

A.I.D.  
OFFICE OF INFORMATION  
RESOURCES MANAGEMENT

INFORMATION TECHNOLOGY TRANSFER  
MARKETING INTERNET SERVICES IN NIGER  
THREE-YEAR BUSINESS DEVELOPMENT PLAN



**CONSULTING & INFORMATION SERVICES  
PROJECT SUPPORT GROUP**

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JEFFREY A. COCHRANE  
JUNE 1995

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## **THREE-YEAR BUSINESS DEVELOPMENT PLAN**

**Prepared for the United States Agency for International Development, Division of  
Information Resource Management, Consulting and Information Services**

**USAID PROJECT (969-0100)**

**INFORMATION TECHNOLOGY TRANSFER**

**MARKETING INTERNET SERVICES IN NIGER**

Jeffrey A. Cochrane

Issaka Idrissa-Mossi

June 9, 1995

### **INTRODUCTION**

*In the event the contractor concludes sufficient demand exists to support full Internet services, the contractor will submit a three year business development plan for marketing, management and pricing of Internet services in-country... (from the USAID Scope of Work)*

A business development plan is normally constructed from the perspective of the firm or agency that will implement it. It is a guide to that firm or agency that outlines in general terms what steps are required to implement and promote an enterprise.

A business development plan for the Niger case involves two principal operations: a satellite earth station for the international link to the Internet, and a "hub" to provide Internet access to end users. Hence a plan should properly account for services to be delivered by whatever organization or organizations manage these two facilities.

Although there is no small amount of confusion about this issue in Niger (see the "Trip Report"), two organizational configurations are presently being considered. Under one configuration, a private-sector firm would administer both the earth station and hub in a facility provided by AGRHYMET. In the other, the private-sector firm would administer only the hub, while the national telecommunications company, STIN, would manage the earth station, with both operations undertaken in AGRHYMET facilities. This business development plan therefore reflects these two possibilities.

This report was submitted in draft form to staff at USAID/IRM/CIS. Based on their comments, greater detail was provided in the descriptions of scenarios for the income statements in the section below entitled "Access Pricing Strategy and Three-Year Income Statements". Staff also asked that additional scenarios be treated. These requests are incorporated. Note that for logistical reasons, it was not possible for Mr. Idrissa to review late revisions to the text.

## REGULATORY AND BUREAUCRATIC HURDLES

The essential problem has to do both with revenue and control. Telecommunications companies (not only in Africa) are accustomed to monopoly control of telephone and similar services. Even in the USA until recent years there was a private but nonetheless monopoly corporation in charge of telecommunications.

In principle, STIN/OPT (Société des Télécommunications Internationales du Niger, and Office des Postes et Télécommunications) was willing to grant permission to individuals and agencies to seek access to telecommunications independent of STIN/OPT for the private use of those individuals and agencies. Also in principle, STIN/OPT was willing to grant permission to an agency (e.g. ORSTOM with its RIO network) to resell telecommunications services so long as, ultimately, the international link was managed by STIN/OPT. Opposition by STIN/OPT focused on the development of a Niger telecommunications network that did not implicate STIN/OPT in the management of the international link.

Interestingly, a similar situation apparently has arisen in Sierra Leone. Sources report that the MobiTel company would like to establish a mobile telephone network in Freetown, but insists that it manage its own international connection. MobiTel is presumably willing to pay a license fee for the privilege. SierraTel, the national telecommunications monopoly, is said to be insisting that the connection pass through its earth station. At present there appears to be a standoff. Conversations with a private telecommunications entrepreneur in Ghana revealed that MobiTel did apparently secure an agreement permitting it an independent international link there.

Elimination of the telecommunications monopoly in any country necessarily entails a shift in revenue. In the USA, liberalization of telecommunications entailed the division of an existing market among several firms. One large firm that lost control of an aspect of its business was also able to shed the costs of that aspect of its business, which in the long run led to efficiencies and higher profits.

In Niger, the operation of an earth station and hub by a private firm represents a break in STIN/OPT's monopoly with few apparent direct advantages for STIN/OPT itself. Indeed, an Internet network would almost certainly reduce revenues STIN/OPT presently receives from its NigerPac X.25 data network. To the extent that STIN/OPT is managed as an independent enterprise, this represents a threat to its bottom line.

To the extent that such an arrangement might be beneficial for the country as a whole, this must inevitably be discussed at a level where broader national interests are taken into account. In any event, before any investment in equipment takes place, it would be prudent to clarify what will and will not be permitted by telecommunications authorities in Niger.

## POTENTIAL CUSTOMERS, ACCESS NEEDS, AND INTEREST

The research team identified 108 likely candidates for Internet access. These are firms and organizations with existing data communications needs, typically already in possession of a fax machine, a computer, and telephone service. Many already have well-defined needs for Internet access, while others are likely candidates based on an assessment by the research team of how well their operations might be served by Internet access.

A sample of these likely candidates was interviewed by the research team. The sample provides an indication of the likely demand within the various categories of consumers. Brief summaries of the interviews follow. For each where appropriate, suggestions as to potential services are designed to suggest directions for tailored marketing campaigns.

### STATE PUBLIC SERVICES

#### **Présidence de la République**

Abdou ILLIA, Directeur Adjoint du Cabinet

Boukari TARI, Secrétaire Particulier du Président

Hadi MAHAMANE, Attaché de Presse

Expected level of connection: Dial-up

Level of interest:

The office presently sends 30 to 50 pages minimum fax per month internationally at \$5 per page, hence roughly \$200 per month, and spends even more on voice calls than fax. Communications within Niamey are often by courier, a process that would be greatly facilitated by a national network. The network would be used to disseminate public announcements and proclamations. An FTP server would maintain the official journal of decrees and laws.

The press attaché presently maintains news subscriptions with ATP (Agence Transcontinentale de Presse) and AFP (Agence France Presse) at a reported cost of roughly \$4500 per month. (That this rather extraordinary amount is actually paid should be verified.) These subscriptions could be replaced wholly or in part by newsgroups and access to online newsgroup searches. Press releases can be posted on a public server and transmitted directly to press agencies and embassies, abroad or nationally.

A marketer should develop a list of online news resources, methods of access, and costs for use in a demonstration. A directory of online addresses **within** Niamey should be compiled and updated periodically to provide users such as the Présidence with an understanding of domestic messaging potential.

**SNIS (Ministère de la Santé)**

Dr Albert E. HENN, Directeur du Projet  
Ibrahim KOMBLO, Chef de Sce Info & Stat. Sanit  
B.P. 11 461 Niamey  
Bur. 227-723503  
Rés. (Henn) 227-752458  
Fax 227-733569

Expected level of connection: Dedicated low-speed (19,2) line, or dial-up

Level of interest:

With essentially project funding this government ministry has some 50 computers and an expressed interest in bibliographic research and ongoing training. In addition to messaging for which it presently spends perhaps \$150 per month, staff express an interest in access to major medical databases (e.g. the CDC in Atlanta).

The computer center director expressed some frustration at not having easy access to technical support for unexpected questions, and would thus greatly benefit from the presence in Niamey of a resource or help center. Training for this director would permit him then to disseminate his practical knowledge of Internet resources to a wide variety of users within his organization. He would likely benefit from short courses held periodically at INRAN. Access to reference materials and a software help desk at INRAN would also be highly beneficial.

He has recently received a copy of Intermail Fidonet software, but requires assistance in installation and configuration. Such assistance will likely be provided informally by a knowledgeable local USAID employee, Mr. Jeff Marzilli. Mr. Marzilli earlier provided assistance in the installation of comparable software at another SNIS office.

The marketer may wish to prepare a demonstration of relevant online resources, but it seems likely that with project funding this agency will require little convincing to secure a dial-up subscription. A subsequent user seminar for effective networking applications is advisable to assure this particular user becomes productively dependent upon network access, and hence maintains the subscription if at some point project funding ceases.

## OTHER STATE PUBLIC SERVICES

### **Direction Générale de la Police**

Oumarou Souley, Directeur Général Adjoint

Expected level of connection: Dial-up

Level of interest:

Presently sends faxes to Interpol in Europe on a regular basis, an expense that might be reallocated to Internet service, though concern was expressed about the security of communications. Also communicates with remote posts by radio where there is no telephone access, which is an unlikely candidate for Internet service. Interest was expressed in participation in law enforcement discussion forums, but concern was expressed about costs.

The marketer should compile a list of relevant French-language discussion groups, as well as correspondent email addresses, nationally and internationally. A subscription here will be a hard sell, and is more likely to come about once many other domestic offices are online.

## PUBLIC ENTERPRISES AND ESTABLISHMENTS

### **Université de Niamey**

Pr YENIKOYE, Recteur de l'Université

Abdoulkader GALY A., Enseignant Chercheur

B.P. 11352 Niamey

Harouna B. MAIGA, Enseignant Chercheur

B.P. 10662 Niamey

Expected level of connection: Dial-up

Level of interest:

Spends on average \$400 per month on telephone charges from the Recteur's office alone, plus \$600 per month fax from the same office, but there are an additional 6 faculties and 3 institutes, each with separately maintained and billed telephone and fax. The Recteur's office has a 486 PC running Windows with a laser printer.

Interested in better participation in the Centre CIFFAD (Consortium International Francophone de Formation a Distance), which could be facilitated with student Internet access or access by a central repository in Niamey for the distribution of student materials. Were expecting some kind of electronic network connection, but not yet online.

A center for data processing and analysis is envisioned, using a central computing facility. This could form the basis for an Internet resource center. Galy and Maiga are responsible for this center, which presently has several PCs used for word processing and some data analysis, housed in a room with space for perhaps 30 additional workstations. There is also a second room for which funding has apparently been received from UNESCO to make structural changes for a more extensive center.

With sufficient funding, the usual array of university computing and Internet access is expected. While the various parties indicate there is presently no funding, a rearrangement of priorities and a reduction in spending on other telecommunications technologies (fax, telephone)

could make significant funds available. Note that the university has inquired with ORSTOM/RIO about an account, but has not found the funds (perhaps \$200 per month) to open and maintain the account.

A subscription here is most likely to come about as a result of USAID or project funding. However the marketer should seize the opportunity to familiarize staff with relevant applications so that sufficient productive dependency is created to motivate a reallocation of university resources. Should project funds become unavailable in the future, funds presently spent on lower priorities (fax, international telephone) would then become available to support the network subscription. USAID and other donors ought to consider creative funding arrangements that provide incentives for budget reallocation, rather than funding simply to add a network connection on top of existing telecommunications services.

**CCAIAN (Chambre de Commerce, d'Agriculture, d'Industrie et d'Artisanat du Niger)**

Abdoulaye DJADAH, Secrétaire Général

B.P. 209 Niamey

Bur. 227-733563/735155/732210

Fax 227-734668

Expected level of connection: Dial-up

Level of interest:

The Chamber seeks to fill the usual role of similar organizations in other countries, namely to facilitate business activities. It maintains databases that might be of use to Niger enterprises, though availability and access may be a problem presently. It has recently received equipment from USAID and other organizations, presently using them for word processing and limited internal accounting. Staff indicate that English-language software has created some difficulty for implementation of desired programs with the business community.

There are 4 telephone lines plus 1 dedicated fax line. Expenditures on telecommunications average about \$120 per month. Revenues for a tight budget come 30% from enterprises and 70% from a customs levy.

The director expressed keen interest in network development that might be used to facilitate communications between the chamber and the business community. In particular, he expressed interest in a trade point as proposed by UNCTAD, with the chamber providing the facility.

The Chamber receives project funding that might be allocated to a subscription. The subscription will be cemented if the marketer can assist the Chamber in using the Internet to service the Chamber's business clients. Development of an online business database, perhaps with the assistance of a Small Enterprise Development PCV, would encourage businesses themselves to subscribe or to take advantage of a business resource center or "trade point".

**Agence Nigérienne de Presse**

Souleymane ANZA, Directeur Général

Arimi SADDI, Directeur Technique

Expected level of connection: Dial-up

Level of interest:

The agency claims to have a LAN (the team did not actually inspect the equipment), and has an interest in participating in West African programs to disseminate and receive news. It has approached ORSTOM/RIO but was denied access because it is not strictly a research or educational organization. It further claims to have a satellite downlink from Agence France Presse, and distributes news to clients within Niger via teletype.

This organization is a strong candidate for network participation. Likely services include a gopher database for distribution of news, and online searches of newsgrids such as that maintained by Compuserve for news relevant to Niger.

The marketer should develop a set of products for ANP to assist it in servicing its clients online. ANP can likely recover the costs of its subscription to the network by charging a fee for access to its online data. The marketer should provide the necessary configuration assistance to make this access-for-fee arrangement possible. ANP might also resell Niger news that it sifts from Compuserve newsgrids and elsewhere. The marketer should explore possible licensing arrangements with the news services carried in these newsgrids. An arrangement with the InterPress Service through the Association for Progressive Communications would be ideal. ANP might also prepare a Niger News Bulletin distributed internationally by email, with costs paid by advertisers (e.g. with a "Land for Sale" or "Stay at the Sofitel" advertisement between each news story).

**INRAN**

Dr GOURO S.A., Directeur Général

B.P. 429 Niamey, Bur. 227-723434, Fax 227-722144

Moussa OUMAROU, Chercheur, Dpt Stat. & Info

Dadé HAYA, Responsable Sce Informatique

B.P. 429 Niamey, Bur. 227-733071, Fax 227-723434

Expected level of connection: Dedicated line (19,2 twisted pair) and dial-up

Level of interest:

Staff are keenly interested, but have funds only through external donor projects. INRAN is a national agricultural research institution. Administrative offices are located near central Niamey, while one of several research facilities is located on the southeast edge of the city. This nearby "CERRA" in Niamey has a small climate-controlled computing facility with power backups and three desktops, and space for perhaps 20 more. Counting equipment in private offices, there are 13 computers total reported to be in good condition. A grant of some 30 additional high-speed desktops has been awarded by the World Bank.

There is a programmer with competence in sophisticated statistical software, Mr Haya, on the CERRA Niamey staff. The CERRA also houses a medium-sized air-conditioned library with reading tables and a small book and magazine collection. In the library is a computer workstation used presently for word processing.

USAID/Niamey has an ongoing program of support for INRAN. Apart from likely funding from USAID, ICRISAT has expressed strong interest in collaborative research endeavors with INRAN. INRAN has physical facilities suitable for an Internet resource center that could be linked via dedicated line to the Internet hub. The computer room could easily be adapted for hands-on classroom instruction. It might further serve as an access point for the general public, especially the computerless public, which would pay hourly access charges during specified hours. The library could easily be adapted as an Internet help center stocked with recent publications and magazines. The librarian could receive and process requests for specific information accessible via the Internet, such as queries by students. Collaboration between librarians at INRAN and ICRISAT might prove fruitful.

The work of research staff at INRAN would be greatly enhanced by links to the Internet. Research staff at the administrative headquarters facility could be linked via dial-up connection either to the CERRA LAN or directly to the national hub facility. Regular messaging between researchers at INRAN, AGRHYMET, and ICRISAT would permit collaboration and dissemination of research results.

#### **STIN**

Moussa MOUNKAILA, Directeur Technique  
 Tahirou AYOUNGA, Directeur d'Expl. & Aff. Cciale  
 Moukaïla TCHIRGNI, Chef de Div. Transmission  
 Saadou SALOKE, Chef du Centre NIGERPAC  
 Société des Télécommunications Internationales du Niger (STIN)  
 B.P. 208 Niamey  
 Bur 227-734870  
 Télex 5208 NI  
 Fax 227-722478  
 Sani ADAMOU, Chef de la Station de Karma  
 Issa MOUSSA, Adjt du Chef de la Station Karma  
 B.P. 11610 Niamey  
 Télex 975 5322  
 Standard 227-735208  
 Bur. 227-734353  
 Expected level of connection: Dedicated high-speed line  
 Level of interest:

STIN/OPT is of course a provider of telecommunications services, but also a likely consumer. It is likely that STIN/OPT staff will want to gain expertise in various Internet technologies as fast as possible, since the provision of Internet line access will undoubtedly constitute an important component of its operations in years to come. It may be that STIN/OPT will request access without charge.

#### **Office National du Tourisme**

Rabiou Daouda, Directeur Général  
 B.P. 612 Niamey

Bur. 227-732807/732447

Rés. 227-741068

Fax 227-723347 (Hôtel Gaweye)

Télex 5467 NI

Expected level of connection: Dial-up

Level of interest:

The office has no computers, but has an occasional relationship with the Hotel Sofitel Gaweye for collaborative efforts. It assists with conferences, using the Gaweye fax facilities.

The director seemed quite interested in the possibility of managing a Niger tourism home page as a marketing tool. See the related discussion under Hotel Gaweye.

## **PRIVATE ENTERPRISES AND ESTABLISHMENTS**

### **BIAO**

Harou OUMAROU, Responsable Centre Informatique

B.P. 10350 Niamey

Bur. 227-733859/732706/732707

Rés. 227-741280

Télex AFRBK 5215 NI

Expected level of connection: Dedicated line to LAN

Level of interest:

BIAO presently sends on average 50 X.25-2-fax/telex messages per day using CalvaCom system provided by a French company through its local agent, the Tout-Elec company. This is a store-and-forward mailer system, similar to Fidonet. This messaging service could likely be switched to the Internet. The bank further sends a large number of ordinary national and international fax. Contacts should be initiated with BIAO correspondents, which might enhance interest in establishing electronic mail service.

BIAO runs a daily X.25 "MiniTel" session to verify all bank transactions, which for security reasons may not be a good candidate for Internet service. The possibility of FTP encrypted data transfer for BIAO's accounts transactions bookkeeping should be explored. It may be that BIAO in France already has a facility for handling such transactions via the Internet, or would be interested in establishing new service.

The bank operates 97 PC workstations on a Novell/Ethernet. Most machines are 486 running DOS and Windows, with 6 private phone lines, 6 switchboard phone lines, 2 dedicated fax lines, a dedicated X.25 line to CalvaCom, and a dedicated X.25 line for Minitel. An earlier X.25 software Misitexte apparently acquired directly from STIN has been discontinued as not user-friendly. They are now phasing out an older Bull proprietary (CSL-A/B) mainframe system with 70 terminals, plans to perhaps donate old equipment to a school or university.

There are four branches of BIAO in the interior towns of Niger. BIAO is presently exploring whether extending X.25 links to them would be cost-effective, or if it would be preferable to use ordinary modem systems over telephone lines. These would be excellent candidates for Internet transmission. The marketer should meet with BIAO computing staff and

management to develop useful products to service not only its branches but also a potential online customer base. In the event that USAID proceeds to assist INRAN in linking its provincial research stations via microwave, this might facilitate provision of Internet services to other users in the Niger interior, including BIAO.

**Bull Niger**

Amadou A. KOUNOU, Directeur  
Chaïbou GARBA, Ingénieur de Maintenance  
Ave. Général de Gaulle  
B.P. 12013 Niamey  
Bur. 227-722819/723765  
Fax 227-733830

Expected level of connection: Dedicated line (19,2 twisted pair)

Level of interest:

As a leading supplier of computers and peripherals in Niamey, this is a likely candidate for an Internet connection. Likely uses include communications with clients, and advertising. It might also use the Internet to obtain information on contract bids. Bull presently communicates with its home office in France using a store-and-forward mail system. Such mail could either be transferred or gated to the Internet.

Present expenditures on telecommunications (fax and phone) may reach as high as \$2,000 per month. For business use, the company maintains several computers and has three telephone lines, one dedicated to fax. Staff have competence in LAN installation and Novell netware, as well as UNIX operating systems.

The marketer should take advantage of this firm's position as a supplier of modems and other equipment. These products could be advertised in a home page using scanned photographs. The marketer should insure that companies such as this are prepared to service retail consumers of Internet services with equipment and onsite repairs and technical support.

**ENTRELEC**

Daouda OUMAROU, Directeur Général

B.P. 10830 Niamey

Bur. 227-734503

Rés. 227-734692

Fax 227-733283

Télex 5460 NI

Expected level of connection: Dial-up

Level of interest:

Operates a small computer services business in collaboration as subcontractor with other firms in Niamey, selling UPS systems and installing LAN wiring among other things. It is likely this firm will want access to the Internet for local communications, especially if competitors and contractors are also online. The firm might further wish to advertise its own services, perhaps on a home page.

The marketer should assist this firm in online advertising of its products, and cultivate a collaborative relationship for the provision of related services to Internet consumers.

**TOUTELEC**

Guy CARLIER, Directeur Général Adjoint

B.P. 12755 Niamey

Bur. 227-740115/740446

Fax 227-740784

Expected level of connection: Dial-up

Level of interest:

This company is a computer equipment and peripherals supplier, and provides equipment installation, after-sales service, and custom training for end users. It began operations in electrical equipment supply and installation in the early 80s, branching into computer sales and service in the late 80s. It is a publicly held company, with a nominal Nigerien director, and a French deputy director in effective charge of operations.

ToutElec is also an authorized agent for the CalvaCom service, a French-based store-and-forward messaging system operating over the NigerPac X.25 network linked to TransPac in France. It facilitated access by BIAO, which uses the CalvaCom system.

Like Bull, as a leading supplier of computers and peripherals in Niamey, this company is a likely candidate for an Internet connection. Likely uses include communications with clients and advertising. It might also have interest in obtaining information relevant to contract bids, and communications with its suppliers, primarily in France. The company also has a training classroom, and might be called upon for its expertise in computer instruction.

The marketer should assist this firm in online advertising of its training and product lines. This firm might also provide contractual short courses and customer onsite training, perhaps in conjunction with or using the facilities of INRAN.

**Hôtel Sofitel GAWEYE**

Michel LECERF, Directeur Général

Place Kennedy, B.P. 11008 Niamey

Bur. 227-723400/722710

Télex 5367

Fax 227-723347

Expected level of connection: Dial-up

Level of interest:

The director expressed initial skepticism, but after discussion said he looked forward to a demonstration once infrastructure is in place. Access to a help center for online demonstrations as is proposed at INRAN, or access to a dial-up demonstration as might be performed by a private-sector marketer in the hotel office, will prove important.

Possible uses discussed included a collaborative tourism home page with the National Tourism Office, online or downloaded newspapers for guests, messaging for guests, and collaborative information services with other firms in Niamey. The possibility of online reservations and hotel information for remote users prior to arrival in Niamey also sparked interest.

This customer will require a sophisticated home page integrated with messaging. A demonstration should be developed to show, for example, how a remote user clicks on a reservation form, or how news from the Agence Nigérienne de Presse can be distributed to guests. The marketer might also consider working through the Gaweeye Business Center, perhaps developing workstations for hotel guest accounts, a poste restante, terminals for access to information on tours and restaurants, and other services.

**Ets HIMA SOULEY & FILS**

Hima SOULEY, Directeur Général

B.P. 10322 Niamey

Bur. 734111

Fax 734694

Expected level of connection: Help center or trade point occasional use, or dial-up

Level of interest:

The proprietor expressed no great need for trade or international data, though he might benefit from greater familiarity with the technical capabilities of an Internet system. He expressed concern about costs, and a keen desire to see an actual demonstration once infrastructure is in place.

He uses no computers in the operations of his business, one of the largest commercial enterprises in Niger. He does have an older laptop for personal use. The company sends perhaps one or two faxes internationally per day. Total telecommunications expenditures comes to perhaps \$1000 per month, mostly in voice calls to suppliers. These are a likely candidate for Internet services.

The marketer should seek to determine this firm's correspondents to determine if they are online or if they could easily get online. The marketer should also explore Niamey messaging for this firm's customers who might then place product orders online. The firm might also place

online advertising and price lists at the distribution of its customers.

## ORGANIZATIONS AND INTERNATIONAL INSTITUTIONS

### Centre AGRHYMET

George OLIVIERA, Directeur Général

A. STANCIOFF, Assistant Tech. Principal/ WMO

Paul CARTIER, Technicien Télécom

A. Moumine Zirkaleni, Responsable Administratif & Financier

Moulaye M. Omar, Ingenieur Système, Administrateur des Systèmes Informatiques & Télécommunications

Xavier Girard, Projet Suivi des Cultures

Antoine Pagnoux, Projet Suivi des Cultures

Issoufou TIEMOKO, Documentaliste

B.P. 11011 Niamey

Bur. 227-733116/732436/755742

Fax 227-732435

Email AGRHYMET@his.com

Télex 5448 NI

Expected level of connection: Dedicated high-speed line (64)

Level of interest:

AGRHYMET staff, especially American senior USAID consultant Andrew Stancioff, have been instrumental in promoting the idea of a joint Internet access endeavor in Niger. Mr. Stancioff has been an integral player in various consultant missions and discussions with USAID to organize studies and facilitate planning for system installation.

The center receives, processes, and reports on large quantities of satellite meteorological data, particularly from May to October (the rainy season), monitoring drought and pest conditions across the Sahel. Reports are disseminated in the form of periodic bulletins and as high-quality maps.

Bulletins of roughly 10KB in size are distributed to 9 other affiliated centers in Africa, typically every 10 days, for a total volume of perhaps 100KB per month. A larger monthly bulletin is also anticipated, which might involve an additional 200KB per month. The present plan is to distribute these by INMARSAT at a cost of \$19 per minute, though negotiations for a volume discount are expected. Total cost for these products alone would likely average between \$250 and \$500 per month using a store-and-forward (Fidonet) mailer over the INMARSAT link, including an allowance for bad connects. 300KB at 9600bps would ordinarily require roughly 10 minutes or less to transmit once a good connection is established.

Note that the cost of comparable Fidonet service over ordinary telephone would cost \$3 per minute, and has proved to be reliable to and from Niger, as well as to and from most if not all the other countries with which AGRHYMET wishes to communicate. See the discussion under FEWS. Discussions with AGRHYMET staff did not clarify why an investment in INMARSAT was deemed necessary.

The center would like to make its maps available via the Internet. These are presently distributed on tape or disk. The US Geological Service is one consumer. The center presently generates some \$120,000 in annual (?) income from product sales, though in addition to maps this figure includes training courses. Its annual report might be 50KB. Country and regional maps vary in size from 100KB to 2MB. One regional product may be as large as 64MB. Such large files would clearly be inappropriate for Fidonet transfer at 9600bps (taking as much as 22 hours for transmission). Hence both INMARSAT and ordinary telephone seem inappropriate for this purpose. The present system of files sent to consumers on tape or disk by fast courier, if a 3 to 5 day delay is technically acceptable, while inconvenient is nonetheless quite cost effective.

Anticipated annual communications charges over INMARSAT are anticipated to be as high as \$47,000, not counting the \$30,000 or more installation charges at each of 9 centers across the Sahel, according one report. Telephone and fax add an additional \$13,000 per year, according to figures provided by the fiscal officer. Additional charges for electronic mail sent via the ORSTOM/RIO network are roughly \$3,360 annually, including the monthly flat fee for line access. Hence total annual communications charges may be as high as \$63,360 for messaging and file transfer.

Clearly access to a leased Internet line at 64kbps, even at \$5000 per month, can be justified, particularly if usage of the INMARSAT system can be greatly reduced. Further justification can be found in the needs of research staff at the center who would greatly benefit from inexpensive access to online network search tools (gopher, ftp, WWW). AGRHYMET also maintains a specialized library collection of materials relevant to its mission, and employs staff that regularly synthesize received publications and maintain online abstracts. The mission of AGRHYMET would be advanced if these bibliographic materials were made available to its affiliated stations in other Sahelian countries as well as to the broader world research community.

### **ORSTOM**

Alain Casenave, Représentant

Boubacar M. ABDOU, Opérateur du RIO

B.P. 11416 Niamey

Bur. 227-732054/723115/722610

Fax 227-722804

Télex ORSTOM 5534 NI

Expected level of connection: Dial-up or dedicated low-speed line (19,2)

Level of interest:

ORSTOM is both a user and provider of data communications services, transmitting in total roughly 100KB per day or 3MB per month, according to the system operator. Using a store-and-forward system, mail is transferred to a gateway in Montpellier at 10 minutes past the hours of 7, 9, 11, and 15. Given the costs of connect time, the minimum minute charges, and gateway charges, it is to the advantage of some firms in Niamey to pass messages through RIO unless expected volume is very high.

The ORSTOM chief representative noted that his staff of researchers already have access to the Internet via their X.25 connection to Montpellier, though this is for occasional and high-priority use only due to the high cost. He suggests demand in Niamey is insufficient to justify an

Internet access service, noting that the university cannot even afford RIOs low-priced subscriptions. He further commented on the problem of non-payment of bills by many public agencies.

Note that ORSTOM refuses to bundle mail that is not related to research or education, and has denied access to the Nigerien Press Agency.

It is likely that ORSTOM researchers will have high demand for online services. As with other such organizations in Niamey, ORSTOM will likely have an strong interest in developing a home page to disseminate its research results and solicit collaboration.

It is further likely that mails presently passed through RIO will be further routed through the Internet service if price is lower than the X.25 time and volume charges of NigerPac. That is, some RIO customers may choose to maintain their ties with RIO, though their messages may be transparently gated through the Internet service.

### **ICRISAT**

Rabé HAROU, Responsable Sce Informatique

Roger Stern (avec trois chercheurs de plus, noms inconnus)

Sadoré (35 km de Niamey)

Bur. 227-722725/722529/723697/722626/733453/735492

Expected level of connection: High-speed (possibly fiber optic) dedicated line to its Training and

Visitor Center, 2400bps radio link to its main facility possibly to be upgraded with a high-speed microwave link. The fiber optic link to AGRHYMET, which will cost an estimated \$10,000, is in the proposal stage.

Level of interest:

ICRISAT is an agricultural research center with an experimental farm, climate controlled seed storage facilities, a GIS production room with digitizing tables, laboratories, and a large LAN linking researcher offices and computing centers. Its main facility is located some 30 km from Niamey along a trunk highway, linked electronically by 2400bps radio to its Niamey Training and Visitor Center. At the TVC, there are facilities for medium-size meetings and instruction, including limited guest accommodations.

ICRISAT staff express keen interest. The center already spends as much as \$3,000 per month for some 1000 monthly electronic mail messages alone, according to figures provided by their computer center specialist. As a research institution, this high volume of electronic mail can be easily understood as a need for maintaining contacts with colleagues abroad to further collaborative research. Such collaboration would be greatly enhanced with access to a more convenient and lower cost Internet system in which turn-around time for messages could be reduced.

Note that for the \$8,000 annual cost to send 47MB electronic mail over its existing store-and-forward mail arrangement with ORSTOM/RIO (?), some 980 minutes is likely required for total transmission, averaging \$8 per minute. As with AGRHYMET, a Fidonet arrangement is conceivable under which such charges might be reduced to \$3 per minute for comparable service. See the discussion under FEWS.

Staff expressed a willingness to pay for all telecommunications of roughly \$60,000 per year (\$5,000 per month). Under one pricing scheme, that would be roughly the cost of access to

the Internet. Such an expenditure, which would likely increase total telecommunications charges beyond \$60,000 per year, can be justified by the higher quality of an Internet link, permitting research staff access to online network search tools, quicker message turn-around, and better links to collaborators within Niger, especially INRAN. Staff indicate pressure from donors to enhance ICRISAT collaboration with INRAN in particular.

#### **NAAR Project, Niger-USA Alumni Association Project, ATLAS Project**

Mme. Hadiza DIORI BOLHO

USAID Niamey

Bur. 227-733508

Expected level of connection: Dial-up for various projects

Level of interest:

The idea being considered for the Alumni Association and ATLAS project is a mini-help center with resources for career development, and access to messaging and conferencing to maintain regular contacts with professors and colleagues subsequent to training in the USA. Operations would be fully paid by USAID, and thus this is a firm candidate for Internet services.

#### **USIS**

Shirley STANTON, Public Affairs Officer

Foli KUEVIDJEN, Responsable Bibliothèque

Bur. 227-734107

Expected level of connection: Dial-up

Level of interest:

Staff express much frustration with its present efforts to obtain even limited connectivity. Discussions with NigerPac and ORSTOM for store-and-forward messaging reflect an understandable lack of technical expertise at USIS, where staff are trained in traditional library skills. The full range of messaging options are not fully understood. USIS would therefore benefit greatly from access to a locally accessible resource or help center. They are presently considering a 1200bps dial-up link through NigerPac to ORSTOM/RIO for messaging, but were surprised to learn that message turn-around could be as much as 48 hours. Staff is just now learning how expensive independent access to higher-quality connections can be.

USIS in Niamey, like USIS posts elsewhere, sees itself as a resource center, and would like to add Internet resources to the array of services already offered to the public. It would like to provide, for example, access to online newspapers from America, and would like to be able to undertake online bibliographic searches in response to customer queries. USIA in Washington is considering direct Internet links via satellite for its USIS posts.

USIS is a strong candidate for a dial-up connection, with adequate funding and a clearly defined need. Access through a local Internet service provider would likely be much less expensive than a direct link to USIA.

**American School of Niamey**  
 Mr. Steve Pozinski, Directeur  
 American Embassy Compound  
 Bur. 227-723942

Expected level of connection: Dial-up

Level of interest:

Interest was expressed primarily for better communications with a correspondence school in Nebraska for students. However the speed of such communications is not a critical issue. A one-week turn-around in messaging is considered acceptable. Hence a more effective store-and-forward messaging system in Niger would satisfy this need.

Additional but less intense interest was expressed for staff career development, including access to information contained in online systems like ERIC. It seems likely that staff would appreciate and be willing to pay for dial-up Internet access, even if not provided through the school. Little interest was expressed in actual training in online computer skills for students, though staff might benefit from seeing demonstrations of instructional potential in a help center.

The school expects to receive 15 new MacIntosh computers soon with internal modems and CD-ROM drives.

## NGO'S AND ASSOCIATIONS

### **Africare**

Dr. Reginald L. Simmons, Country Representative  
 B.P. 10534 Niamey  
 Email: Simmons@p7.f1104.n109.z1.fidonet.org; 1:109/1104.7

Expected level of connection: Dial-up

Level of interest:

Africare is a US NGO that administers a variety of projects in behalf of various donors, especially USAID. It has just installed its Fidonet messaging system. (Dr. Cochrane provided assistance in configuring their modem during a mission visit.) It will use the system for transfer of reports and documents, as well as messaging. It will be polled daily from Washington, with typical transfers likely to average 2 minutes. Costs, including an allowance for bad connects, will likely average \$120 per month.

Africare operates on a small budget. Its interest in Internet services depends greatly on the cost of such services. It is a likely candidate for such services if pricing is near its present expenditure on email and fax. Slightly higher expenditures might be justified by advantages likely to accrue from participation in local networking with donors and affiliated government agencies. As with other NGOs operating in Niger, it may further be able to justify expenditures in developing a WWW home page to promote its work and disseminate its findings.

**UICN (Union Mondiale pour la Nature)**

Thomas PRICE, Deputy Representative and Social Sciences Advisor

Peter KRISTENSEN, Program Officer and Geologist

B.P. 10933 Niamey

Bur. 227-753138

Fax 227-752215

Email rneo@hq.iucn.ch

Expected level of connection: Dial-up

Level of interest:

This organization undertakes research and projects with respect to the environment and conservation. Other offices exist in Africa and on other continents. It already uses a modem and store-and-forward system for communications with its home office in Switzerland. Staff express some frustration with file transfers over this system, since the interface to Internet addresses is not transparent, requiring the operators at both ends to transform files using UUEncode and UUDecode. For file transfers it uses the ORSTOM/RIO system.

The organization is keenly interested in exchanging electronic messages with staff in provincial locations within Niger. It might therefore benefit from any USAID program to upgrade communications with INRAN field offices. Also of interest is enhanced online search capabilities with respect to the head office library in Switzerland, said to be one of the best specialized libraries for conservation in the world. Materials from the library are essential for the preparation of reports in Niger. Staff also expressed keen interest in maintaining a home page to promote its work in Niger with the world community. Staff expressed familiarity with and a desire to participate in newsgroups related to the organization's work.

**FEWS (Famine Early Warning System, USAID)**

Mark McGUIRE, Directeur

Bank of Africa Building, 7th floor

Bur. 227-734120

Expected level of connection: Dial-up

Level of interest:

A project of USAID, FEWS receives full-color satellite imagery that it uses to identify areas where crop production is likely to be problematic in Niger. Field staff then verify information on the ground in collaboration with government agencies and other projects.

FEWS operates an effective messaging and file transfer system using Fidonet technology and inbound polls. The Washington office polls once per day for the exchange of messages and files, with charges paid in Washington at American rates, perhaps \$1.50 per minute. This compares favorably with outbound polling rates charged by STIN/OPT at \$4 per minute. Line capacity is roughly 9600bps (according to STIN) on an analog link that is reasonably problem free (according to Mr. McGuire).

FEWS/Niamey receives images of about 200KB about six times per month, file transfer time taking 5 to 10 minutes. In addition, there is an estimated 10KB of messages transferred every day. Based on this volume, requiring perhaps as much as 120 minutes online per month (allowing for bad connects), FEWS/Niamey incurs costs of \$180 per month for regular messaging

and files, not counting special polling on demand from the Niamey side.

FEWS is a likely candidate for Internet services to replace its existing system. Alternatively, it might significantly lower costs by passing its existing Fidonet messages through a local UUCP gateway.

#### **OTHER CONTACTS**

Mr. Jeff Marzilli, DPM Project  
Mr. James Anderson, USAID/Niamey  
Mr. Sidikou Maman, USAID/Niamey  
Mr. Keith Simmons, USAID/Niamey

#### **SERVICES MOST LIKELY TO "CREATE" DEMAND**

Services do not really "create" demand. Rather, creative marketers evaluate consumer needs and speculate as to what new products its custom-designed services will be required. In the discussion of potential consumers of Internet services of the preceding section, the intent in each case was to provide a creative marketer with ideas to get started. In practice, actual services provided -- the form in which specific technologies will be made available to Internet users -- will be developed in an iterative process determined by the relationship between the marketer and the customer.

As is the case in the United States and Europe, electronic mail is likely to be the most widely demanded service. It is easy to understand as a substitute for fax. Most of the potential Internet services consumers interviewed in this study indicated that would be keenly interested in any service that lowered their present telecommunications expenditures, especially their expenditures for international fax and telephone.

FTP and Gopher access for searches and file access on servers outside Niger is likely to appeal to research institutions, particularly ICRISAT and the University of Niger. In particular, if line speed for the "last mile" is a problem, as may be the case at ICRISAT in remote logins from their main facility some 30 kilometers from Niamey, or if time charges are assessed, as will likely be the case for dial-up SLIP and shell account users, then FTP and Gopher as search and file retrieval tools may be more attractive for many purposes than access tools like Netscape that operate in a graphical environment and consume relatively greater bandwidth. Lynx software, which strips out graphics and accesses only text, is an attractive alternative to Netscape in the event that line capacity becomes an issue, and also for users wishing to economize on time and volume charges.

While non-research agencies and individuals may from time to time access FTP and Gopher, their demand for them is not likely to be great. This is largely because of the level of expertise required with these tools to track down the desired information. The phenomenal growth of the World

Wide Web has come precisely as a result of the difficulties encountered by users of more tedious access services like FTP and Gopher.

Clearly graphical user interfaces to the Internet are likely to be the most appropriate for all but the already advanced users of computers. Hence, apart from electronic mail for which simple user interfaces are well developed, the World Wide Web is likely to be the most popular service. Anyone who is already comfortable in a Windows or MacIntosh operating environment will require perhaps five minutes of training before becoming fully versed in the mechanics of World Wide Web access through such software as Netscape.

Not only does the Web have potential as a means by which people in Niger can access servers abroad, but it also provides a means by which people abroad can access information that people in Niger will want them to have. Hotels can advertise their services, newspapers can disseminate news, tourist attractions can make graphics of their offerings available, and so on. In the United States and indeed in South Africa, the popularity of "Home Pages" for everything from pizza parlors to research institutes is growing rapidly as companies and organizations seek to advertise and promote their work.

In South Africa, commercial vendors of Internet services offer consulting to clients wishing to prepare their own home pages. Vendors in Niger can do the same.

### **INFORMATION RESOURCES OF SPECIAL INTEREST**

Specific requests for access were only made by those interviewed who already had considerable experience with the Internet in other countries, or who were being fed information about the potential of Internet access by colleagues or friends abroad.

An NGO representative expressed a need to access relevant libraries with online information for the presentation of reports locally. At AGRHYMET, which sells the data it processes, an interest was expressed in being able to store relevant information in its own FTP server for remote access. ICRISAT personnel expressed a need for closer contact with colleagues abroad, which would be facilitated by the high quality of communications available on a reasonably priced Internet system. Access to both Usenet and Bitnet discussion forums will likely be heavily used by these and other research organizations.

With other respondents, it is necessary to speculate in their behalf, based on the research team's assessment of their likely demand in the presence of Internet infrastructure at a reasonable cost. These specific speculations are presented when appropriate for each respondent in the interview summaries.

## ACCESS PRICING STRATEGY AND THREE-YEAR INCOME STATEMENTS

Standard pricing practice (e.g. in South Africa) is a fixed fee with a volume limit for dedicated-line access. A surcharge is added when the volume limit is exceeded. Dial-up access typically includes online-time and volume charges. A similar strategy is proposed for Niger, though with a different consumer and infrastructure environment, sustainable price levels will likely be higher in Niger than in South Africa.

The research team used the following procedure to arrive at potentially sustainable prices.

1. The expenditure section of income statements was constructed based on data on ordinary running costs (staff, office supplies, utilities, rent) from Niger businesspersons, and on data on line access and major equipment provided by USAID. The assistance of the general manager of Zenith/Bull, Mr. Amadou Abdou Kounou, in estimating office operation expenses is gratefully acknowledged. Equipment costs came from a report by consultant Jin Kim (see bibliography). Line costs came from a communication received by the USAID/Niamey Mission Director.
2. The revenue section was constructed, initially using prices from South Africa.
3. As a benchmark, prices were pegged at a level roughly double that found in South Africa. At those prices, a local businessperson suggested the likely number of willing consumers. This number of consumers was incorporated into the revenue section.
4. Prices were adjusted in a spreadsheet while maintaining rough price ratios, and gross revenues were recalculated in a computer spreadsheet, until income statements showed a reasonable return to capital after three years.
5. Resulting prices were then inspected to determine if consumers would be willing to pay them, the number of consumers was adjusted accordingly, and earlier price adjustment steps were repeated as necessary.

The following prices were determined to be potentially sustainable after three years, given the price and demand data at the disposition of the research team when this report was prepared:

<b>Access Level</b>	<b>Monthly Price</b>
64kbps dedicated access	\$5,000
19.2kbps dedicated access	\$3,000
Dial-up SLIP	\$ 140

These are prices charged by the local Internet access provider, not counting the cost to the consumer of the line physically linking the consumer to the access provider. The three-year plans below are based on these prices.

The computer spreadsheet (provided to USAID/Washington) can be used to create a wide variety of organizational and cost scenarios. Two organizational scenarios are presented below. In the first, hub and earth station operations are combined. In the second, these operations are separated. Hence three income statements are required: one for the joint operations, and one each for the independent hub and independent earth station operations.

Two basic cost scenarios are presented as well. In the first, costs for access to IntelSat are low. In the second, costs are high. Thus each organizational scenario is presented twice, once for each cost structure.

When costs are raised, prices must also be raised if the operators are to realize positive cash flow. It was assumed under the high cost scenarios that the number of Internet service customers remained the same. The spreadsheet can be used if desired to explore a reduced number of customers under high price structures.

The scenarios all assume that the qualified private-sector service provider has private financing for office equipment. It is also assumed that no difficulties will be encountered in obtaining necessary network connections (Internet, OPT/STIN). To assure that the relevant agencies are aware that this project is a priority for a diverse community of essential ministries, businesses, agencies, etc., it may be appropriate to hold a special series of seminars and public forums during which plans would be unveiled and the dependency of the undertaking on cooperation by all agencies is clarified. It may also be appropriate to delay acquisition of more expensive equipment until a firm date for installation of necessary dedicated lines and telephones is established.

Consideration was given to the possibility of ancillary services to be provided by the hub operator. It seems reasonable to expect that the hub service provider will generate additional revenues from such things as custom classroom instruction, the design of home pages, and rental of disk storage space. These ancillary services may prove to be a highly profitable component of any service. However, for clarity, no consideration of these ancillary services was included in the income statements.

**LOW COST  
COMBINED EARTH STATION AND HUB OPERATIONS  
COST PARAMETERS AND DESCRIPTION**

COST PARAMETERS (US dollars)	Monthly	Hourly		
Cost of IntelSat 64kbps Circuit monthly	2500			
Cost of Internet Access Provider (Maine) monthly	1000			
Price of 64kbps local access	5000			
Price of 19.2kbps local access	3000			
Price of SLIP access monthly and hourly	50	3		
	Year1	Year2	Year3	
Number of 64 clients	1	2	3	
Number of 19.2 clients	1	1	1	
Number of SLIP clients	10	25	40	

**Scenario Description:**

Both the earth station and the Internet hub are operated by a single firm. There is one minor dedicated-line client, INRAN, with 19.2kbps service over ordinary twisted pair telephone lines. AGRHYMET and ICRISAT are the major subscribers, with AGRHYMET online in year 1 over a line priced at 64kbps. ICRISAT is planning to lay a dedicated fiber-optic line from its Training and Visitor Center to AGRHYMET, which delays their coming online until year 2.

In year 3, it is assumed that a third major subscriber will come online. This might be additional service purchased by AGRHYMET, as would be the case if AGRHYMET exceeded its allotted volume and paid a surcharge, or it might be a new subscriber such as BIAO or ORSTOM.

This additional demand in year 3 forces the service provider to upgrade from 64kbps to 128kbps. Hence satellite charges by IntelSat to the service provider increases from \$2500 to \$5000 per month in year 3, raising total line access charges from \$3500 to \$6000 per month, on the assumption that the US Internet service provider does not increase charges.

System equipment are those noted in the Jin Kim consultant report (see bibliography). Office equipment are based on estimates provided by a local businessperson for such things as desks, photocopiers, and filing cabinets. All equipment is financed at 12% interest, with principal repaid over three years. A simple division method was used to calculate both interest and principal repayment. A bank would likely use a different method, though results would be of the same magnitude.

Income tax is levied on profit. Profits can be reduced if the system operator reinvests in equipment. Also, if any of the system is operated by a public or semipublic entity, such as STIN, taxes may not be levied. However, agencies like STIN are typically required to make some kind of payment to the central government treasury, either as a dividend on investment or simply as a fixed obligation.

An overall loss is shown for the first two years of operations, not unusual for a business startup. Losses are carried forward each year. Note that there is an operating profit in the second year.

**LOW COST  
COMBINED EARTH STATION AND HUB OPERATIONS  
HYPOTHETICAL THREE-YEAR INCOME STATEMENT**

	YEAR 1	YEAR 2	YEAR 3
Revenue	Annual		
64kbps dedicated-line clients	60000	120000	180000
19.2kbps dedicated-line clients	36000	36000	36000
SLIP clients	16800	42000	67200
TOTAL	112800	198000	283200
Expenses			
Line access	42000	42000	72000
System Equipment (3-year depreciation)	37767	37767	37767
Office Equipment (3-year depreciation)	7133	7133	7133
Personnel			
Manager/marketer \$1,000/month	12000	12000	12000
System operators \$800/month	19200	19200	19200
Billing clerk \$700/month	8400	8400	8400
Facility			
Rental	4800	4800	4800
Telephone	3600	3600	3600
Utilities	3600	3600	3600
Office, Misc.	9000	9000	9000
Interest on system equipment	9000	9000	9000
Interest on office equipment	1920	1920	1920
Ordinary taxes (stamp, sales)	3000	3000	3000
TOTAL	161420	161420	191420
Gross profit (loss)	-48620	36580	91780
Profit (Loss) carried forward		-48620	-12039
Adjusted gross profit (loss)	-48620	-12039	79741
Income tax 45%	0	0	35883
Net profit (loss)	-48620	-12039	43858

**LOW COST  
EARTH STATION ONLY OPERATIONS  
COST PARAMETERS AND DESCRIPTION**

COST PARAMETERS (US dollars)	Monthly			
Cost of IntelSat 64kbps Circuit monthly	2500			
Cost of Internet Access Provider (Maine) monthly	1000			
Price of 64kbps hub access	5000			
	Year1	Year2	Year3	
Number of 64kbps circuits resold to clients	1	1	2	

**Scenario Description:**

The earth station and hub operations are separate. This scenario pertains solely to the operation of the earth station. In year 3, it is assumed that the hub will require a second 64kbps circuit from the earth station, due perhaps to extra demand from AGRHYMET or from another major consumer. It is assumed that the hub pays directly for Internet access, which does not appear in this income statement for the earth station.

System equipment are those noted in the Jin Kim consultant report (see bibliography). No allowance for office equipment is included. Equipment is financed at 12% interest, with principal repaid over five years. A simple division method was used to calculate both interest and principal repayment. A bank would likely use a different method, though results would be of the same magnitude.

Only one employee is budgeted. It is assumed that the hub operators provide emergency service to the earth station during the night hours. Given that the earth station operator is STIN, it is assumed that no increase in costs is incurred for management.

Income tax is levied on profit. Assuming that the earth station is operated by a public or semipublic entity, such as STIN, taxes are assumed not to be levied. However, agencies like STIN are typically required to make some kind of payment to the central government treasury, either as a dividend on investment or simply as a fixed obligation. No allowance for this has been included.

**LOW COST  
EARTH STATION ONLY OPERATIONS  
HYPOTHETICAL THREE-YEAR INCOME STATEMENT**

	YEAR 1	YEAR 2	YEAR 3
Revenue			
64kbps circuits	60000	60000	120000
TOTAL	60000	60000	120000
Expenses			
Line access	30000	30000	60000
Earth station equipment (5-year depreciation)	13500	13500	13500
Personnel			
System operator \$800/month	9600	9600	9600
Facility			
Rental	1200	1200	1200
Telephone	0	0	0
Utilities	900	900	900
Office, misc:	0	0	0
Interest on equipment	3180	3180	3180
TOTAL	58380	58380	88380
Gross profit (loss)	1620	1620	31620
Profit (Loss) carried forward		1620	3240
Adjusted gross profit (loss)	1620	3240	34860
Income tax 0%	0	0	0
Net profit (loss)	1620	3240	34860

**LOW COST  
HUB ONLY OPERATIONS  
COST PARAMETERS AND DESCRIPTION**

COST PARAMETERS (US dollars)	Monthly	Hourly		
Cost of Circuit from Earth Station	5000			
Cost of Internet Access Provider (Maine) monthly	1000			
Price of 64kbps local access	5000			
Price of 19.2kbps local access	3000			
Price of SLIP access monthly and hourly	50	3		
	Year1	Year2	Year3	
Number of 64 clients	1	2	3	
Number of 19.2 clients	1	1	1	
Number of SLIP clients	10	25	40	

**Scenario Description:**

The earth station and hub operations are separate. This scenario pertains solely to the operation of the hub. There is one minor dedicated-line client, INRAN, with 19.2kbps service over ordinary twisted pair telephone lines. AGRHYMET and ICRISAT are the major subscribers, with AGRHYMET online in year 1 over a line priced at 64kbps. ICRISAT is planning to lay a dedicated fiber-optic line from its Training and Visitor Center to AGRHYMET, which delays their coming online until year 2.

In year 3, it is assumed that a third major subscriber will come online. This might be additional service purchased by AGRHYMET, as would be the case if AGRHYMET exceeded its allotted volume and paid a surcharge, or it might be a new subscriber such as BIAO or ORSTOM.

System equipment are those noted in the Jin Kim consultant report (see bibliography). Office equipment are based on estimates provided by a local businessperson for such things as desks, photocopiers, and filing cabinets. All equipment is financed at 12% interest, with principal repaid over three years. A simple division method was used to calculate both interest and principal repayment. A bank would likely use a different method, though results would be of the same magnitude.

Income tax is levied on profit. Profits can be reduced if the system operator reinvests in equipment.

An overall loss is shown for the first two years of operations, not unusual for a business startup. Losses are carried forward each year. Note that there is an operating profit in the second year.

**LOW COST  
HUB ONLY OPERATIONS  
HYPOTHETICAL THREE-YEAR INCOME STATEMENT**

	YEAR 1	YEAR 2	YEAR 3
Revenue			
64kbps dedicated-line clients	60000	120000	180000
19.2kbps dedicated-line clients	36000	36000	36000
SLIP clients	16800	42000	67200
TOTAL	112800	198000	283200
Expenses			
Internet access	12000	12000	12000
Line access	60000	60000	120000
System Equipment (3-year depreciation)	15267	15267	15267
Office Equipment (3-year depreciation)	7133	7133	7133
Personnel			
Manager/marketer \$1,000/month	12000	12000	12000
2 System operators \$800/month	19200	19200	19200
Billing clerk \$700/month	8400	8400	8400
Facility			
Rental	3600	3600	3600
Telephone	3600	3600	3600
Utilities	2700	2700	2700
Office, Misc.	9000	9000	9000
Interest on system equipment	6350	6350	6350
Interest on office equipment	1920	1920	1920
Ordinary taxes (stamp, sales)	3000	3000	3000
TOTAL	164170	164170	224170
Gross profit (loss)	-51370	33830	59030

## FOR COMPARISON

### South Africa

These are prices paid from within South Africa for full-connectivity Internet access.

- ▶ Dial-up SLIP \$25/month + \$1/hour
- ▶ 19,2 dedicated line \$1,300/month + surcharges
- ▶ 64kbps dedicated line \$2,300/month + surcharges

### Niger alternative access

It is possible to have full connectivity Internet access from Niger today via EUNet and NigerPac. Costs (for low-volume users) are estimated as follows:

- ▶ Dial-up SLIP setup NigerPac and EUNet \$1,100 + NigerPac and EUNet subscription \$530/month + NigerPac time (30 hrs) and volume (6MB) \$1,123/month

### Niger alternative technologies

It is possible to have email and news access (no online search capabilities) today via EUNet and NigerPac. Costs (for low-volume users) are estimated as follows:

- ▶ UUCP setup NigerPac and EUNet \$800 + NigerPac and EUNet subscription \$230/month + NigerPac time and volume \$85/month

Similar email and news can be obtained for a presently nonexistent Fidonet network. Costs estimates are drawn from Sierra Leone:

- ▶ Fidonet setup \$300 + \$30/month + volume \$300/month

A potential private service provider has suggested supplying email/news only access in addition to full connectivity. This might prove an optimal solution for Niger internal dialups from provincial capitals. Offline access drops considerably when there is also online access present in the country:

- ▶ UUCP setup \$300 + \$20/month + time \$0.5/month (\$1 per hour, 1 minute daily)

## SPECIAL SERVICES PRICING STRATEGY

Several possible sites exist to provide assistance of various kinds to end users. Users will typically require technical assistance, preferably available quickly with a phone call. They may also need assistance in making effective use of Internet technologies.

The conundrum in Niger is that those who know what services to request typically have the means at their disposal through their organizations to obtain those services without any particular additional assistance from USAID. The smaller independent Nigerien user will require significant services, but does not yet know what those services will be. We can anticipate services and suggest a pricing strategy for them. These can serve as a model for additional services that might

eventually be provided in response to consumer demand.

Agencies such as the American Cultural Center see themselves already as essentially free information services for the public, though such agencies typically restrict the scope of queries they are willing to accept. With Internet access, it is assumed that these centers will continue to provide free but restricted-scope search services. Each organization can best judge how to manage its facility for the provision of services and assessment of fees if in the event they find their services oversubscribed.

For more general and unrestricted access to special services, the proposed model is an "Internet Help Center". This essentially follows the model at most American universities where, for simple questions, services are free of charge. Such services are made available with the general view that an informed user community is healthy for network development, much in the sense of any infrastructure of public service. The aim is to promote a rapid expansion of user network knowledge, hence promoting a rapid expansion of user willingness to pay for access to network services. Lack of knowledge about how to access the network should be removed as a network-development impediment in the community as quickly as possible.

The agency or enterprise providing Internet access to the user should take into account the need for limited user services in developing its cost structure. Hence the costs for Internet Help Center assistance would be included in the monthly subscription. This is typically covered in the job description of the 24 hour duty technician who handles queries by telephone, and has access to a bookshelf of reference materials and an online database of responses to previous queries that can be searched while the caller waits.

An additional Internet Help Center can be established at INRAN to target particular research and extension needs identified by Government. Here as well, it is envisioned that responses to simple questions be provided for authorized inquirers as a free service. Costs would be recovered through funds generated in servicing other needs.

More complicated requests for assistance at either the commercial or the INRAN Internet Help Center would entail a fee for service. Fees would be assessed basically as a charge for labor. Based on local conditions, a rate of \$5 per hour seems reasonable. Examples of services:

- Tutoring (e.g. how to use Gopher, a POP mailer)
- Designing and installing a home page
- Courses at the user site for staff

Note that there are private firms in Niamey that already provide custom computer instruction, one-on-one and in a classroom setting. It may prove more cost-effective and efficient for INRAN to contract such instruction to these firms.

There is another potentially more important role to be played by both the INRAN and any

commercial Internet Help Center in particular may be able to play. The vast majority of Nigeriens will not have access to computers, hence will not have access to the Internet. Help centers can play a role in delivering services to computerless users, serving as a "poste restante" for electronic mail, and can provide Internet access based on hourly charges for occasional users. Such centers provide a skeptical public an opportunity to see first hand the possibilities of having access to the Internet without the necessity of first making a significant capital investment. They permit those who are incapable of investment to have access at a more affordable level.

In Sierra Leone, for example, a sent message of 2000 bytes (a typical page) costs \$1. A received page costs half as much. These prices include the cost of a system clerk to type in the users sent message, and the cost of printing out the received message. Costs of online access at a workstation should be based on ordinary dial-up access with a small surcharge, the surcharge providing an incentive to the user to obtain dial-up access if possible from his or her own residence or office.

Lack of affordable access is a significant network development issue. Just as public libraries in America and elsewhere permitted access to books for those who could not afford them, INRAN may very well play a similar role providing access to the Internet. It is a model worth replicating.

### **SAMPLE BILLING AND ACCOUNTS STRATEGY**

The team met with the Financial and Administrative Officer of AGRHYMET. He outlined what additional steps would be necessary to handle billing and accounts for a system under AGRHYMET management. Given a customer base of under 50, each month or quarter he would be delivered a list of time and volume consumption for each registered subscriber. A member of his staff would then simply enter these numbers using a standard, low-cost billing software. The officer expressed knowledge of several acceptable packages. He indicated he would require two additional staff, one to keep accounts, the other to receive and disburse funds. He indicated that the necessary changes in his operations to manage an Internet system would be quite simple and straightforward.

The team also met with a private entrepreneur. His present business already involves billing and accounts servicing. Hence, the expertise is again already in place for effective management. In the event that such an entrepreneur were to undertake system management, no significant problems in billing and accounts is anticipated.

## END-USER TRAINING PLAN AND RESOURCES

The role of a private entrepreneur is central to end-user training. It is assumed that it will be in the interest of this entrepreneur to promote his or her business, provide training and demonstrations to potential users, and encourage network usage generally. Essentially, no plan on the part of USAID is necessary for this individual. The role of USAID is to set up an appropriate structure of incentives so that the private entrepreneur himself or herself takes the initiative. This structure of incentives is implicit in the proposed network development strategy.

It is assumed that the entrepreneur will develop a laptop computer online demonstration and present it personally to potential clients. It is further assumed that the entrepreneur will develop media campaigns. While it is not the place of USAID to specify how these various forms of advertising will take place, USAID might facilitate by making available to the entrepreneur a staff person well familiar with campaigns in other countries with whom the entrepreneur can share ideas.

There is also a key role that can be played by INRAN. INRAN will have superior access to Internet resources under the proposed plan. INRAN has a computer center that could be configured in a LAN for seminars and classroom instruction. INRAN could generate significant revenue in making its facilities available for instruction, perhaps in cooperation with the private entrepreneur, who would then provide regular consultation and technical assistance to INRAN as part of a package of services. A collaborative networking community is envisioned, in which each agency and individual contributes the resources it has available.

INRAN can offer special courses of instruction for agencies of government. These agencies will have network access via SLIP dial-up to the private service provider at AGRHYMET. The specific nature of the courses to be offered should be tailored to the specific needs of the agencies concerned. It may be more appropriate to train computer center specialists for each agency, since typically the most important kind of end-user assistance is on-the-job, helping users to overcome the minor but nonetheless vexing problems that arise at unexpected moments.

In order for INRAN to play this role, it will require more than a facility. INRAN training staff will require expertise themselves. Much of the necessary knowledge exists in Niamey. Local consultants might therefore be employed to develop INRAN expertise. Where local knowledge is lacking, short coursed in neighboring countries, or consultants brought in from neighboring countries, where conditions of network access and problems of access are roughly comparable, may provide the best quality and cost-effective solution. Training for INRAN staff to provide end-user Internet instruction is in addition to any technical training that will be required at INRAN to support the underlying infrastructure.

## **AGRHYMET BUSINESS TRAINING PLAN**

In discussions with AID/Niamey staff, it was determined that the intent of this instruction in the Statement of Work was to provide a plan for the education of AGRHYMET personnel to maintain accounts, billing, etc. for the direct management of the Internet earth station and hub. Even if it were the intent of USAID to ask AGRHYMET to manage these facilities directly and provide services to end users, discussions with the Fiscal and Administrative Officer at AGRHYMET revealed that their existing procedures could easily be adapted with the addition of two persons to staff. Similarly with respect to the privately managed system, expertise will already exist with any qualified service provider.

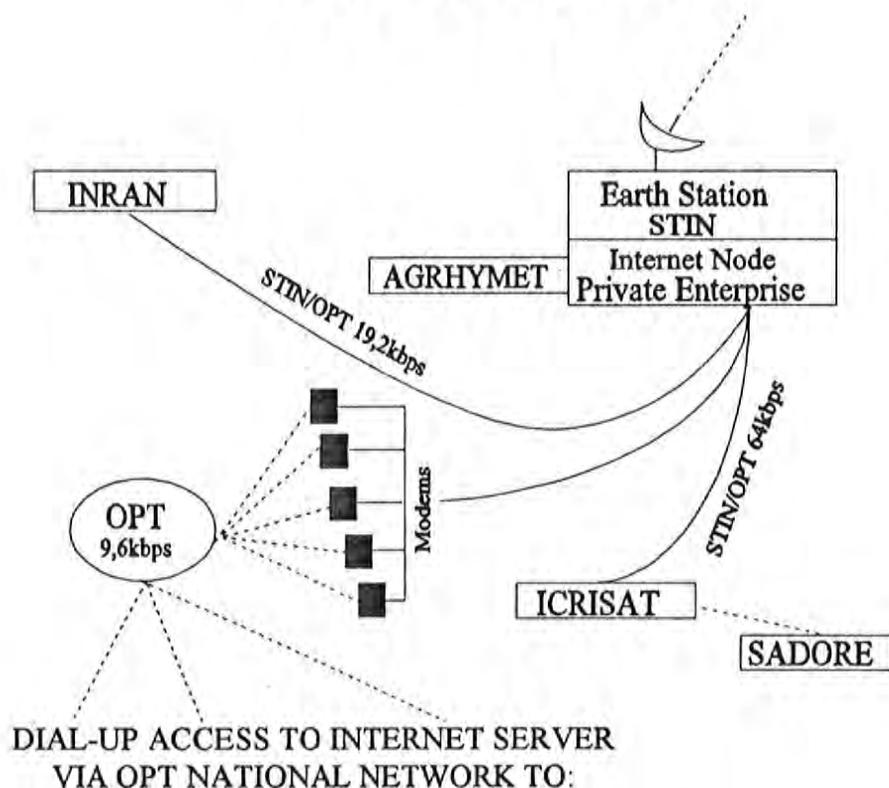
## **TECHNICAL TRAINING**

There is no requirement in the SETA Statement of Work or the USAID Scope of Work that the team address technical training issues. This is nonetheless important and worth a brief comment, though it is somewhat beyond the expertise of the research team.

This issue was addressed in the report of Jin Kim on an earlier consultancy. Specifically mentioned in that report are TDYs from USAID/Washington to assist with equipment installation and training in operation. A minimum 2-month TDY was envisioned.

As an alternative, or perhaps in addition, two Peace Corps Volunteers with network management skills may be appropriate complements to the hub manager team and to the INRAN help center. There are many recent college graduates from computer sciences departments in the USA who were employed during their studies as network administrators and in user support. These would be excellent candidates.

# INTERNET NETWORK IN NIGER



## GOVERNMENT

Presidence  
Ministries

## EDUCATION

University  
Schools

## BUSINESS

Commercial Enterprises  
Banks

## TOURISM INDUSTRY

Hotels  
National Tourism Office

## PROJECTS

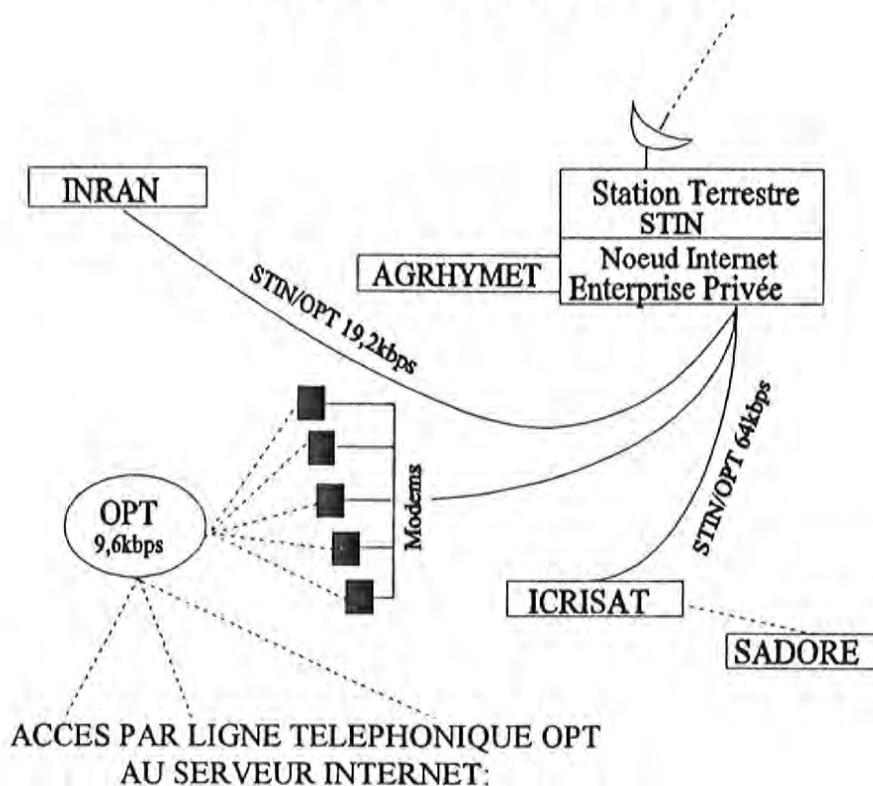
NGOs  
Research Organizations

## EMBASSIES

## CULTURAL CENTERS

## INDIVIDUALS

# RESEAU INTERNET AU NIGER



GOUVERNEMENT  
PRESIDENCE  
MINISTERES

EDUCATION  
UNIVERSITE  
ECOLES

AFFAIRES  
ENTERPRISES COMMERCIALES  
BANQUES

TOURISME  
HOTELS  
OFFICE NATIONAL DU TOURISME

PROJETS  
NGOS  
RECHERCHE

AMBASSADES  
CENTRES CULTURELS

INDIVIDUS

## UTILISATEURS POTENTIELS DES SERVICES INTERNET A NIAMEY

(Interviewed respondents are in bold typeface)

### SERVICES PUBLIQUES DE L'ETAT

- 1 **Présidence de la République du Niger**
- 2 Cabinet du Premier Ministre
- 3 Ministère des Affaires Etrangère et de la Coopération
- 4 Ministère des Finances et du Plan
- 5 Ministère de l'Enseignement Supérieur et de la Recherche
- 6 Ministère de l'Intérieur et de l'Aménagement du Territoire
- 7 Ministère de la Défense
- 8 Ministère du Commerce, du transport, de l'Artisanat et du Développement Industriel
- 9 Ministère de l'Agriculture et de l'Elevage
- 10 **Ministère de la Santé Publique (SNIS)**
- 11 Ministère de la Justice
- 12 Ministère de l'Hydraulique et de l'Environnement.
- 13 Ministère des Mines et de l'Energie
- 14 Ministère de l'Equipement et des Transports
- 15 Ministère de la Communication, de la Culture, de la Jeunesse et des Sports
- 16 Ministère de Développement Social, de la Population et de la Promotion de la Femme
- 17 Ministère de la Fonction Publique, du travail et de l'Emploi
- 18 Ministère de la Santé Publique
- 19 Assemblée Nationale
- 20 Conseil Supérieur de la Communication

### AUTRES SERVICES PUBLIQUES DE L'ETAT

- 1 **Direction Générale de la Police (DGP)**
- 2 Direction Générale des Douanes
- 3 Trésor National
- 4 Système d'Alerte précoce (SAP)
- 5 Archives Nationales
- 6 Centre de Documentation de l'Etat

### ENTREPRISES ET ETABLISSEMENTS PUBLICS

- 1 **Université de Niamey** (rectorat, facultés et instituts de recherche)
- 2 Office National des Ressources Minières (ONAREM)
- 3 Hôpital de Niamey
- 4 Ecole Nationale d'Administration Publique (ENA)
- 4 **Chambre de Commerce, d'Agriculture, d'Industrie, et d'Artisanat du**  
**(CCAIAN)**
- 5 Office National d'Energie Solaire (ONERSOL)

Niger

- 6 Institut Pratique de Développement Rural (IPDR)
- 7 Ecole National de Santé Publique (ENSP)
- 8 Office des Postes et Télécommunication (OPT)
- 9 Office de Radio et de Télévision du Niger (ORTN)
- 10 **Agence Nigérienne de Presse (ANP)**
- 11 Office Nigérien d'Édition et de Presse (ONEP)
- 12 **Institut National de Recherche Agronomique du Niger (INRAN)**
- 13 Institut de Formation en Techniques de l'Information et la Communication (IFTIC)
- 14 Office National des Produits Pharmaceutiques et Chimiques du Niger (ONPPC)
- 15 Société Nigérienne d'Assurance et Réassurance (SNAR-LEYMA)
- 16 Société Nigérienne des Produits Pétroliers (SONIDEP)
- 17 Société Nigérienne de Transit (NITRA)
- 18 Société Nigérienne d'Électricité (NIGELEC)
- 19 **Société des Télécommunications Internationales du Niger (STIN)**
- 20 Riz du Niger
- 21 Société des mines de l'Air (SOMAÏR)
- 22 Office des Produits Vivriers du Niger (OPVN)
- 23 Société Nationale des Transports Nigériens (SNTN)
- 24 Office National du Tourisme

#### ENTREPRISES ET ÉTABLISSEMENTS PRIVÉS

- 1 Société Nigérienne de Banque (SONIBANK)
- 2 **Banque Internationale pour l'Afrique de l'Ouest (BIAO)**
- 3 Banque Of Africa (BOA)
- 4 Union Générale des Assurances du Niger (UGAN)
- 5 Agence Multi-Média ANFANI
- 6 Radio R&M
- 7 Journaux Privés
- 8 Royal Air Maroc
- 9 Air Afrique
- 10 Air Algérie
- 11 **Bull NIGER**
- 12 **ENTRELEC**
- 13 **TOUTELEC**
- 14 Infotronic
- 15 Interface
- 16 Gamma Informatique
- 17 **Hotel Sofitel GAWEYE**
- 18 Hotel Terminus
- 19 Grand Hotel
- 20 Hotel Sahel
- 21 **Ets Hima Souley et Fils**

- 22 Magasin SCORE
- 23 PEYRISSAC
- 24 Niger Aluminium (NIGERAL)
- 25 Société des Produits Chimiques du Niger (SPCN)

#### **ORGANISATIONS ET INSTITUTIONS INTERNATIONALES**

- 1 Centre AGRHYMET
- 2 EMIG
- 3 ORSTOM
- 4 CELTHO
- 5 EAMAC
- 6 ICRISAT
- 7 USAID
- 8 GTZ
- 9 SNV
- 10 ACDI
- 11 Les Ambassades accréditées au Niger
- 12 PNUD
- 13 FAO
- 14 PAM
- 15 ACMAD
- 16 UNICEF
- 17 OMS
- 18 BCEAO
- 19 Banque Mondiale
- 20 USIS
- 21 American School Of Niamey
- 22 Fonds Européens de Développement (FED)

#### **ORGANISATIONS NON GOUVERNEMENTALES ET ASSOCIATIONS**

- 1 Care International
- 2 Africare
- 3 LWR
- 4 Hellen Keller
- 5 UICN
- 6 FEWS
- 7 Développement, Liberté et Démocratie (DLD)
- 8 Association Nationale de Défense de Droits de l'Homme (ANDDH)
- 9 RIDD FITLA
- 10 Croix Rouge

#### **LES PROJETS DE DEVELOPPEMENT**

- 1 DPM

- 2    Projet Agro-Sylvo-Pastoral (PASPII)
- 3    Projet Micro Réalisation
- 4    Projet Stocks de Reserve
- 5    SDSA II

