Leland Initiative:
Africa Global Information Infrastructure Gateway Project
(Project No. 698-0565)

Strategic Objective 3: End User Applications

Country Implementation Plan
Zambia

Prepared for:
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The process of bringing widespread Internet access to Zambia will involve action on a number of fronts, including policy reform, infrastructure and telematics equipment improvements, and human and organizational capacity development. These activities roughly correspond to the Leland Initiative's three strategic objectives (SOs). The following implementation schedule briefly outlines activities in the first two SOs, policy reform and technical assistance. It then examines in more detail specific SO 3 activities that will involve promoting an Internet Service Provider (ISP) industry, raising Internet awareness, computer training, and organizational information strategy development. Some of these proposed activities will involve specific organizations that already have the potential to implement them, while others will require more effort to bring them to fruition.

Telecommunications Policy and Technical Assistance

The Leland Initiative's first two SOs are designed to support the creation of private sector ISP industries. Hence, SO 1 should focus on encouraging the Government of Zambia to privatize its telecommunications infrastructures and industries, particularly Zamtel, and liberalize regulations regarding the creation of private sector ISPs, the introduction of new telecommunications services and support industries, such as telematics equipment manufacturing.

Accordingly, a Memorandum of Understanding with the Zambian government regarding these policy issues should be drafted within the next six months. This memorandum would preferably guarantee continued progress in the privatization of Zamtel (which is slated to be privatized over the next few years), a free and equitable market for ISPs and other telematics services and equipment providers and manufacturers, lower tariffs on imported telematics equipment and software, and enforceable oversight by Zambia's National Communications Board.

End User Applications

The aims of SO 3 are to give USAID partners in Zambia the technical, organizational, and human development capacity to take advantage of existing Internet services and to make effective use

of
more comprehensive Internet services once they become available through an expanded and competitive ISP industry. The implementation strategy outlined in this report recommends action
on three fronts: improving the capacity of new ISPs to deliver a high quality and affordable service, increasing Internet awareness, and institutional strengthening.

To accomplish these goals, we recommend a number of activities, which are listed below along
with rough time frames for their implementation:

Internet Service Provider Development

Support for ZAMNET (immediately actionable). Support for ZAMNET would revolve mainly around policy issues, as it is doing quite well functioning as a commercial independent
enterprise. A memorandum of understanding should be negotiated with the Government of Zambia as soon as possible to ensure fair competition between ISPs, fair and transparent regulation and oversight by the National Communications board, and cooperation from ZAMTEL
in providing connections to ISPs if needed.

Internet Service Provider Conference (actionable after resolution of policy issues). Implementing an ISP Conference would involve a fair amount of initial organization and outreach.
The conference should address a number of issues related to starting an ISP business, including
obtaining capital funding, equipment and human resources needed for the business and where to
acquire them, and strategies for advertising and promotion. If possible, breakout sessions on these
various topics should be planned. Speakers could be drawn from ZAMNET and from ISPs in South Africa, with other speakers invited from ISPs in other African countries, if possible.

Increasing Internet Awareness

Demonstration/Information Technology Resource Centers (6-12 months). An Internet Resource Center would serve two purposes: to increase the awareness of the Internet in Zambia
(particularly Lusaka) and to give the general public a means to access the Internet when it might
otherwise be unavailable to them. Setting up one or more of these centers would require a fair
amount of financial support for obtaining the necessary equipment and staff. Basic requirements
for a Resource Center include: at least a half-dozen computer workstations, preferably

interconnected via a LAN; a router with a dedicated line to ZAMNET; and (preferably) a server
from which the Center could carve out its own Internet "presence" to attract users.

Internet Society Development (6-12 months, with initial groundwork immediately actionable). A local chapter in Zambia could perform numerous functions, including: serving as an information clearinghouse for Internet-related topics; serving as a means to centrally organize the various Internet-related activities in Zambia; and serving as a resource for higher level problemsolving and advice. Most of the work that needs to be done to develop a local Internet Society (ISOC) chapter involves organization and networking, so all that is really needed
to get this off the ground is a group of dedicated, knowledgeable individuals who are willing to
dedicate their time and effort to the process. Thus, the mission could help by taking the lead in
pulling such a group of people together and aiding initial organizational efforts, perhaps in conjunction with ZAMNET. Once organizational efforts are underway, a nascent Internet Society
would also benefit from having a Web site of its own, so mission assistance might also include
equipping the local ISOC with a server and short-term Internet access (until the group becomes
self-sufficient and can afford paying for access on its own).

Institutional Strengthening

Afronet Regional Democracy Network (6 months). Afronet already has a home page through
ZAMNET, but it would benefit from additional hardware capacity to support the proposed Regional Democracy Network. To this end, the mission could assist Afronet with the procurement of its own server from which it could maintain an expanded home page and manage
the Democracy Network. Although a direct leased line to ZAMNET would give Network patrons
faster connections to Afronet’s server, this option is probably too expensive at present. However,
if ZAMNET achieves its goal of implementing a wireless Internet connection system within Lusaka, such a system might provide faster access at affordable prices.

Zambian Legal Information Institute (immediately actionable). The Zambian Legal Information Institute is in the process of making Zambia’s legal text available electronically on
the Internet. Since many courts throughout rural Zambia have little or no access to hard copies
of the legal codes, this is a project that could make the texts available at a much smaller cost. The

major challenge for the Institute is project sustainability--that is, aside from the two Peace Corps volunteers who started it, there are currently no heirs-apparent to guarantee the viability of this exercise once the volunteers leave. Accordingly, the Institute would benefit from mission assistance in developing a business plan for making the operation self-sufficient. Perhaps their operations could be folded into an ongoing democracy sector project.

Capacity for Internet Training within ZAMCOM (6-12 months). ZAMCOM is well-positioned to provide Internet training at many levels. It has modern training facilities complete with a dozen state-of-the-art Apple workstations, each with a modem and each connected to a local area network (LAN). Since it is under a mandate to become self-sufficient over the next year (it had been a government-owned operation), Internet training could provide much-needed revenue. To do so, ZAMCOM will need mission assistance in developing a training program and in finding personnel qualified to do the training if it is unavailable or cannot be developed internally. ZAMCOM could also use technical assistance in connecting its LAN to the Internet, possibly through a leased line to ZAMNET or through a wireless system if and when it is available.

Internet Capability for IESC Business Center (3-6 months). The International Executive Service Corps (IESC) is currently developing a business information center in Zambia to assist small- and medium-scale enterprise (SMEs). This business center would benefit greatly from having Internet capability, not only to more easily disseminate information to Internet-connected businesses (via e-mail and a Web page), but also to locate information on the Internet to respond to specific questions from entrepreneurs. IESC/Zambia already has a staff member who is quite competent in using the Internet. Nonetheless, he could benefit from further Internet training since--if he would be interested in performing this function--he would be doing very detailed Internet research for the business center. The proposed center would also benefit from having a Web server of their own rather than leasing server space from ZAMNET. This is particularly true since the proposal for the business center also includes allowing local businesses to use Internet terminals there for a fee, much like a telecottage. Such an arrangement will require a more robust Internet connection than is currently available through ZAMNET.

Ministry of Health Internal Communication Network (6-12 months). To support the proposed decentralization of the Ministry of Health, an information/communication network could

be created among the central Ministry offices and district-level Ministry offices. Currently a management information system is being developed and computers, modems and telephone lines
are being installed as part of this effort. With the establishment of a network, multi-directional communications could be established with a minimum of effort. Since telephone lines in the rural
areas have only a 9,600 kilobyte bandwidth, the network would need to focus on e-mail rather than the Web. This activity might come in the form of a joint project between BASICS and the
Ministry of Health to coordinate their communication/information strategies and to pursue Internet-based communication improvement activities.

First steps could include: setting up e-mail "discussion groups" on population/health/nutrition topics most-pressing in Zambia, such as AIDS, sanitation, and birth control promotion; bulletin
boards/Web Pages involving the distribution of internal communications (research papers, minutes of meetings, e-mail address lists, etc.) through either an electronic bulletin board or through a central Web page; and conducting training classes on using the Internet for health/population/nutrition-related applications, including using the Internet for research, finding
appropriate institutions on the Internet, setting up a regional program over the Internet (i.e., exchanging information, reports, etc. with regional field offices through the Internet)..

Internet Workshops (3-6 months). Workshops can be an effective means to disseminate information about the Internet. The purposes of workshops would be to educate attendees about
the Internet in general; to educate attendees about specific features of the Internet; to give attendees the basic technical background necessary to connect to the Internet; and to create a forum for the exchange of ideas among participants. Depending on the capacities of available facilities in the area, attendance at the workshop would likely need to be limited, either by making
the sessions invitation only or by charging a fee for admission.

The workshop could begin with lectures on the Internet in general and the basics of connecting
to the Internet. For these, speakers from ZAMNET could be utilized. Subsequent breakout sessions could be targeted to a number of issues, including: using the Internet for specific development sectors; maximizing document delivery through the Internet through advanced e-mail
features such as document encoding and basics of attaching files, file compression, and uploading/downloading files to and from servers; creating listservs and virtual conferences via the
Internet; publishing via the Internet; and techniques for finding information on the Internet.

INTRODUCTION TO LELAND INITIATIVE
SO 3 IMPLEMENTATION PLAN

Background

The U.S. Agency for International Development (USAID) African Global Information Infrastructure Gateway Project, also known as the Leland Initiative, is an inter-agency effort designed to provide full Internet connectivity to up to twenty African nations, and, in cooperation with USAID bilateral missions, to provide Internet-related technical and training assistance to USAID development partners. The Leland Initiative has three strategic objectives (S.O.): 1) foster a favorable policy environment for Internet connectivity and access; 2) introduce or enhance full Internet connectivity through the provision of requisite technologies and the strengthening of a private Internet Service Provider industry; and 3) achieve broad-based utilization of the Internet and other information and communications technologies within USAID's development partner community to promote sustainable development in Africa.

This document is the Country Implementation Plan for Zambia and is based on the findings of Strategic Objective assessments carried out in Zambia and on research conducted for a Best Practices Study on Internet Connectivity Projects by USAID Research and Reference Services Project staff. Assessment teams have explored Zambian telecommunications and related policies to determine if there is a favorable policy environment for expanding Internet connectivity and access in the country; evaluated the current telecommunications infrastructure to determine capabilities and needs for handling greater Internet connectivity and access; and met with USAID/Lusaka and the Mission's development partners to measure institutional information and communication resources and needs and readiness for Internet. Separate assessment reports provide the detailed findings from these assessments.

Country Implementation Plan Purpose

The Country Implementation Plan seeks to provide a coherent structure for the achievement of Leland Initiative SO 3 in Zambia. The achievement of SO 3 will require activities at several different levels, including: the USAID mission in Lusaka, which will direct the Agency's efforts in the country; the missions's development partners, through which USAID will work to encourage the use of the Internet to support sustainable development; the Internet Service Provider

(ISP) industry, which will provide gateways for Internet access; and the general public, whose support will be necessary to ensure sustainability of Internet service. These areas will be explored
in further detail below.

STRATEGIC OBJECTIVE 3 AND USAID/LUSAKA

Internet Connectivity and Use in USAID/Lusaka

The USAID mission in Lusaka currently does not have full access to the Internet. The mission previously had full Internet access through a local ISP but decided to cancel its account for financial reasons. The mission does, however, have access to e-mail through AIDNET, so mission personnel are familiar with some of the lower-level Internet applications.

Most direct hires were at least aware of the Internet. However, no one we spoke to really understood how it worked or what is available through it. Aside from the mission's brief experiment with full Internet connectivity through ZAMNET, no one we spoke to at the mission was using the Internet on a regular basis. Considering the fact that full Internet connectivity is available locally, Internet awareness at the mission was rather low overall. Although some expressed interest bordering on curiosity, only one direct hire seemed genuinely enthusiastic about the role Internet could play in development programs in Zambia. This lack of enthusiasm probably stems in part from the fact that no one has seen the Internet in action.

USAID/Lusaka as an Internet Leader in Zambia

If USAID/Lusaka is to promote effectively the use of the Internet for sustainable development in Zambia, then the Mission must connect to the Internet. It is recommended that USAID subscribe to ZAMNET for a networked connection to the Internet. This would provide Internet to all users on the mission's local area network (LAN). Most other donor organizations are linked this way in Lusaka and it would be advisable for USAID to also become a member of this virtual community. The cost is not exorbitant and with the VSAT being installed at ZAMNET access will be greatly enhanced.

Since the majority of USAID/Lusaka's partners and collaborators are already connected to the Internet, this link will be important. Mission staff will need to become more Internet savvy and be able to demonstrate to its development partners by example what contribution the Internet can make to organizational strengthening. Mission staff, particularly those program and project staff who have monitoring responsibilities for development partners, should be aware of the basic

history and functions of the Internet and know how to use its more important applications such as e-mail, LISTSERVs, Telnet, FTP, Gopher and the World Wide Web. Mission staff should also be able to explain how the Internet can be used to promote sustainable development and contribute to the achievement of program or project results in order to share this knowledge and experience with development partners.

The successful introduction of any new technology in an organization is greatly facilitated by the presence of an individual or group of individuals in the organization who will "champion" the new technology, demonstrate its effective use and encourage others to adopt the technology. A core group of individuals need to take on this role within the Mission. There was no evident "champion" at the time of our visit; however, this capacity needs to be developed. Additional training should be provided to these internal Internet champions in Internet applications and the potential contribution of the Internet to sustainable development.

Development Information and Communications Training in USAID/Lusaka

The first step for the mission should be to obtain Internet access. This could be done either through ZAMNET or, like many other USAID missions, through a VSAT link. Access through ZAMNET would be cheaper than VSAT, but it would also be slower and/or would support fewer users at the mission. Whatever the case, the mission should at the very least reinstate an account with ZAMNET so it has Internet access for at least one computer at the mission. Alternatively, if it is decided that the mission needs more than one connection, it could sign up for multiple accounts. This would be a small investment for bringing USAID/Lusaka up to speed on the Internet.

Once the mission establishes a connection, basic Internet training for appropriate mission staff should commence. There are a number of options for this training. The mission could choose to train a few staff through ZAMNET--if the mission chooses to connect through ZAMNET, this training will be included in the initial installation fee. Once trained in Internet basics, the individuals could then train a larger number of potential users at the mission. The only caveat to this strategy is that the current ZAMNET training course is very basic--graduates of the

session
are prepared to begin "surfing the Net" and use e-mail but not much more.

For more in-depth Internet training, as well as a primer on the effective use of information in general, the mission may wish to consider a more specialized, intensive program. The Center for
Development Information and Evaluation Research and Reference Services Project has designed
a workshop for USAID field Missions on "Development Information and Communications Training." This workshop has been successfully implemented in USAID field Missions looking
to integrate more effectively information and communications into their program. The five-day
workshop can be customized to meet the needs of particular missions, but typically includes training in USAID information sources and various Internet applications as they apply to meeting
the information and communication needs of Mission Strategic Objective teams. Workshop sessions have also included discussions of how to incorporate technical assistance in information
and communication technologies, such as the Internet, into development projects (this element could be a special focus of the training in USAID/Lusaka), as well as how to assist USAID development partners in the design of institutional communications strategies. Most recently, this
workshop was conducted in USAID/Kingston and arrangements are currently being made to conduct a version of the workshop in USAID/Jakarta.

PROMOTING THE INTERNET SERVICE PROVIDER INDUSTRY IN ZAMBIA

Current Internet Service Provider Status

Zambia is one of a handful of African countries to have a commercial Internet Service Provider (ISP) that provides access to the Internet at a reasonable price. ZAMNET, with the help of an initial one year grant from the World Bank, is a self-sustaining commercial business providing full Internet access to over one thousand subscribers in Zambia. Although the poor state of Zambia's telecommunications infrastructure provides for neither good quality connections nor adequate bandwidth for speedy response, subscribers are satisfied with the service provided. We heard repeatedly that communications costs have dropped so dramatically with the use of the Internet that people are reluctant to complain.

ZAMNET offers full Internet service, including access to the World Wide Web, for about $25 per month, with two hours of on-line time included in that base fee--each additional hour costs $7. There is a one-time connection fee of $30, which includes Netscape Navigator browser software, an e-mail client, and 4 hours of introductory training. In addition to providing Internet connectivity, ZAMNET also designs and posts Web pages for subscribers and provides technical consulting for minor problems--both services are for a fee.

ZAMNET recently installed a very small aperture terminal (VSAT) satellite earth receiver and is making the final adjustments needed to put it into operation. At that point, bandwidth within Lusaka will not be a problem and speed should increase significantly. However, outside of the capital telephone wiring will allow for only a 9600 baud rate; therefore, e-mail only will remain the norm for rural areas in the near future. For the long-term, ZAMNET does want to provide improved Internet access to rural areas by using a wireless system that a firm called Telcom 2000 wants to construct.

Promoting Additional ISPs within Zambia

Although ZAMNET has done a first-rate job in providing Internet access to Zambia, its capacity to deal with additional subscribers--even with the additional bandwidth offered by installation of

a VSAT--is currently being stretched to the limit. Lusaka specifically and Zambia in general would benefit from the existence of additional commercial ISPs. Not only would additional ISPs offer more aggregate bandwidth for current and new users, but their existence would also create the competitive environment that would help ensure lower prices, good service, and more universal Internet access.

A few parties do appear to be interested in setting up ISP operations in Zambia. Mark Bennett, director of ZAMNET, informed us during an interview that Quantum Technologies, a South African ISP, is interested in setting up an operation in Zambia. He also expects that ZAMTEL, the state-owned PTT, will also eventually try to win a share of the ISP market.

To encourage and facilitate the formation of new ISPs, an Internet Service Provider Conference could be held. The conference should be open to all interested parties, including current ISPs, entrepreneurs, and government officials. Since the degree of success in establishing a strong national ISP industry will hinge strongly on government cooperation, particularly in regards to policy and regulation, special effort should be given to bringing government officials to the conference, particularly those involved with telecommunications. Government representation at the conference would ensure that officials are cognizant of the needs and concerns raised by actual and potential ISPs.

Topics covered at the conference could include:

- Equipment requirements for ISPs;
- Initial capital requirements and ways to raise and/or attract capital;
- Skills needed for an effective staff and where to find those people;
- Types of services that can be offered;
- How to devise a pricing structure for services;
- Providing customer service;
- Marketing of Internet services.

Depending on the level of interest in the conference, participation may need to be limited by making it invitation only or by charging a fee for participation. ZAMNET should be tapped to provide speakers for the conference. Our sense from meeting with Mark Bennett, ZAMNET's director, is that ZAMNET would welcome additional ISPs in Zambia, so it would probably welcome the opportunity to relate its experiences in providing ISP services, especially if some sort of remuneration for its efforts would be involved.

CREATING AND EXTENDING INTERNET AWARENESS IN ZAMBIA

Internet Awareness in Zambia

Of the eighteen organizations we interviewed in Zambia, only four did not have Internet access. However, of the organizations connected to Internet, half used it for nothing other than e-mail. We found there was very little real understanding of the Internet or the potential of Internet. No one was participating in listservs, few had searched the Web, and only one had created a home page. Some of this was due to slow access from ZAMNET--searching the Web was a slow and tedious process that simply took too much time (and money, since ZAMNET charges by the hour after the first two hours). As mentioned earlier, no one was participating in a discussion group, news group, virtual conference, or listserv, nor had they seemed to have heard about them. At the time of our visit there was a visiting professor from the University of Florida who was teaching faculty at the University of Zambia on the use of the Internet for research purposes. He did cover these topics in his course.

Afronet was the only organization we interviewed that had created a presence for themselves on the Internet. They have a home page and plan to use the Internet to create a Southern African regional network on human rights issues. Most organizations had not developed an institutional information and communication strategy, which should be the first step in creating an Internet presence and using it effectively.

Listed below are potential mechanisms for promoting Internet awareness in Zambia.

Internet Workshops

Workshops can be an effective means to disseminate information about the Internet. The purposes of workshops would be to educate attendees about the Internet in general; to educate attendees about specific features of the Internet; to give attendees the basic technical background necessary to connect to the Internet; and to create a forum for the exchange of ideas among participants.

In Lusaka there are about one thousand current Internet users and interest in the Internet is high.
Accordingly, an Internet workshop would likely generate a sizeable number of participants. Depending on the capacities of available facilities in the area, attendance at the workshop would
likely need to be limited, either by making the sessions invitation only or by charging a fee for
admission.

The workshop could begin with lectures on the Internet in general and the basics of connecting
to the Internet. For these, speakers from ZAMNET could be utilized. Subsequent breakout sessions could be targeted to a number of issues, including:

Development Sectors. This session would cover using the Internet for specific development sectors. For example, a session on democracy and governance could highlight use of Internet for
newspaper publishing, while a session on economic growth could highlight on-line advertising and
commerce. For these breakout sessions, mission personnel could be tapped, along with speakers
from organizations that are using the Internet for development-related purposes (see "Fast Track
Pilot Activities").

Document Delivery. This session would cover maximizing document delivery through the Internet. It could focus on advanced e-mail features such as document encoding and basics of attaching files, file compression (which all users should definitely know about, since it can dramatically reduce the size of files, speeding up transmission and cutting costs), and uploading/downloading files to and from servers. Someone from ZAMNET or the University's
computer center might be a good candidate for heading this session.

Creating Listservs. This session would cover creating listservs and virtual conferences via the Internet. Topics could include the basics of setting up and configuring servers, tips on maintaining lists, guidelines for moderating listservs, and strategies for increasing web presence.

Publishing via the Internet. This session would cover the specifics of publishing Web pages through the Internet. It could include basics of Web design (with specific focus on efficient page
design for low bandwidth/low speed networks, which are currently the norm in Zambia), determining what information and documents to include on a Web page, introduction to hypertext
markup language (HTML) code, and an introduction to commercial Web page software (such as

Microsoft's FrontPage or Adobe's PageMill). For example, a speaker from Afronet could be tapped for the "publishing on the Internet" session to discuss their development of a Web page,
how they use it, and what problems have been encountered.

Internet as a Research Tool. This session would cover techniques for finding information on
the Internet. Speakers for the breakout sessions could be identified from key Zambian institutions
that have been using the Internet for this purpose for some time.

Demonstration/Information Technology Resource Centers

Information technology resource centers offer key advantages as a way to heighten Internet awareness. These include:

Hands-on Educational Resource. With a technology resource center, participants can actually
see the technology in action. This should pique interest more than simply reading about the Internet, thus encouraging users to put in the time needed to master its use.

Universal Access. These centers could be open to the public, with either free access or time-based pricing. Even if this type of public access were not conducive to allowing people to utilize
the Internet to the extent that private accounts would allow, it would at least spur interest in the technology and give individuals the chance to find out what it is all about. Having done so, word-of-mouth talk about the Internet should have a snowball effect in generating broader interest in
the Internet.

Serve as an Information Tool. Resource centers would provide an alternative to individuals or organizations that cannot afford their own Internet access. Especially for those with limited
and focussed Internet needs, resource centers would give users the ability to send periodic e-mails,
look for specific documents, or download needed software.

Specific types of services that such centers could supply to users include:

Basic User Training. Many users who visit resource centers will be inexperienced in the Internet, so the centers can play a large role in educating people about the Internet. Staff members
could guide new users through Internet browsing and answer questions. The centers could also
offer basic training courses on specific topics, such as basics of e-mail, using Web search engines,

setting up browsers for optimal performance, and so forth.

Internet Demonstrations. Periodic demonstrations could show users the more advanced Internet functions, such as video conferencing and Internet telephony (depending on bandwidth availability), walk-throughs of software downloading and installation, advanced e-mail functions (subscribing to listservs, fetching data files via e-mail, etc.), and Web page design. Demonstrations could also target more basic tasks, but this approach would probably work better for more complicated procedures. A hands-on approach--with some guidance--would be more effective for beginners.

Web Page Development. Resource centers could assist individuals and organizations with designing Web pages, or they could build Web pages for customers. ZAMNET already offers this service for a fee, but as Internet usage increases, there will surely be more demand for this. Keeping in mind that commercial software programs will soon supplant HTML coding, the centers could offer training on using these programs.

Media Connectivity and Involvement

Although those with Internet access find it to be a useful tool in keeping abreast of current events, those without access must rely on newspapers, television, and radio to find out what's going on. Accordingly, these traditional media channels can be harnessed to spread the word about the Internet. Sample media activities to raise Internet awareness and use include:

Information on Local ISPs. Newspapers in particular could inform readers about whatever ISP services are available. The arrival of Internet service is a newsworthy topic, so this should not be looked at as "free advertising," but rather as a public service announcement (perhaps the ISP could provide free server space for the newspaper, should it decide to go electronic). At the same time, newspapers could provide information on non-ISP means of accessing the Internet, such as "store-and-forward" systems.

Special Interest Columns. Newspapers could run periodic columns on the Internet. Such pieces are already common in many US newspapers and, as the user base grows in Zambia, they should draw increasing interest. These columns could relate general stories about the Internet (such as new services, Internet-related projects such as the Leland Initiative, or just interesting anecdotes such as the advent of on-line dating), provide answers to readers' Internet

questions,
or point out good Web sites. All these activities would serve the interests of current users, while
at the same time piquing the curiosity of non-users.

Rural and Remote Access to the Internet

As is the case with most developing countries, Zambia's rural telecommunications infrastructure
is extremely underdeveloped. As a result, providing widespread Internet connectivity to these areas is often impossible in the short-term and will require innovative approaches to address this
need in the long-term.

There are only a few practical short-term ways to provide rural and remote Internet service in Zambia. The first, demonstration/information technology resource centers, has already been covered in some detail in this paper. These centers would provide publicly-accessible Internet terminals that organizations could periodically use for short periods of time. The drawbacks to
this approach are that individuals would have to travel to the centers to use the Internet, which
will probably dampen enthusiasm for taking advantage of the service. Depending on the level of
interest in the centers, users may also have to wait in line or make appointments as well. Of course, the key advantage to these centers is that they are better than nothing at all. Would-be
users will need to decide for themselves whether using the Internet in this fashion is worth the
trade-offs.

Where phone lines do exist in remote areas, "store-and-forward" Internet systems would make sense. Store-and-forward technology can operate on rather low quality phone lines and would thus be compatible with existing infrastructure. Although store-and-forward systems do not enable full-fledged Web access, they do provide quite adequate e-mail service. Regional information resource centers could disseminate store-and-forward software and technical information to their users. The ToolNet Foundation, based in Amsterdam, has implemented such
systems in numerous developing countries over the past few years. Their approach should work
for rural Zambia as well.

Long-term solutions to rural connectivity are forthcoming, but these may not be fully in place for
several years. For instance, a company called Telecom 2000 has approached the Government of
Zambia about building a fiber-optic backbone through Zambia, with wireless service splitting

off
from this trunk to serve remote areas. Their proposal involves subsidizing rural service through the leasing fees raised from the fiber-optic trunk.

Internet Society/Professional Association Model

As stated in the Benin Country Implementation Plan, the Internet Society (ISOC) has begun to
explore setting up national level Internet Society chapters. A local chapter in Zambia could perform numerous functions, including:

Information Clearinghouse. The Zambian ISOC chapter could serve as a clearinghouse to fill Internet-related jobs with qualified applicants. It would be relatively easy for job descriptions
to be kept on file for job-seekers to examine. At the same time, these listings could be placed on
the Society's Web page--the perfect place to look for Internet-related work! The chapter could
also maintain rosters of computer/Internet training courses, computer/telematics equipment and
software suppliers, and e-mail/Web addresses for local and regional Internet users.

Organizational Tool. Perhaps the greatest advantage offered by a local Internet Society would
be its ability to organize the Zambian Internet community. Acting as a united front, Zambian Internet users could more effectively promote their goals in the political process, giving them more leverage to effect changes such as lower tariffs on computer equipment and lower phone fees
(at least while Zamtel remains state-owned). The chapter would also provide a convenient mechanism for group purchases of computer equipment and software, which can make possible
quantity discounts from vendors. Finally, the solidarity made possible by a local chapter would
allow Zambia to be better represented at international and regional Internet conferences.

Higher-Level Advice/Problem Solving. Much as technology resource centers could provide advice and problem solving services for Internet end-users, Zambia's ISOC chapter could provide
advice and troubleshooting services for higher-level Internet-related organizations. These services
could include information on how to become an Internet Service provider, technical information
about setting up local area networks, and government-targeted information such as the pros and
cons of specific telecommunications policies.

Although Zambian Internet users can and should be offered advice and support to start a local chapter, the success or failure of the undertaking (and whether it is even undertaken) ultimately will rest on their shoulders. As stated in the Benin Country Implementation Plan, the impetus to start a local chapter can come from informal meetings at Internet conferences, where Zambian participants can get together to begin discussions on the matter. ZAMNET would be the logical choice for pushing for a local chapter, since more Internet users would mean more business.

The Internet Society provides some guidance for establishing local chapter, including organizational requirements, funding obligations, reporting requirements, and so forth. These guidelines can be found on the Web at http://info.isoc.org:80/chapters/chapter-guide.txt and http://info.isoc.org:80/chapters/chapter-policy.txt. As the guidelines state, the first step for a prospective ISOC chapter to take is to contact the international ISOC. At that point, ISOC will determine the feasibility of a local chapter and will suggest next steps.

INSTITUTIONAL STRENGTHENING

The R&RS Leland SO 3 Assessment Team met with USAID/Lusaka development partners during July 1996. Most of the organizations interviewed had at least one computer, and of these almost all had Internet access through ZAMNET. The computer equipment was almost universally quite modern--only a few organizations had sub-486 class equipment, while many owned Pentiums with CD-ROMs, internal modems, and other peripherals installed. Overall, the NGOs we assessed seemed very committed to utilizing computers in the work environment.

If most organizations had the hardware to make use of the Internet, few had individuals who really know how to take advantage of it.

Computer/Network Repair and Training

Technical capability was lacking in most of the organizations we interviewed and in Zambia as a whole, perceptions confirmed by Mark Bennett of ZAMNET. ZAMNET has the expertise necessary to connect users to the Internet, but it and the University of Zambia's Computer Centre are the only reliable resources for computer troubleshooting within Lusaka, apart from a few entrepreneurs who appear to be "shadetree mechanics" for computer repair. Even so, the University does not offer computer training courses (it would seem that the expertise of students in the Computer Centre was gained from hands-on experience) and the Computer Centre's technical assistance is generally limited to software problems.

Computer repair and technical support are services best provided locally, since most users can ill afford to be without their equipment for long and since many services demand on-site visits. Fortunately, these types of businesses are also well-suited for small enterprise support, which has been a mainstay of USAID's economic growth programs since the late 1980s.

User Training

As mentioned before, computer use in the organizations we interviewed was quite high. Most organizations were using their computers for word processing and e-mail, and user proficiency seemed adequate for these fundamental applications. However, the more widespread use of advanced Internet features will demand greater computer skills on the parts of users. To get the

most from Internet searching, users will not only have to know how to point and click, but also how to download files, how to move files from the Internet to local applications (such as word processing programs), and how to check downloaded files for viruses, to name just a few of the skills. Furthermore, mastering these skills depends upon a mastery of other skills, such as navigating Windows.

One institution we interviewed, ZAMCOM, is well-positioned to provide computer training to large numbers of users. A proposed strategy for providing computer training through ZAMCOM is detailed later in the "Pilot Activities" section of this report. ZAMNET is also considering expansion of their Internet training activities. Furthering ZAMNET's Internet training, as well as assistance for training to future ISPs in Zambia, should be considered. Although the ISPs commercial status might limit the scope of USAID assistance, some technical assistance and/or monetary support would be justified if the mission's partners benefit from the end-user training.

Organizational Information/Communication Strategy Development

As previously stated, the majority of the organizations interviewed did not have clear strategies for integrating information and communication in their daily routines. Although the Internet was seen as a useful tool in terms of e-mail access, no one made use of discussion groups, used the Internet as a research tool, or used the Internet to advertise presence or disseminate information (with the exception of Afronet). This failure to take full advantage of the Internet seemed to be due less to lack of awareness--most organizations knew about the Internet's research abilities, Web pages, and so forth--than the absence of either a strategy or coordinator to pursue these activities.

As a segment of the Internet Workshops for sustainable development institutions, or as a separate activity, USAID development partners should be given instructions for developing or refining an Institutional Information and Communications Strategy (IICS). This exercise would walk institutions through the process of concentrating on the real and potential role that information and

communication play in their attempts to achieve institutional results. With guidance from experienced information and communications professionals and trainers, institutions would perform audience, message and media analyses to help them conceptualize how to maximize the use of their limited resources in order to be effective communicating organizations. Each institution would leave this exercise with the beginnings of a strategy for improved use of information and communication to be tested and refined as per instructions. Institutions who have taken the time and made the effort to develop and articulate an IICS become much more appreciative of the important role of information and communication in their institutions. Having become so, they will be better prepared to recognize the potential contribution of the Internet to their mission.

MONITORING AND EVALUATION

It will be important to monitor and evaluate the various activities throughout the implementation phase of the Leland Initiative in Zambia. Not only is this important to ensure that Leland Initiative and USAID/Lusaka funds are being used to achieve maximum results, but it will also be important because Zambia is among the first USAID countries to implement Leland Initiative activities and as such will serve as a testing ground for the activities and a model for other USAID countries.

Proposed Indicators

Suggested indicators of whether Leland Initiative SO 3 is being met in Zambia include:

Number of Internet Users. This indicator would measure the increase in the number of institutions with Internet access in Zambia. It need not be limited to development-related institutions as a whole, since wider Internet use by commercial organizations, government agencies, and the like also benefit society as a whole.

Internet Presence. An organization's Internet presence refers to its posting of Web pages, the existence of links to these pages at other Web sites, its hosting of listservs or virtual conferences, and any other activities that make the organization "visible" to other Internet users. Although it would be prohibitive to monitor all these activities for Zambian organizations and institutions, a suitable proxy would be simply tracking the number of Zambian Web pages.

Comprehensive Use of Internet. Although e-mail alone is a very useful Internet tool, the goal should be to prod users to take advantage of a range of the Internet's features. This indicator would measure the amount of time spent using advanced functions of the Internet such as the World Wide Web or listservs.

Coordination and Outreach Via Internet. This indicator would be used to assess the degree to which organizations are using the Internet for communication purposes, which for many is the Internet's most powerful and useful feature. The indicator could cover participation in listservs, numbers of e-mail messages sent and received, and participation in virtual conferences.

Measuring the Success of Implementation Activities

Some of the activities proposed within this report lend themselves to fast and easy appraisal. For example, short tests of Internet skills and knowledge could be administered to a sample of participants at the Internet workshops both before the workshops begin and after it ends. Both tests would be identical and would be administered to the same participants. Results of the tests could then be compared to determine how much participants learned at the workshop. In this way, areas of weakness within the program could be identified and adjustments could be made.
Statistics regarding the number of Internet users, the number of local Web pages, and the existence of listservs should be readily available from the ISPs in Zambia.

Other statistics, such as the level of Internet awareness and the degree of advanced Internet use, will be more problematic to gather. To determine the level of Internet awareness in Zambia, a polling firm could be enlisted, but this may cost too much. Alternatively, a better solution may be to simply conduct informal polling. In Lusaka, stopping people at random on the street to ask them about the Internet might suffice. This method would not work in most areas outside Lusaka, but as we mentioned before, widespread Internet access in rural areas is years away, so rural connectivity--not rural awareness--is the main concern there.

To determine how organizations use the Internet, the Internet itself would make an ideal tool for gathering the information. E-mails containing short questionnaires could be sent out to specific organizations on a periodic basis. Sample questions include "Does anyone in your organization participate in a listserv?"; "How often do you use the World Wide Web?"; and "How many hours, on average, does your organization connect to the Internet per week?" Most of the answers to these questions can be quantified--even more subjective questions, such as "How satisfied are you with the quality of service provided by your ISP?" could be quantified by dictating a "1-5" response (i.e., "5" means "very satisfied and "1" means "not at all satisfied"). Therefore, user responses to such a questionnaire would lend themselves well to comparison across organizations over a period of time and could be easily stored in electronic format.

FAST-TRACK PILOT ACTIVITIES

Recommended Pilot Projects

During the interviewing of USAID's partners and collaborators in Zambia, several projects stood out as possible pilot opportunities for the further development and use of Internet for sustainable development purposes. These suggestions would need to be studied further, with the development of a feasibility study or concept paper for each idea, in order to fully determine the cost, impact and sustainability of these pilots.

Ministry Of Health Internal Communication Network

To support the proposed decentralization of the Ministry of Health, an information/communication network could be created among the central Ministry offices and district-level Ministry offices. Currently a management information system is being developed and computers, modems and telephone lines are being installed as part of this effort. With the establishment of a network, multi-directional communications could be established with a minimum of effort. Since telephone lines in the rural areas have only a 9600 kilobyte bandwidth, the network would need to focus on e-mail rather than the Web. Nonetheless, e-mail allows for many possibilities. Minutes of Ministry meetings could be circulated; virtual meetings could be held centering around very specific agendas and topics; specialized listservs could be created on topics such as vitamin A deficiency or immunization; virtual conferences could be held on specific topics; and discussion groups could be organized around topics of interest to the Ministry. These activities would provide a cost-effective tool to advance the Ministry's objectives; furthermore, they would provide for and improve the communication channels within the Ministry for conducting routine administrative tasks.

The Ministry of Health seems to be the Zambian government agency most open to using the Internet for development objectives. Zambia's Minister of Health (whom we unfortunately did not have the opportunity to meet) is evidently a big Internet advocate. Considering the Ministry

of Health's receptiveness, and since population/health/nutrition is probably the mission's most active SO at present, a pilot activity in this sector would be appropriate.

This activity might come in the form of a joint project between BASICS and the Ministry of Health to coordinate their communication/information strategies and to pursue Internet-based communication improvement activities. First steps could include:

Discussion Groups. Setting up e-mail "discussion groups" on population/health/nutrition topics most-pressing in Zambia, such as AIDS, sanitation, and birth control promotion. Such discussion groups would put partners in touch with one another, with government officials, and with USAID personnel. At the same time they would expand organizational and personal contacts, they would make current relationships and contacts speedier, less expensive, and more flexible (no need to hold conferences, instant access to other organizations/individuals, ability to start widespread discussion on any given topic almost immediately, etc.).

Bulletin Boards/Web Pages. Distribution of internal communications (research papers, minutes of meetings, e-mail address lists, etc.) through either an electronic bulletin board or through a central Web page.

Training. Conduct training classes on using the Internet for health/population/nutrition-related applications. This could cover using the Internet for research, finding appropriate institutions on the Internet, setting up a regional program over the Internet (i.e., exchanging information, reports, etc. with regional field offices through the Internet).

Internet Capability for IESC Business Center

The International Executive Service Corps (IESC) is currently developing a business information center in Zambia to assist small- and medium-scale enterprise (SMEs). This business center would benefit greatly from having Internet capability, not only to more easily disseminate information to Internet-connected businesses (via e-mail and a Web page), but also to locate information on the Internet to respond to specific questions from entrepreneurs. For example, imagine a local Zambian brewery is interested in exporting their beer to the United States. The Internet could be used to find US import restrictions and requirements for such a product. If the requirements include that the beer be homogenized, then the Internet could be used to find out what that process entails. In this way, the Internet could be used to answer questions that may have otherwise been too difficult, given the dearth of hard-copy information of any type in

Zambia.

IESC/Zambia already has a staff member who is quite competent in using the Internet. Nonetheless, he could benefit from further Internet training since--if he would be interested in performing this function--he would be doing very detailed Internet research for the business center. The proposed center would also benefit from having a Web server of their own rather than leasing server space from ZAMNET. This is particularly true since the proposal for the business center also includes allowing local businesses to use Internet terminals there for a fee,
much like a telecottage. Such an arrangement will require a more robust Internet connection than
is currently available through ZAMNET.

Capacity for Internet Training Within ZAMCOM

ZAMCOM should be considered as a leading candidate for a central Internet training program.
ZAMNET is already in the business of training (trains journalists in writing skills, research, etc.)
and it has an excellent computer training center--complete with a LAN and full Internet access--in
place. Furthermore, it has a radio station and video production facilities on-site, has working relationships with newspapers across Zambia, and a well-stocked library. Accordingly, it would
be in a good position to advertise any courses to a large audience and would have most of the resources necessary to support training activities. Computer and Internet training is a critical need
in Zambia right now, and ZAMCOM seems to be the organization most logical for handling such
a program for the reasons stated above.

ZAMCOM, which was previously a state-owned entity, is under a mandate to become self-sufficient over the next year. Accordingly, the training program proposed above should be
operated as a for-profit enterprise, with a rational fee structure for the various types of training
that would be offered. Mission support would thus be limited to initial start-up support, after which ZAMCOM must rely on the strength of their own business strategy (the mission could also
help with formulating this strategy) to continue its Internet-related operations.

Zambian Legal Information Institute

The Zambian Legal Information Institute, started by two Peace Corps volunteers, is pursuing a
very innovative approach to disseminating legal texts throughout Zambia. Currently, hard

copies
of Zambia's legal codes are unavailable in many areas. Courts routinely make judgements without
the benefit of referring to Zambian law, as the texts are frequently unavailable even to them!

To circumvent this problem, the Institute started posting texts relating to Zambia's legal system,
such as the constitution, supreme court decisions, and law statutes, in electronic format on a Web
page with ZAMNET. Subsequent funding from the Peace Corps allowed the Institute to eventually purchase its own server for storing the information. More information, including lectures from the law school, articles from the Zambia Legal Journal, and law school syllabi, are
currently being added to the server.

The main concern for this project is how to keep it going once the Peace Corps volunteers who
started it leave. It has been their personal dedication that has kept this project going, and once
they leave, there seems to be little incentive for anyone else to take over the job. Accordingly,
they are attempting to get local lawyers "hooked" on accessing the site so they will have a vested
interest in contributing to its future maintenance. Likewise, they are also trying to convince Zambia's legal branch in the system's utility (courts, for example, could access the legal code over the Internet) so that government support might be forthcoming.

Mission support for this project could come in the form of providing some computer equipment,
encouraging the Zambian government to support this initiative since it benefits their legal system,
and helping the project locate individuals or organizations who would take over the project once
its current custodians depart Zambia. Law students at the University of Zambia could be a promising resource for carrying out this task. Perhaps some work with this project could be made
part of course requirements, thus advancing two goals at once--sustaining the long-term viability
of the Zambian law page and familiarizing students with the Internet's capacity as a valuable resource for course work.

Afronet Regional Democracy Network

Afronet has been awarded a grant from USAID's Regional Center for Southern Africa Southern
Africa Democracy Fund. The purpose of the grant is to create an Internet-based network of

Southern African NGOs working in the democracy area. While Afronet currently has a Web page on ZAMNET's server, it would be able to better implement the Southern Africa democracy network if it could manage the network from its own site.

Accordingly, Afronet would benefit from having an Internet server of its own. The server itself need not be too expensive--a Pentium-class machine with a large hard drive should suffice. However, more assistance would probably be needed in setting up the server and acquiring adequate data lines for people to access it. If wireless networking, which ZAMNET is interested in starting, takes off in Lusaka, this might be a cheaper, more-viable alternative to leasing a line from Zamtel.

Support for ZAMNET

ZAMNET has been doing a yeoman's job with few resources. In a few years it has managed to become a self-sustaining operation that is making capital improvements independently (it will be upgrading to a V-SAT connection within a few months). ZAMNET seems to be dedicated to making it on its own (and doing a good job of it!), so large amounts of direct assistance are unnecessary. They could, however, take a proactive stance in supporting the formation of an Internet user group (such as a local Internet Society) in Zambia. They are stretched to the limit in terms of providing training to their new subscribers, however, and would need assistance to hire additional personnel for handling this new activity.

Aside from assistance to start a local Internet Society, ZAMNET could benefit from USAID leverage at the government policy level. Zamtel, Zambia's state-owned telecommunications company, seems to be interested in carving out a piece of the Internet market for itself. This is fine, especially since it is due to be privatized shortly, but ZAMNET needs to be guaranteed continued access to Zambia's current and future Internet gateways, as well as participation in rural connectivity projects currently under review. In short, ZAMNET has and can take advantage of Internet business opportunities, but it also needs assurance of a level playing field into the future.

ANNEX I: BARRIERS TO INTERNET ACCESS

First Level Barriers to Internet Access

ZAMTEL, the national PTT, is currently the only provider of telecommunications. While it is slated to be privatized, there is much speculation about whether and when this might occur since the policy environment is somewhat tenuous.

First-level barriers to Internet access in Zambia include:

High Tariffs. There are currently high tariffs on computer hardware and software. Tariffs on computer hardware are 15%, while software tariffs are an even-higher 20%. When the 20% value-added tax is added, additional costs for computer equipment approach 50%.

Technical Expertise. Depth of technical knowledge in ZAMTEL is limited, especially for Internet-related technologies. While ZAMNET has expertise in the Internet, customer growth is beginning to tax existing resources. Apart from these, there are few, if any, indigenous organizations with the high-level knowledge and capabilities needed to expand the intranational network.

Telecommunications Policy. Zamtel currently has a monopoly on telecommunications services in Zambia. This has led to a number of conditions that are not conducive to the spread of Internet in Zambia, including but not limited to extremely expensive metered calls and the abolition of the use of "call-back" schemes (where a user in Zambia makes a long-distance connection to a remote host, which then promptly calls back the user, thus establishing an Internet connection based on the remote countries rates, which can be much lower). On the other hand, the newly-established National Communications Board, which is now responsible for regulating telecommunications in Zambia, has provided favorable decisions for the continuation of ZAMNET and the installation of its VSAT Internet connection.

Poor Infrastructure. The telecommunications infrastructure in Zambia is extremely poor. Local loop telephone lines are in desperate need of repair and upgrade. Call noncompletion rates are relatively high, and even when a call goes through, the connection is often poor. The nation’s trunk system is comprised of copper analog wires with 9600 baud rates--too low to support

very
much Internet traffic at all (this is a major reason for ZAMNET switching to V-SAT).

Second Level Barriers to Internet Access

Lack of Internet Awareness. Although most of the organizations interviewed by the assessment team had used or at least heard of the Internet, an in-depth understanding of its capabilities (and limitations) was lacking in most organizations. Although poor infrastructure dictates, in practical terms, that ZAMNET subscribers are limited to e-mail alone, no organizations were aware of listservs, which can greatly increase the utility of e-mail service.

Lack of Information Strategies. Even if an organization is well-versed on use of the Internet,
it needs a strategy to effectively harness the Internet's capabilities for its overall institutional goals. While many organizations had broad plans for using the Internet to gather information and
to communicate with other organizations and individuals, none had thought through their information needs in a comprehensive manner or had devised a concrete framework for weaving
the Internet into the workplace.

Lack of Training. Just as lack of technical expertise constitutes a first-level barrier to Internet
dissemination in Zambia, a paucity of computer know-how within partner organizations also retards the effective use of information technologies on a broad scale.

Recommendations to Address 2nd Level Barriers

Demonstrations. Demonstrations to increase awareness of potential use of Internet--mission, NGOs and development partners, business community.

Technical Training. Technical training for computer/systems technicians--ZAMNET, LAN, installation of software, hardware, modems trouble-shooting.

User Training. User Training--ZAMCOM, two levels: basic computer and e-mail, sector specific.

Information Strategy. Training in development of communication/information strategy for strategic use of the Internet, ZAMCOM, publishing on the Internet, Web page development, establishing a listserv, facilitating a virtual conference, creating and facilitating a virtual network.

Internet User Groups. Creation of Internet User group.

ANNEX II: ORGANIZATIONAL ASSESSMENT SUMMARY