications at lower costs per capita than it was possible for the developed world just a few years ago.

New economic rules dictate that the developing world capture the opportunity to become an information economy. Information can be replicated at negligible marginal cost. Fast, and easily accessible information can overcome time and distance constraints. It is a factor of production and can substitute for other factors of production, e.g., land, labor, capital and energy.

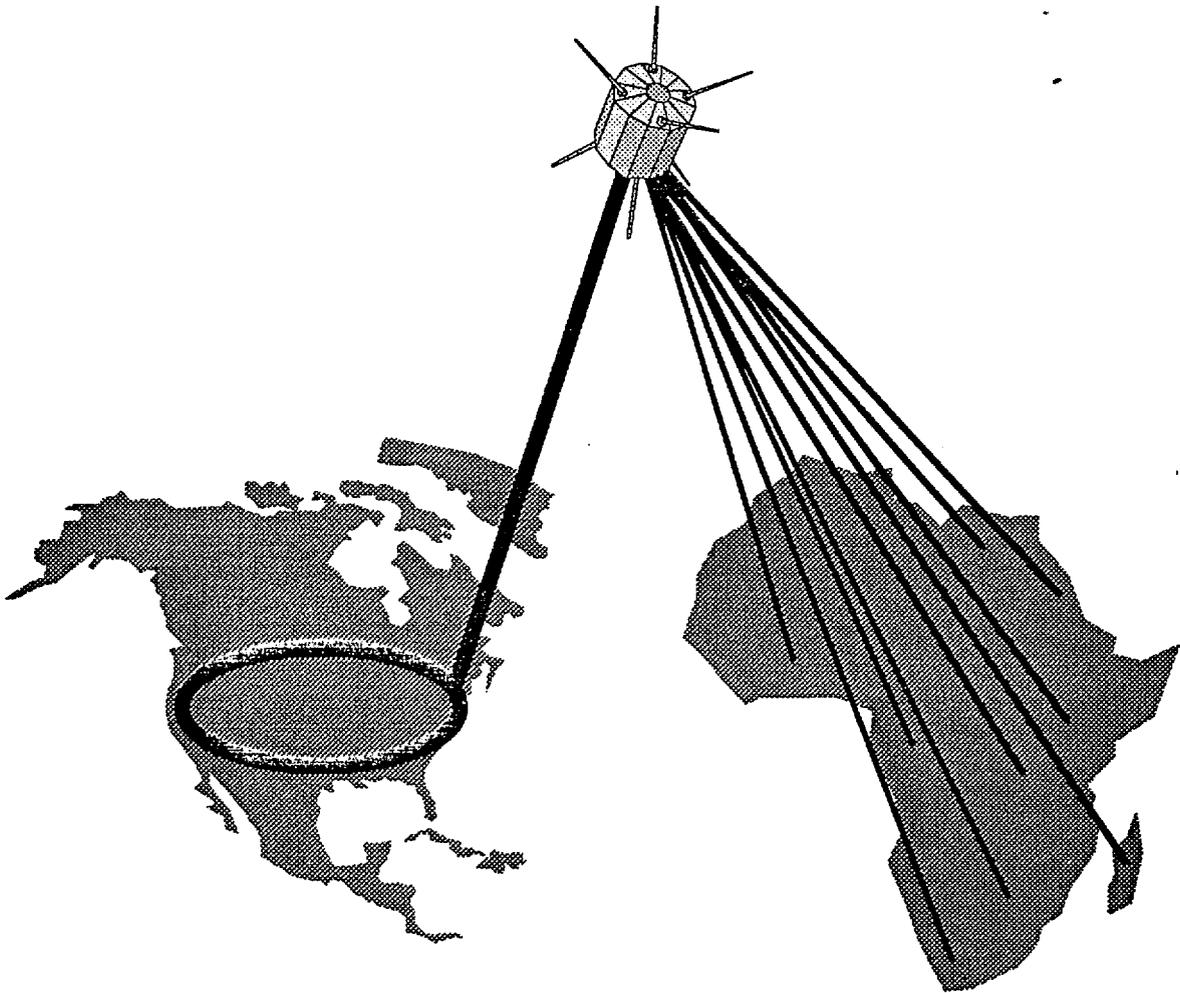
¹"Global Growth of the INTERNET", Paper presented by Anthony M. Ruthowski at a seminar in Washington D.C., August 9, 1995.

²"Harnessing Information for Development: World Bank Group Vision and Strategy" (Talero, Edward and Gaudette, Philip, The World Bank, Draft, July 1995).



USAID
Network Diagram
August 17, 1995

GATEWAY FOR AFRICA via *INTERNET*



ANNEX E: TECHNICAL ANALYSIS

By connecting the world to a global information infrastructure, "we will derive robust and sustainable economic progress, strong democracies, better solutions to global and local environmental challenges, improved health care, and -- ultimately -- a greater sense of shared stewardship of our small planet." Al Gore, Buenos Aires, March 1994

The world has entered a new age of electronic communication and information sharing. By 1995, information technology will have become the largest industrial sector in developed countries. Internet, a network of networks, is estimated to serve over 15 million personal computers and is currently doubling its numbers of servers every 11 months. The World Bank currently spends over \$1 billion per year on information technology, which is more than it spends on its programs for health, population, or energy. The Carnegie Foundation has shown that the capacity for networking in developing countries is proliferating and VITA (Volunteers in Technical Assistance) has developed low-cost satellite technology for just this purpose. Innovative low-cost telecommunication technology offers the potential to bring the Information Revolution to users in even the poorest countries. New low-orbit satellite based cellular telephone technology, spread-spectrum wireless LAN technology, and radio data transmission will make it possible for anyone to connect with on-line data bases from any point in the world with a pocket device by the end of the decade.

The technical solution outlined below is but one of many options for connecting a hub, city or country to the Internet. VSATs (very small aperture terminal) are small, relatively inexpensive (\$20K) satellite earth stations. VSATs are ideal connectivity solutions for isolated locations where spectrum is available. Fiber optic cable delivers more bandwidth for less cost in high volume applications. However, it requires larger capital investment and is usually the purview of the Post, Telegraph and Telephone (PTT) organization in most developing countries. The illustration below includes the VSAT earth station, a Unix file server for file management and a router for traffic (packet) management. End users can connect to the hub either via 24hr dedicated lines or via temporary dial-up connections.

B. Directions for Seeking Answers to the Questions

This Scope of Work envisions a multi-step process for seeking answers to the questions posed above.

1. Assemble a team of experts that includes specialists from the region.
2. Complete a thorough study of current literature on information sharing for the country to be visited.
3. Conduct a survey in the field designed to elicit data on information sharing in the region.
4. Conduct site visits to survey key people in USAID Missions, PVOs/NGOs, universities, government offices, local telecommunication service and equipment providers, and the public telephone operating entities to determine the available options for enabling improved information sharing, including by electronic means.

THE TEAM

The team consists of the following:

- A. Specialist in technological hardware
- B. Information analyst
- C. Policy analyst

The tasks they are to complete are set forth in parentheses in the next section. It is desirable to secure the participation of African counterparts for each of the above-mentioned team members.

OUTPUT

The letters in parentheses at the end of each output refer identify the expert area as described in the following plan.

Concentrate on impact as well as developing key contacts -- identify indicators by which impact of interventions can be monitored. (B)

Determine the best method of providing access to information resources. (A,C)

Determine the role and value of information sharing within an organization, country and region. (B)

Determine the results of the development of an atmosphere of open, accessible and shared information system. (B)

Make recommendations on how to improve information sharing systems. (A,B,C)

Identify infrastructure needs.(A)

Identify existing channels, capabilities, alternative mechanisms for information sharing.(A,B)

Identify training, as well as hardware and software needs. (A,B)

Identify institutions that will be information providers in support of local and regional information networks. (B)

Identify other donor activity and possible linkages. (A,B,C,)

Identify local providers, and how they can best be assisted in creating better information systems within the region. (A,C)

Assess the market potential for data communication services. (A,C)

Identify regulatory, political and infrastructure barriers that inhibit information sharing. (A,B,C)

In order for any network to be successful there must be a need and desire to share certain information among the participants. This will be a key element in the success and sustainability of any information sharing/networking project.(B)

How is the network supported? Who supports it? What services do they provide? What level of equipment do they have?

Who pays for network access? How much do they pay?

Do users enhance the information they share?

What is the organizational attitude toward information sharing? Do users share information willingly.

4. Status of Electronic Network Infrastructures

What kind of software and equipment are used (UNIX/DOS, modems, computers)?

Who are the local data communication providers?

Are PC-based, store-and-forward e-mail networks such as FidoNet currently in use?

Are data communications networks such as X.25 and Internet Protocol used?

What types of telecommunications infrastructure (e.g. computers or modems) is necessary in a user community to sustain a certain level of data communications?

Is there sufficient demand for full Internet Protocol access to internet file management systems such as FTP sites, gopher, or the World Wide Web to warrant investment in these services?

5. Constraints/Barriers to Sharing Information

What are the cost constraints to establishing more efficient information sharing networks?

What are the costs for accessing dial-up shell accounts, PPP, and dedicated connections?

Would there be potential cost savings from improving the system?

What are the technology constraints to establishing more efficient information sharing networks?

What are the organizational policy constraints?

What are the government policy constraints? Is there enough flexibility in the regulatory environment to ensure a reasonable probability of success?

What are the policies regarding the importation and use of equipment such as computers and modems?

What are the policies regarding use of wireless communication devices such as radio LANs and packet radio?

6. Other Donors

What other donors are working in the information sharing/networking area and what are they doing in the region?

7. Potential Users

Who are potential users of improved information sharing systems?

What are estimated levels of interest in different forms of electronic connectivity (e.g. dial-up shell accounts, PPP, or dedicated lines)?

Are certain key partners potential internet clients? Will these key partners benefit from the resources of the internet and can they technically support an internet site?

What training needs exist with respect to information sharing networks?

What level of skill does the local data communication provider need to sustain a certain level of data communications?

What training providers are in the region?

ANNEX D --SCOPE OF WORK FOR THE COUNTRY ASSESSMENT TEAMS

This Scope of Work describes an assessment that will provide an analysis of the means by which the region currently shares information, and ways in which these information sharing systems can be improved. The long-term goal is the creation of sustainable, efficient, and cost-effective systems for the sharing of information for development purposes on a regional basis, using both electronic networking capabilities and other means. It is recognized, however, that much work must be done prior to reaching this goal. It is also recognized that countries, as well as sectors, within the region are at very different stages on the continuum of information sharing. It is the intent of this assessment to identify the barriers to, and suggest solutions that will encourage the development and use of networks in the sharing of information to enhance regional cooperation. An effective network can only be as good as the information being shared. Therefore, this assessment will also analyze the quality of information (by sector) in addition to the technical aspects of information sharing.

This Scope of Work describes (A) a series of questions to be answered by the team assembled to fulfill the Scope of Work, and (B) directions for seeking answers to these questions.

A. Questions to be Answered

1. Information Producers

Who are the information producers in the region? Describe these information producers, including libraries, documentation centers, government offices, universities, and NGOs/PVOs.

Are these information producers sector- or country- specific?

Why is the information produced?

Whom do the information producers perceive to be their users?

2. Types and Quality of Information

What information is currently being used?

Is this information timely, relevant, and reliable?

How is the information obtained? Who collects it?

Does regional information play a role in helping reach organizational objectives or in organizational decision making? If so, how? If not, why not?

What additional information is needed? From whom would the organization like to obtain information, and what inhibits the organization from accessing that information now?

3. Current Information Sharing Systems

How is regional information sharing currently occurring (in both an electronic and non-electronic format)?

Is the information sharing network formal or informal?

Do users have fax machines? E-mail facilities? Other electronic communications devices?

What is the purpose of the information sharing network?

Who are members/participants in the network?

ANNEX C -- AFR/SD Effort in Networking FY 1995

	Analysis & Evaluation	TA	Hardware Software	Training	Misc.	Total (\$000)
ENV Unit: PIO/T (IRM)	0.00	60	55	17	18	200
WRI NRICG Consultative Group	100.0	0	0	0	0	100
TDT Unit	IARCs Research.Organizations.Connect.					400
FSP Unit	TRADENET					200
AFR/WA	Study on connection in the Sahel					50
USAID/Malawi	Future buy-in to IRM					100
USAID/Botswana.	Future buy-in to IRM					50
USAID/Niger	Future buy-in to IRM					100
ISA	Need assessment					
ISA	Future buy-in to IRM					200
CARPE	Future buy-in to IRM					100
GHAI(Horn)	Future buy-in to IRM					100

Total Effort\$1,600,000

In FY 1993, the United States provided about 3% of all donor assistance to Tanzania. Other major donors are: United Nations agencies, World Bank, IMF, the European Union, Denmark, Norway, Sweden, Japan, the Netherlands and Germany.

6B. Telecommunications Overview in Tanzania

HealthNet
 William Sangiwa
 Muhimbili Medical School - Dept of Epidemiology
 PO Box 65015
 Tel: 255 51 27 081/6 extension 240
 Fax: 255 51 46 229
 Email: <wsangiwa@hnettan.gn.apc.org>

HealthNet's program is four years old. They have over seventy computers connected representing over two hundred users. Messages are exchanged with the InterNet twice a day.

MARIE
 Erik Rowberg or Marietta Kikairmbo
 PO Box 1215, Arusha
 Tel: 255 57 70 65
 Fax: 255 57 71 82
 Email: <erowberg@marie.gn.apc.org>
 Email: <marie@marie.gn.apc.org>

MARIE is less than a year old, but has been providing reliable service to the people in the Arusha area. They have fifty-two users and exchange messages with the InterNet twice a day.

7. COSTS

Table of Known Costs for Ghana, Kenya, Madagascar, Mali, Niger, and Tanzania

Node and Country	Start-Up & Training	Yearly Subscription	Kilobyte Charge
Network Computer Systems - Ghana	\$100	\$1200	\$0
GhastiNet - Ghana	\$20	\$0	\$0.50
HealthNet - Ghana	\$50	\$240	\$0
FidoNet Orgs - Kenya	\$50	\$120	\$0.25
RioNet - Madagascar	\$200	\$100	\$0.40 Non Region \$0.30 Regional
MaliNet - Mali	\$200	\$100	\$0.55 Intl. \$0.00 Local
RioNet - Mali	\$200	\$100	\$0.40 Non Region \$0.30 Regional
RioNet - Niger	\$200	\$100	\$0.40 Non Region \$0.30 Regional
HealthNet - Tanzania	\$50	\$120	\$0.10
MARIE - Tanzania	\$40	\$180	\$0.20

severely deteriorated road network. These infrastructure needs discourage foreign and domestic investment, constraining economic growth. USAID activities under this SO have a direct effect on rural incomes, national food security, the distribution of economic and governance information, and the availability of health-enhancing materials and information.

The Rural Telecommunications project will assist in attracting a US telecommunications firm to establish a fully private, commercially-viable, self-sustaining rural telecommunications company to support every aspect of social and economic activity, including linking rural agricultural production areas with urban traders to facilitate exports and improve distribution to domestic food-insecurity areas.

Related Activities. The provision of complementary technical training in supportive public-and private-sector institutions is enhancing domestic capacity to sustain these infrastructure improvements.

Key infrastructural improvements in rural roads and rural/urban telecommunications will connect an increasing share of the rural population to major urban installations being implemented through other-donor programs.

In the telecommunications sector USAID assistance is provided within the framework of a major multi-donor program to the Tanzanian Government's Telecommunications Restructuring Program, with overall funding commitments of about \$250 million. Participating donors include the World Bank, African Development Bank, the European Union, Denmark, Sweden, Japan, Kuwait and Belgium. USAID's unique involvement was welcomed because it promotes private-sector involvement and benefits for the rural population.

Constraints. In the telecommunications area, official Government policy encouraging investment is neither well understood nor accepted by all implementing agencies, leading to delays and confusion that discourage investors.

SO 2. Increased formal private-sector participation in the economy (\$4,908,000 of which \$2,010,000 is for Economic Growth and \$2,898,000 is for Building Democracy).

SO 3. Increased use of family planning and HIV/AIDS preventive measures (\$18,870,000, of which \$12,0498,000 DFA is for Economic Growth and \$6,820,000 - \$2,517,000 DFA and \$4,303,000 DAF).

PROTECTING THE ENVIRONMENT (\$7,075,000).
BUILDING DEMOCRACY (\$3,498,000).
HUMAN RESOURCES DEVELOPMENT (\$ 2,800,000)

Other Donor Resource Flows.

near-total state direction and control to an enabling environment conducive to the development of strong private-sector activity. The per-capita annual Gross Domestic Product (GDP) of \$120 makes Tanzania one of the poorest countries in Africa and in the world, severely limits domestic investment, and encourages dependence on external assistance. Nearly 80% of the population is rural. However, agriculture supplies less than 50% of GDP, due largely to inadequate infrastructure, which hampers the efficiency of the rural productive base and magnifies the cost of inputs. Recurrent droughts and periodic refugees from troubled neighbors force Tanzania to import food, in an age when world market prices for traditional export crops (coffee, cotton, cashews) are relatively low. An estimated 60% of the 26 million population is under age 25, the group most vulnerable to Tanzania's raging Acquired Immune Deficiency Syndrome (AIDS) pandemic.

Yet Tanzania is rich with promise and possibility. Despite inefficiency and a continuing need for reform, there has been progress in establishing a strong private sector. This is illustrated by an average annual GDP growth rate of 4.0% which is encouragingly above the high population growth of 2.8%. Basic natural resources abound: a highly literate population is united by one common language; major natural ports exist along the 400-mile coast of this largest country in East Africa; more than sufficient thermal and hydro-energy pools remain unexploited; animal wildlife is the most varied and abundant in the world; and only one-quarter of the productively arable land is cultivated. Eight years of economic and political reform have removed many vestiges of a generation of socialism and one-party rule, opening the door for private-sector-led progress.

U.S. assistance is focused on rebuilding the financial and physical infrastructure necessary for private-sector entrepreneurial capacity and confidence, both urban and rural. Economic gains from this orientation towards the private sector are being safeguarded through improved AIDS control, population planning, better planned use of natural resources and enhanced civic education in support of improved governance.

Strategic Objectives (SOs).

USAID is pursuing three strategic objectives in Tanzania. Additionally, the program consists of important activities in training, natural environment and civic education, which cut across sectoral boundaries to promote achievement of these strategic objectives.

ENCOURAGING BROAD-BASED ECONOMIC GROWTH (\$25,239,000).

SO 1. More effective infrastructure services delivered (\$8,980,000). An adequate physical infrastructure is essential to all economic activity in this largest country with the least dense and most widely dispersed population in East Africa. Lack of urban-rural telecommunications reinforces limitations imposed by a

leads, international data base and internationally-focussed bulletin boards. There are already internet-based project (like UNISPHERE Institute in Washington D.C.) to broker joint ventures between U.S. small business and potential business partners abroad. The Small Business Administration has an on-line domestic and international information service for small business (Fifth Program in USAID Seminar Series on Information Technology, Trade and Development: Small Business Use of the Internet for International Trade", 8/3/95, Washington D.C.).

In Africa, as it is in the rest of the developing and corporate world, the environment in which business, governments and professionals interact has evolved as a series of seemingly unconnected initiatives in technology, information and facilities. It should be kept in mind that electronic information flow impinge on policy and business environment and change the very nature of business interaction. However, there has been little conscious thought given to the way in which these come together to produce the enabling environment where parties can conduct their business. Too often actions that affect this environment have originated from the point of view of service providers rather than from carefully considered business needs. ("The Nature of Professional Work at the Bank: and the Role of Technology, Information and Physical Facilities Department, ITF Staff Paper no. 13, Prepared by Sharpston, Michael J., 1994).

E. Project Cost-Effectiveness

It is difficult to monetize benefits derived from this Internet project. The benefits are not necessarily fully internalized or short-term. They are also intergenerational, extraeconomic (social and cultural, educational access, last mile), and they involve externalities and equity issues (access to education for all in remote corners), making it difficult to put a dollar value on it. In achieving some of the benefits from telecommunication, such as for Distance Learning (DL), the public cost is reduced only because private costs go up. For example, traditional in-service training in a classroom situation involves travel, transportation and per-diem for the employees, whereas the DL forces the employee to learn while on the job, saving the employer travel and housing expense for the training. Therefore, the telecommunication demands a high private opportunity cost that helps reduce public/corporate direct costs. Additionally, improvement in grade performance under DL implies a lower training cost per unit of grade point average; however, this does not get counted as a saving for calculating direct DL costs.

Cost-benefit analysis is, therefore, not the optimum vehicle for analyzing the economic effectiveness of an Internet Project. Rather, a way to address this problem would be to assess whether it is the most cost-effective way to achieve a given level and quality of activity. And, that can be difficult because of the problems associated with identifying the benefit unit that is being provided. Nonetheless, experts in the technical and in the application of GII must set-out to

develop such a unit, even if by proxy.

Cost-effectiveness for Internet improves as the "population size" of the users of these services expands or DL "class size" enlarges (In traditional education, fixed costs and administrative costs are far lower than variable costs. However, in DL, the proportion of fixed cost within the total cost is high. Therefore, reaching more students/ trainees per DL "class" will reduce the fixed cost significantly without increasing the variable cost proportionately), or if the higher costs associated with its use give more than proportionate improvement in quality or equity. It is also better if it is less costly while the results are as good or better. Conversely, cost-effectiveness is worse if the approach is equally costly but gives poorer results, or if it is more costly but gives poorer or equal results. It thus becomes evident that it is difficult to accurately assess the cost-effectiveness of any approach when it is less costly but also results in less good, or when it gives better result but only at a higher cost. For that reason, we have recommended that a delphi-like process--with experts familiar with the technical and the adoption rates-- be used to determine the priority of investments in and between countries.

While the selection of the countries for Internet assistance was made on bases other than narrowly defined "cost" (out-of-pocket costs), the enormity of the economic and non-economic benefits from Internet, as outlined above, more than amply justify a recurring annual cost between \$180,000-\$230,000 and an start-up cost between 75,000-\$125,000 per country for this Project for a period of 5-years.

ANNEX G

LELAND INITIATIVE

SOCIAL SOUNDNESS ANALYSIS

by Jonathan's Olsson and Metzger August 16th, 1995

I. Introduction: The Leland Initiative Strategy states: "Information is becoming a strategic resource for all countries, and information technologies are becoming catalysts which are transforming economic and social structures in those countries. The GII will give developing countries unprecedented access to the kinds of information that can drive fast-paced sustainable development." Popular and academic literature are filled with "in-depth" discussions on the transforming power of information technology in general, and electronic communication specifically.

This initiative must not be satisfied with only the potential created by making technology more available in Africa; it must look through to the results that will be achieved (in other words what transformations can be expected). The Initiative also must be concerned with the nature of those results: will they promote sustainable development; will they hinder the development process? The questions to be answered by this social analysis are therefore:

- * How automatic are these transformations? and
- * How beneficial will these transformations be?

The results created by the Initiative are contingent upon the kinds of information that are made available and exchanged. The Initiative has two objectives that will bear directly on the information made available and exchanged. The SO2 will provide for electronic communication services; SO3 will be focused on establishing a set of applications. The social soundness of these two objectives will depend on how implementation is structured. The framework for the analysis below is based on the factors that affect the adoption of innovations in developing countries, and criteria for gauging the impact of the kinds of information made available through the Initiative.

II. Measuring Information: A key step in working out the benefit of this initiative is to measure the impact of information on society. A key issue is how to measure the amount of information made available or exchanged. Information theory and computer science tend to measure information by the bit: the computer stores so many bits; the modem transfers information at so many bits per second; the encyclopedia was put on a CD-ROM using up so many bits of storage space;

or the uplink to the satellite transfers information at so many bits per second. Kenneth Boulding said³ "Knowledge is not merely a pile of bits of information; and the "wit" which seems to be the appropriate term for a unit of knowledge, is far more complex than a mere . . . bit." Thus, an understanding the utility of the information provided and exchanged will come from Boulding's wit perspective.

Semioticians and anthropologists have for some time studied information in a way that directly gets at this dichotomy. Ferdinand de Saussure (1857 - 1913) was among the first to divide signs (e.g., information) into two parts: signifier (perceived form) and signified (mental construct). Loosely put the signifier part is what could be measured in bits, and the signified is what could be measured in wits. James Beniger gets at the significance of this dichotomy this way:

For the engineer, communication involves a quantifiable amount of information that "flows" from A to B; for the semiotician, A communicates by "pointing" (by whatever means) to information already stored at B. . . . the possibility that a symbol might be simple in information content but rich in meaning or part of a highly complex system of meaning like a grammar gives human communication transcendent power. Although the engineering model better captures what occurs after one routinely asks an authority for the German name for Oswiecim, Poland, for example, the semiotic model probably better captures what will occur after you read the answer here: Auschwitz.⁴

It is important to note, that what is signified by a block of data depends on who is "pointing" (i.e., trying to use) that block of data. This suggests that different socio-cultural groups (with their different experiences and needs) will discover different wit values for the same data set.

The transforming capability of the Initiative will depend on the kinds of information or amount of wits (not bits) that are communicated to and among Africans because of the technology made available. For example, if the new Internet connections were used by Africans to play computer games or exchange pornography, the impact on Africa would be seen as less beneficial than if it had been used for developing commercial linkages or for educational purposes regardless of the number of bits that were transferred under either scenario. Boulding suggests that the information that might be most valuable to a society at any particular time is knowledge that "addresses the problems of the society" at that time. For the Leland Initiative to have its maximum effect, it must provide access not only to the means to acquire and transfer information, but also to information that is locally important.

Within the context of the sustainable development objectives of USAID, the kinds of information that would be expected to have the greatest value locally include the following:

Health. The health sector will benefit by the use of the InterNet. Targeted users should include the Ministries of Health, medical schools, medical libraries, central drug repositories, urban and provincial hospitals. It has been shown to have been beneficial to exchange information relating to outbreaks of disease, shortage of medicine, information for diagnosis, and filling in information gaps in libraries. The InterNet will allow students to pursue advanced degrees in their country of origin and do original research. Additionally, as most recent medical graduates must work for a year of rural service after graduation, this will assist them in the transition from information 'rich' to information impoverished areas.

Environment. The global environmental movement has raised awareness to the frailty

³ Boulding, Kenneth (1968) Beyond Economics, Ann Arbor Paperbacks, p. 142

⁴ Beniger, James R. (1986) The Control Revolution, Harvard University Press, p. 90

of the world ecosystem. Monitoring industrial growth, pollution, desertification, endangered species, and biospheres are a few areas in which increased communication, information sharing and access can make a difference.

Education. The InterNet revolution came about, in large part, by educational institutions which invested resources so that students and academics could communicate and gain access to information and advanced education. Educational institutions have the same potential to assist the InterNet thrive in Africa, from the ability to assist in K - 12, distance learning (by whatever technical method is appropriate), and advanced education. The InterNet can augment the minimal existing resources as well as provide a foundation of computerized awareness and utility amongst the newly emerging workforce.

Democracy/ Conflict Resolution. Fifteen countries in Africa have multiple party elections and even more countries are opening their political structure. This is proof that oligarchies and dictatorships are giving way to multi-party democracies and the liberalization of political structures. Opposing factions will be able to communicate to find common ground. To help promote democracy and bring parties together in factionalized areas, dialogue is necessary. Access to outside information will help to provide a guiding light, a monitor for human rights and exposing corruption, while helping to promote a stable environment in which citizens can live.

Business. Businesses are projected to be a chief beneficiary and utilizer of Internet services. Those businesses which adopt the use of Internet services will benefit by being able to exchange information relating to local, regional, and international markets, customs regulations, pricing, availability of merchandise, and explore new markets. Businesses can compete in the global marketplace with improved access to information in a timely manner. Foreign businesses will be exposed to the opportunities and potential in Africa giving rise to foreign investment.

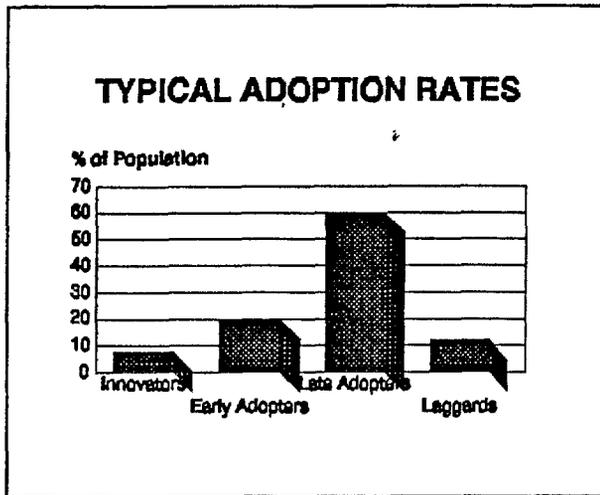
Community. Through the colonial experience, countries were put together without taking into consideration social and cultural groups. Additionally, without the infrastructure or means in the modern age to travel to distant areas of the country, concepts of community can be restrictive. Information might not be shared. Relationships might be deemed inappropriate. The Internet, as a communications tool, can help build the means for people to communication and form cohesive unions.

III. Innovation Diffusion from the Demand Perspective: Evidence on how easily Internet related technologies are adopted in developing countries is scant if only because of its newness. Nonetheless, there are some interesting lessons to draw on. History offers a lesson from the experience of the movable type printing press. It was first invented by the Chinese in the 11th century, however it took 400 years and a German named Gutenberg to unleash the potential of that technology. Historians tell us that the printing press did not 'take-off' in China first for a number of organizational and cultural reasons. To jump to a modern time frame, a recent World Bank study⁵ of 76 of its projects in Africa showed that the returns on use of information technology were mixed. This was due partly from poor design, but the core constraining factors were found to be limited human and organizational capacities. Subsequent studies have also concluded that the key factors in the successful adoption of information technologies are human. In fact, technology itself is often specifically identified as not being a constraint. Deployment of information systems in developed countries can be complicated, and is easy to do poorly.

The diffusion of an invention can be looked at from two perspectives: 1) the demand perspective (i.e., the adopters); and/or 2) the supply perspective (i.e., the diffusion agencies). The *demand*

⁵ Antoun Moussa and Robert Schware. "Informatics in Africa: Lessons from World Bank Experience." World Development, Vol 20, No 12, 1992

perspective emphasizes the adoption behavior of individuals (i.e., their propensity to do things in new ways), and their ability to get information about innovations. Figure 1 is a break out of the typical adoption curve for a given population. The first two groups represent the portions of the population most likely to try out new ideas or new things. The third group, Late Adopters, contains the bulk of the population. They typically are slow to change their ways, and often require an agent of change to do so (for example, this is how marketers and extension agents justify their work). The fourth group, Laggards, are the people who will not try new things no matter what.



the success of the Initiative should be measured in part by the adoption rate (i.e., the percentage of the population regularly using the technology) in each country. In the absence of directly on-point empirical data, there is nevertheless every reason to expect that it will take a directed effort to get a large portion of the population in each country to adopt Internet. Aside from the kinds of psychological explanations that might be offered for expecting the bulk of the population to be late adopters, other arguments can be added including the costs involved, the absence of a history of information culture, the absence of

a strong tradition of information in decision-making, or the lack of skills. To overcome these obstacles to adoption, people will need to understand clearly the utility they will gain from using the technology. Therefore it will be critical to have a well thought out strategy for explaining the purpose and utility of the Internet.

IV. Supply Perspective: The supply side is comprised of diffusion agencies (e.g., the institutions and infrastructure that facilitate the diffusion process). The concern from the supply perspective is whether an entire population has an equal access to the innovation. Equal access might not be possible because diffusion agency methods of operation, adoption strategies, characteristics of relevant public and private infrastructure (e.g., delivery, information, transportation, or electricity). Thus, social, economic, and locational variance in the availability of the innovation are determinants of its rate of adoption. The adoption process can have a positive or negative impact (particularly, in the case of the later, it will be important for the Internet's information content to have a high "wit" value to promote broad based adoption, and not become circumscribed by a user base of elites). To the extent that diffusion is channeled by existing patterns of resource distribution, existing patterns of social and economic disparities will be intensified. This is sometimes referred to as non-diffusion. Thus, before introducing a potentially powerful tool like Internet, a developmentally sound strategy must be formulated that takes into account the personal attributes of potential adopters, information, and resources (which constitute the conditions for adoption).

"As a great social leveler, information technology ranks second only to death. It can raze cultural barriers, overwhelm economic inequalities, even compensate for intellectual disparities. High technology can put unequal human beings on an equal footing, and that makes it the most potent

democratizing tool ever devised⁶." A critical factor in the ability for the technology to be a leveler, a force for broad-based change, will be the targeting of applications under SO3, and the institutions and infrastructure that can be brought to bear on those applications.

It is envisioned that this kind of analysis and planning will be part of the work of the Template Teams. In the developed world, Internet is used as a tool that empowers individuals. One person, one computer, one modem, connected to every other individual through the Internet. The diffusion agencies would be those that promote awareness and training. This construct may be insufficient in the African context; adoption will be constrained by problems of literacy, poor computer skills, a limited local information base, limited exposure to the information culture, and limited personal and public infrastructure. It will be important in the African context, therefore, to look at the diffusion agencies as filling in some of those constraints. For example, it may not be possible to reach a broad base of the population under the one-person-one-computer template, but it may be possible to benefit a broad base through a shared facility structure (one-service-institution-one-computer). By working through an institution, that institution can mediate for low skill levels across the population, and at the same time, reducing the costs of providing and accessing the technology. More importantly, reducing out-of-pocket expenses on individual basis will greatly help.

It will be important to work closely with the institutions that will provide locally derived information. As discussed above, there are reasons to expect that locally derived information may propel the early benefits stream, but African institutions do not typically have a tradition of building and maintaining data bases for public consumption. It will be important to work with institutions to reverse that tradition, and perhaps even work at the policy level to put in place targeted policies promoting development of data bases and information sharing. This information can be housed in the community information center [see information kiosk section] What follows below are some ideas about the kinds of diffusion agency issues teams can expect to work through.

Service Providers/ Private Sector. In well over thirty African countries, there is, at least, one InterNet services provider. Often these providers have been offering reliable InterNet services, have been working with the PT&T, working with difficult phone lines, and without proper remuneration; yet they have made it work. As the InterNet services need reliable operators, the existing service providers are the most capable people to offer Internet services because they have experience in making Internet services sustainable in Africa. The operators will need to be trained in the new software such as UNIX; this should not be an inhibiting factor in utilizing their services as the knowledge they have gained over the years by providing service overrides the training aspect. In addition to technical training, a marketing course may be beneficial to the service providers because of the number of advanced uses of the Internet versus the present store and forward Internet services facilities.

Some operators feel that the Internet is a big opportunity if they are included in the process and will be able to be very successful 'selling' Internet related services. Other operators feel that it is risky proposition, and a few fear being driven out of business if not included in the "Internetizing" of Africa. A Tanzanian service provider writes "as a store-and-forward system we stand no chance of survival once the fast networks arrive, it should be noted that there are only few companies who can afford the high prices for quality services and are the ones already using Internet services, so once such a system (Internet) is in place, our dear customers will move away and we (service providers) will slide steadily (if not tumbling) into extinction."

⁶ Pitroda, Satyan. "Development, Democracy, and the Village Telephone," Harvard Business Review. Nov/Dec, 1993.

Government/ Post, Telegraph, & Telephone. Traditionally, many governments (and the PT&T as the representative body) control the access to communications and information. Liberalizing this policy has been slow in many countries. Additionally, governments have questioned the value of information. An Ethiopian Telecommunication expert wrote "The key element in Africa is to make governments understand the impact of the technology. I was in a meeting with the Vice Prime Minister and President's advisor. Their main question was what will networking cost us in terms of whole national input? Can one convince us that networking or (connectivity to the Internet) is a priority?" Governments will need to be consulted and worked with in the integration of the Internet. The government's adoption of the Internet can assist in several Ministries such as Education and Health. Governments can help in the Internet process by allowing competition to the state owned telephone monopoly which will allow rates to become affordable.

University. Universities in the United States helped lead the way in showing the importance and functionality of the Internet; for some people, there is the desire to replicate this in Africa. While universities are projected to be an important utilizer of the Internet, they can be beneficial in supporting Internet services through their facilities. At the same time, one must remember that there is often only one or two universities in the country, that they can be poorly equipped because of budgetary constraints, and in some cases, can be closed due to rioting of students or because the faculty was on strike.

Information Providers. Information is important and has a value. It will be important for indigenous information providers to make their services and knowledge available on the Internet for South - South and South - North information exchange. This knowledge should be placed in the information kiosk and made available globally, via the Internet. This process will further enhance development, knowledge, business, and to ensure Africa's role within the world community.

Staggered Pricing. As there are email service providers in at least thirty African countries, a section of the population is aware of communication facilities even if they aren't already connected. Several of those services offer affordable pricing structures such as ENDA's FidoNet service in Senegal which charge their clientele \$5 per month for service with free installation. There are some services which are prohibitively expensive to the majority of the populous such as in Burkina Faso where ORSTOM's RioNet service is close to \$500 for the commencement of service and training with an additional \$20 per month in user fees.

If costs escalate for the advanced features of the Internet (in the case of Senegal), or if there aren't affordable alternatives (in the case of Burkina Faso), potential users (e.g., students, PVOs, NGOs, traditional ethnic groups, the elderly, etc.) might not be able to afford the services. If a large percentage of the people cannot pay for Internet service, this will allow the 'information rich to get richer and the information poor to remain impoverished.' Staggered pricing, as well as building information kiosks, are two solutions to reduce this problem.

Information Kiosk. An information kiosk, also known as a community information center, is a place where individuals can go to gain access to personally relevant information through the Internet. At the kiosk, there can be a trained Internet librarian on hand to field requests. As many Africans people do not have a telephone line, own computers, or cannot afford accounts, an information kiosk would be a way to provide access to the Internet particularly for people without the necessary personal skills, infrastructure and/or resources to do so independently. Additionally, the Internet librarian could skillfully navigate the potentially confusing Internet to find information which might not be easy to find for novice researchers.

The information kiosk can be supported through the private sector, the government, or the NGO/

PVO community. They can also recoup costs by charging for its services as people recognize the value and importance of information. The institutions which utilize the service could also supply information on their activities, allowing for the dual stream of data flow.

WID. Women, traditionally, have not had equal access to computers, education, or upper level jobs. Yet, women often are the chief bread earners within the family. While the Internet will be liberating to many people, it will be important for women to be specially targeted to obtain Internet access and skills to empower their pivotal role within society.

Targeting Youth. Today's youth are tomorrow's future; in Africa this adage is true as several countries have half of their population under twenty years of age. The access to computers and information has, traditionally, been held by more senior 'elders.' If motivated youth are specially targeting for training and utilization of the Internet, they can become the early technology adopters and become the infocentric. This could be accomplished by establishing connectivity in high schools.

Last Mile. While the technical issues of last mile communications are discussed in the annex, one must address last mile social issues. Presently, seventy percent of the population in Africa does not have a telephone; there are more telephones in New York City than in all of Sub-Saharan Africa. As most of these telephones are concentrated in urban areas, the rural population have not had access to communications, thus would not have access to the Internet. If this remains unchecked, the urban dwellers will become the information elite while the rural dwellers, who might benefit from the most from access to communications and information, will remain information impoverished. Rural connectivity must be given the same priority as establishing as establishing the national gateway. With assistance through well targeted diffusion agencies , [see information kiosk section], they can reap the benefits from what the Internet has to offer.

V. CONCLUSION: From a diffusion perspective, the Leland Initiative is distinct in terms of proposing to use first line technology to overcome the most basic of problems (poor communications). Broad-based adoption of the technology will depend on an active effort to help beneficiaries understand the purpose and utility for the technology. The results created by adoption will depend on how well local institutions and infrastructure (including the information made available) can be mobilized to facilitate the pattern of adoption and use. Failure to adequately mobilize institutions and infrastructure will lead to a negative result of creating an 'information elite' that will exacerbate existing disparity problems. Certainly SO3 is structured to appropriately tackle the adoption issues. Therefore, this analysis finds that the design is feasible from a social soundness perspective provided the design includes the specific features discussed above.

ANNEX H

INITIAL ENVIRONMENTAL EXAMINATION
OR
CATEGORICAL EXCLUSION

PROGRAM/PROJECT DATA:

Program Number:

Project Number: 698-0565

Country/Region: AFRICA REGIONAL

Program/Project Title: LELAND INITIATIVE: AFRICA GII GATEWAY

Funding Begin: FY95 _____ Funding End: FY 99 _____ LOP Amount: \$ 15,000,000 _____

Sub-Activity Amount: \$ _____

IEE Prepared By: JAMES A. GRAHAM _____ Date: 8/18/95 _____

ENVIRONMENTAL ACTION RECOMMENDED: (Place X where applicable)

Categorical Exclusion: X _____ Negative Determination: _____

Positive Determination: _____ Deferral: _____

ADDITIONAL ELEMENTS: (Place X where applicable)

EMEMP: _____ CONDITIONS: _____ PVO/NGO: _____

SUMMARY OF FINDINGS:

The project purpose is to increase access of selected African counties to information on the Internet and other Global Information Infrastructure (GII) technologies which the Africans can use to promote sustainable development activities. As such, the primary activity will be information delivery and sharing as well as appropriate training. Physical hardware will fit into existing structures and have no impact on the environment, consequently, the activity fits the general application of Categorical Exclusions under 22CFR 216.2 (C) (1) (i).

APPROVAL OF ENVIRONMENTAL ACTION RECOMMENDED: (Type Name Under Signature Line)

CLEARANCE:
Mission Director:

Draft

Date: 9/25/95

CONCURRENCE:

Bureau Environmental
Officer:

John J. Gaudet

Date:

9/20/95

Approved:

Disapproved: _____

CLEARANCE:

General Counsel
(Africa Bureau)

DM

Date:

9/27/95

ANNEX J

Telematics Activity By Country

Country	Dial-up Service	Full Connectivity	Other	Purpose	Comments
West Africa					
Senegal	public			profit	
	donor				ORSTOM
		<i>Trade Point</i>		trade efficiency	in process
Mali	public			profit	
	donor				ORSTOM
	project/open (3)			various	
		<i>Trade Point; Leland requested</i>		trade efficiency	USAID sponsored
Niger	donor				ORSTOM
		public		market info	@ AGRHYMET - USAID sponsored
Ghana	public			profit	GHASTINET
	donor (2)			improved electronic communications	PADIS ORSTOM

	project/open (6)			various	
		<i>private; gateway in place</i>		profit	
Camer- oon	public			profit	
	donor				ORSTOM
Burkina	donor				ORSTOM
Sierra Leone	public			profit	
Guinea		<i>AfricaNet</i>		?profit	Lusophone networking
East Africa					
Eritrea		<i>Trade Point</i>		trade efficiency	
Ethiopia	donor (2)			improved ectronic communicatio n;research supports	regional/ PADIS & ORSTOM
	project/open (4)			various	
		<i>USAID interest expressed; Trade Point (2)</i>		ag/planning; trade efficiency	
Uganda	??? (some)			unknown	

		<i>Trade Point; USAID welcomes continued dialogue with Leland</i>		trade efficiency	
Kenya	private			profit	
	donor (2)			improved electronic communication; research support	PADIS ORSTOM
	project/open (7)			various	
		<i>closed (2)</i>	deep field (closed)	environmental ; emergency	UNEP; WFP (AFRINET)
		public; <i>Trade Point</i>		profit; trade efficiency	Compuserve
Tanzania	private			profit	
	donor (2)			improved electronic communication; research support	PADIS ORSTOM
	project/open (8)			various	
		<i>Trade Point; gateway</i>		trade efficiency; academics/business/ag/NGOs/ judiciary	USAID interest expressed in applications
Djibouti		<i>Trade Point</i>		trade efficiency	regional hub

Southern Africa					
Mozambique	public				@ university
		<i>USAID interest expressed in Leland; AfricaNet</i>		?profit	Lusophone networking
Madagascar	donor				ORSTOM
	project/open		deep field (VITA packet radio)	various	
		<i>USAID requesting Leland</i>		market info democracy	
Zimbabwe	donor			improved electronic communications	ORSTOM
	project/open (9)			various	
Zambia	donor			various	
		public		profit	
Namibia	public			?	
Malawi	donor			improved electronic communications	ORSTOM
	project/open (4)			various	

		private		profit	through Univ. of Zoma
Angola		<i>AfricaNet</i>		?profit	Lusophone networking

KEY:

italics : planned

Dial-up Service Entries: [public = private sector service provider]; [donor = donor operated]; [project = operated as project component]

private/public]
or] refers to access by general public
open/closed]

N.B. Activities not in table (need more geographical specificity).

1. UNDP's SIDSNet
2. UNESCO's RINAF - future plans for 5 regional and 10 national nodes
3. ORSTOM's RIONet - what is set of countries they currently operate in; plan 10 hubs for full IP.
4. Satelife - Kenya, Uganda, Tanzania, Zambia, Zimbabwe, Mozambique, Botswana, Malawi, Sudan, Ethiopia, Eritrea, Mali, Ghana, Burkina Faso, and Cameroon.
5. PADIS - what are all the countries now served

ANNEX L 1 AND 3 YEAR IMPLEMENTATION SCHEDULES

Leland Initiative: Africa GII Gateway

Year 1 Implementation Schedule

MONTH	ACTIVITIES
0	<ul style="list-style-type: none"> • Project authorization
1	<ul style="list-style-type: none"> • Constitute Steering Committee • Prepare Inter Agency Agreements • Obligate first year funds • Prepare SOW for assessment team • Select country assessment team • Consult Missions regarding participation • Identify 3 first year Phase A and 3 first year Phase B countries • Negotiate assessment schedules
2	<ul style="list-style-type: none"> • Conduct assessments in Phase A countries
3	<ul style="list-style-type: none"> • Preparation, review, and distribution of Phase A country action plans • Conduct assessments in Phase B countries
4	<ul style="list-style-type: none"> • Commence implementation of "A" country action plans • Preparation, review, and distribution of Phase B country action plans
5	<ul style="list-style-type: none"> • Commence implementation of "B" country action plans
9	<ul style="list-style-type: none"> • Consult Missions regarding participation • Identify Year 2 countries • Prepare SOW for assessment team • Select country assessment team • Negotiate assessment schedules
10	<ul style="list-style-type: none"> • System operational in "A" countries • Commence paying "A" countries operational costs • Conduct assessments Year 2 countries
11	<ul style="list-style-type: none"> • System operational in "B" countries • Commence paying "B" countries operational costs • Preparation, review, and distribution of Year 2 country action plans
12	<ul style="list-style-type: none"> • Commence implementation of Year 2 country action plans

Leland Initiative: Africa GII Gateway

Generic Country *

Monthly Objectives

MONTH	GENERAL ACTIONS & MILESTONES	SO1 POLICY	SO2 CONNECTIVITY	SO3 USERBASE
1	<ul style="list-style-type: none"> Consult Mission regarding participation Prepare SOW for assessment team Select country asses. team and negotiate implementation schedules 			
2	<ul style="list-style-type: none"> Conduct assessment 			
3	<ul style="list-style-type: none"> Preparation, review, and distribution of Country Action Plan 	<ul style="list-style-type: none"> Commence policy dialogue with PT&T and identify experts 	<ul style="list-style-type: none"> Prepare technical specs for hardware procurement Determine intl. connection type 	<ul style="list-style-type: none"> Define USAID project user base
4	<ul style="list-style-type: none"> Commence implementation of Country Action Plan 	<ul style="list-style-type: none"> PT&T agree for Internet support Technical assistance with the government for (re)allocation of radio spectrum for 1) intl. access provider to hub, and 2) hub to population centers Discuss with PT&T/sysops regarding operating restrictions (e.g., modem use, tariffs, etc.) 	<ul style="list-style-type: none"> Identify intl. telecom access provider Determine location for hub(s) Identify service provider(s) for training 	
5			<ul style="list-style-type: none"> MOU with service provider(s) Commence study of needs for Internet Society of Africa 	
6		<ul style="list-style-type: none"> MOU with government for allocation of radio spectrum MOU with government for policy change amendments (e.g., modem import., relaxed duties) 		

This table outlines the necessary steps to bring a single, "generic" country to full Internet connectivity, assuming that "nothing" is in place on the ground, e.g., established service providers, amenable PT&T, etc. If service providers, etc., are in place, the associated month can be moved forward, and resources can be saved. Some items might not be applicable to all countries.

MONTH	GENERAL ACTIONS & MILESTONES	SO1: POLICY	SO2: CONNECTIVITY	SO3: USERBASE
7			<ul style="list-style-type: none"> • Purchase hard/software • Ship hard/software and ensure customs clearance 	
8			<ul style="list-style-type: none"> • Install hard/software • Train system operators to use hard/software 	
9				<ul style="list-style-type: none"> • Marketing specialist work with service provider
10 *	<ul style="list-style-type: none"> • System operational * • Commence paying operational costs 			<ul style="list-style-type: none"> • Train and conduct workshops for users • Market Internet to USAID projects, university, NGO/ PVOs, health sector, etc. • Establish information kiosks • Train kiosk Inet. librarians
11	<ul style="list-style-type: none"> • 6 month evaluation 			
10 - 22		<ul style="list-style-type: none"> • Policy work with government, including "last mile" 	<ul style="list-style-type: none"> • Service a/o replace failed hard/software • Telecom work with government for "last mile" 	<ul style="list-style-type: none"> • Expand user base
22	<ul style="list-style-type: none"> • 1st year evaluation • Decrease operating support to 60% 			
24	<ul style="list-style-type: none"> • Review last mile results 			
22 - 34		<ul style="list-style-type: none"> • Work on telecom Internet policy 	<ul style="list-style-type: none"> • Service a/o replace failed hard/software 	<ul style="list-style-type: none"> • Expand user base
34	<ul style="list-style-type: none"> • 2nd year evaluation • Decrease operating support to 30% 			
34 - 46		<ul style="list-style-type: none"> • Work on telecom Internet policy 	<ul style="list-style-type: none"> • Service a/o replace failed hard/software 	<ul style="list-style-type: none"> • Expand user base
46	<ul style="list-style-type: none"> • 3rd year evaluation • Cease operating support 			

* It was noted that there are divergent interests for AID and non-AID projects with respect, in particular, to the user base in SO3. While this is true, the reader is asked to keep in mind that both AID and non-AID users are necessary for the sustainability of the project; both AID and non-AID projects include some of the same essential actors (i.e., service provider, Mission Officers); and, both AID and non-AID responsibilities occur concurrently in the process of bringing the Internet to a country.