UNITED NATIONS DEVELOPMENT PROGRAMME

PREPARATORY ASSISTANCE DOCUMENT

Title: Non-Commercial Data Communication Network

Number: RLA/88/031/A/01/31

Proposed starting date of preparatory assistance: May 1989

Duration of preparatory assistance: 4 months

ACC Classification: 1600 Science and Technology

Subsector: 1620 Development and application of computer technology

Government implementing agency:

Executing agency: OPS - Office for Project Services

UNDP inputs: US$ 52.361

Approved: _____ Date: _____

on behalf of the
United Nations Development Programme

I. Background

The most serious problems facing the world today are substantially different in scope and character from any that have faced the world before. They are shaped by the increasing ecological and economic interdependence spawned by a century of tremendous technological change. Problems such as the proliferation of nuclear weapons, imbalanced resource use leading to hunger and poverty, and the destruction of ozone are so large and have such geographically dispersed effects as to prohibit effective solutions on a local or even national scale. As a result, global cooperation and communication are essential to forging solutions to these problems.

Acting alone, individual organizations do not have the power or influence to solve these broad and pressing problems. Cooperative efforts, involving large numbers of people, throughout the world are needed.
Communication is intrinsic to cooperative effort, and communication technologies available today, properly supported, can greatly speed and enhance these efforts.

Electronic mail, computer conferences, and databases are proving to be essential in communications and collaboration. The telecommunications field has grown dramatically in the last decade, driven largely by the needs of large corporations. In this period, several academic computer networks have sprung up, which have helped build communications links between professors and students around the U.S. and in other countries. More recently, systems have been built specifically to aid non-profit corporations, so organizations working on development and environmental issues have been able to take advantage of these powerful tools.

Unfortunately, none of these initiatives currently provides reasonably priced access to the wide range of organizations working on global issues around the world. While telecommunications systems like Telenet and Tymenet are available in more than 70 countries and do permit access to electronic mail, computer conferencing and database searching, these networks are typically very expensive, particularly for nations in the southern hemisphere. The major US, European and Asian academic networks typically rely on proprietary technology and are limited to major academic institutions and may be used only by academics. Highly distributed and low cost networks such as FidoNet tend to be unreliable and lacking in features essential to group work.

This project is strictly related with other national project that are supporting the establishment of computer communication networks in the region, as the project BRA\88\014. The purpose of these networks is to provide channels for better cooperation and information sharing between academicians, NGOs and developmental organizations throughout Latin America. Through interconnections with similar networks existing in the

United States, Canada and Europe, and underway in S.E. Asia, India, Scandinavia and Australia, these systems will permit worldwide communication and collaboration between a variety of organizations working on global problems. The networks are maintained and operated by independent non-profit organizations. This architecture of national networks interconnected internationally serves as the model for an international expansion of services. The design is intended to provide a relatively sophisticated and reliable computer communications system on a distributed basis, permitting low cost and locally tailored service.

The initial reaction from users of the systems in Latin America indicates tremendous excitement for the potential of the technology in linking educators, scientists, journalists and grassroots organizations throughout the region and the world. Significant obstacles remain, however. If the system is be widely available to small organizations in locations that are not well served by public data networks or even telephone service, several technical refinements and, in same case, technologically appropriate and creative solutions are necessary.

This project seeks to build on the progress made in the creation of these networks by extending access to the technology to other Latin American countries. The first step of this process is to demonstrate and continue to test the technology in more locations. To accomplish this, will be developed a highly portable version of the system used to provide electronic mail and computer conferencing and transporting this system to at least three Latin American countries that are currently underserved by international data transmission networks for rigorous testing and demonstration to potential participants and collaborants in a permanent system through the appropriate transfer of technology and training. To further enhance the cost effectiveness of this system, is also proposed the optimization of the methods of bulk data transfer between networks and to continue to research methods for cost reduction in the operation of the networks.

The existence of locally-based computer communications facilities in Brazil and Nicaragua integrated with networks in the northern hemisphere is an important step forward. To make the systems widely available, systems need to be installed in many more locations. To accomplish this, not only are technical enhancements to the system necessary but also the support of local institutions and NGO's must be enlisted.

As preparation to making this electronic mail, conferencing and database system more widely available throughout Latin America, a small portable version of the EcoNet/PeaceNet system we be created. This system will be used to conduct technical tests and demonstrations in three Latin American countries. The demonstrations will not only introduce local institutions to the technology and develop relationships necessary to the establishment

of permanent facilities, but will also allow testing of the system on-site. These demonstration/testing visits will be conducted in locations that are not adequately served by international packet-switching networks, and thus will provide a rigorous environment for examining the ability of the system to provide service in developing countries.

In addition to developing a portable system, we will begin technical work to optimize the transfer of data between nodes of the network. Development of bulk mailing and compression methods is necessary to reduce telecommunication costs as the volume and frequency of exchanges between networks increases.

Portable System

The UNIX-based software and super-micro computer hardware configuration presently used will be converted to run on a more portable computer system, using either Compaq or Toshiba equipment. In a first stage this system will be used to both demonstrate and test the technology in three site visits to Latin American countries. We will define the three locations during the course of the project from the following list of candidate countries:

Bolivia
Colombia
Ecuador
Haiti
Peru

The site visits will serve several purposes. They will allow field tests of the technology in countries that are poorly served by existing international data transmission systems. They will serve as demonstrations to local governments, educational institutions, international development organizations and NGO's of the application of this technology for international and local cooperation and communication. They will permit a thorough consideration of the legal, financial, technical and institutional constraints to the establishment of a permanent network at the location.

Telecommunications costs.

Depending on the sites being linked, the volume of material being transferred and the frequency of transfer, the expenses for telephone or X.25 data connections can become substantial. Research and experimentation in designing bulk transfer and data compression methods, identification of alternate channels of communication like use of new satellites, corporate networks and radio-packet systems as well as research into alternative methods of inter-network data transfer,

including geo-stationary and low-earth orbit satellites is required to keep the costs of this technology at a minimum.

II. OBJECTIVES, OUTPUTS AND ACTIVITIES OF THIS PREPARATORY ASSISTANCE:

II.1 - Immediate Objectives

II.1.1 Analysis of telecommunications costs and technological alternatives

II.1.2 Design test an implementation of "portable systems"

II.2 - Outputs

Outputs of this preparatory assistance will be

-A full-scale project document suitable for submission to UNDP.

-A feasibility study that will answer the following questions:

* ~~Is~~ technology appropriate to the local situation?
* What support structures are necessary to make the technology useful to academics & NGO's?
* What is the feasibility of a stand-alone system with remote UNIX administration?
* Are there local organizations willing and capable of operating a permanent system?
* Is it cost effective?
* Are government regulations ~~the most~~ adequate?
* How much can inter-network costs be reduced, and how does this affect the economics of operating a node?

-Counterparts for each participating country properly identified.

Preparatory Assistance Activities

* Develop Portable system.
* Develop working relationships with local educators, government agencies, international organizations and NGO's as supporters & users of the systems.
* Optimize inter-node data transfer. Define packet radio & ~~LEO~~ satellites potential and availability.
* Visit to 3 Latin American countries for test/demonstration.

WORKPLAN:

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Planning & Coord. w/partners	+----------+----------+			
Technical work	+----------+----------+			
Travel			-----+---------- +	
Project Assessment				+---

III. - Inputs to be provided by UNDP:

	Rate	Months	TOTAL
11.00 Personnel			
2 Technical Consultants			
	$2,500	2	$10,000
1 Coordinator			
	$2,100	3.25	$ 6,825
16.00 Travel			
3 country visits			
			$ 9,000
42.00 Equipment			
1 Computer System			
			$15,000
45 Modems			
			$ 6,300
51.00 Misc			
			$ 5,236
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TOTAL			$52,361